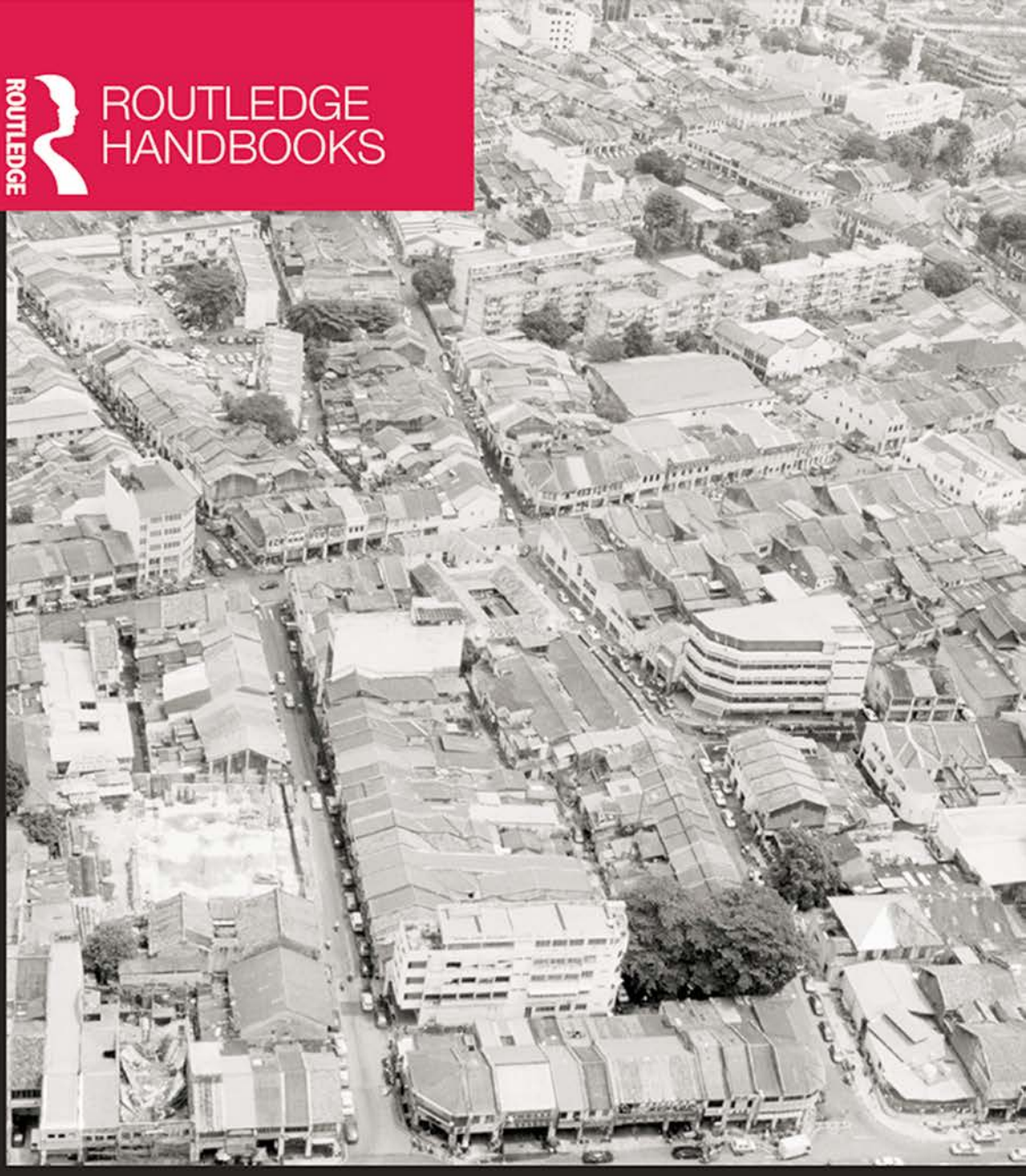
ROUTLEDGE HANDBOOKS



The Routledge Handbook of Planning Research Methods

Edited by Elisabete A. Silva, Patsy Healey, Neil Harris, and Pieter Van den Broeck

THE ROUTLEDGE HANDBOOK OF PLANNING RESEARCH METHODS

The Routledge Handbook of Planning Research Methods is an expansive look at the traditions, methods, and challenges of research design and research projects in contemporary urban planning. Through case studies, an international group of researchers, planning practitioners, and planning academics and educators provide accounts of designing and implementing research projects from different approaches and venues. This text shows how to apply quantitative and qualitative methods to projects, and how to take your research from the classroom to the real world. The book is structured into sections focusing on:

- beginning planning research
- research design and development
- rediscovering qualitative methods
- new advances in quantitative methods
- turning research into action.

With chapters written by some of the leading scholars in urban planning, *The Routledge Handbook of Planning Research Methods* is valuable for planning students at all levels, and a graduate-level textbook for research design and thesis courses.

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INTRODUCTION

The craft of 'doing research' in spatial and regional planning

Elisabete A. Silva, Patsy Healey, Neil Harris, and Pieter Van den Broeck

The argument for focusing on research in the planning discipline

This book focuses on 'doing research' within the discipline of spatial and regional planning and is written for those who may at some point be tasked with conducting research. Research takes many different forms and is carried out in a variety of different contexts. As a reader of this book, you may be a research student engaged in a doctoral programme in a planning school or an urban and regional studies department. Alternatively, you may be working on a postgraduate or undergraduate dissertation. You might be an established academic researcher new to the discipline of planning and wondering how to apply your skills and experience within the discipline, given its specific characteristics and traditions. You may even be working in a research institute and engaged in practical, applied research. You have perhaps identified or even been assigned a 'topic' to research, and maybe you have some initial thoughts on how to study it. It is quite possible that you have completed or are currently studying a course or module on 'research design' or 'research methods' as part of your studies and, in doing so, have encountered the expansive literature on social science research methods (see, e.g., Outhwaite and Turner, 2007; Lewis-Beck *et al.*, 2004; Somekh and Lewin, 2011; Ruane, 2004).

This research methods literature is helpful, but it is generalised and is intended to apply across a very wide spectrum of different disciplines. Some of the material in these texts may draw on specific disciplines in describing the application of specific research designs or methods, but these often feel a little distant from our own disciplinary interest in planning. Your exploration of this literature also identifies that some subjects have specific accounts of how research design and methods apply to their field, including criminal justice, psychology, nursing and social work (see respectively Logio *et al.*, 2008; Lyons and Coyle, 2008; Clamp *et al.*, 2004; Thyer, 2010). You have not, however, come across much discussion of research and research methods in the planning field, and the closest consideration to this comes from other spatial disciplines, such as human geography (Flowerdew and Martin, 2005), with which there are shared characteristics, but also important differences. We argue that these differences matter, and a failure to focus on and address the specificities of doing research in the planning discipline has several important consequences. These consequences include the challenge that students and researchers face in exploring and using the full range of research methods that may be applied to understand the wide subject matter that is related to planning, as well as a lack of attentiveness to the interaction

between disciplinary subject matter and the research methods applied in the course of finding out about the world. There are nevertheless a few papers and appendices in which planning researchers usefully describe their approach to the work they have done (Roy, 2003; Healey, 2007). Yet there is no consolidated text which is focused specifically on the challenges of undertaking research inquiry in the planning field. So, this book has been written to address this gap by providing an opportunity to reflect on research within our discipline. The book should be read alongside the research literature in the social sciences, which is rich and valuable, and to which some planning scholars, such as Bent Flyvbjerg (2001, 2012), have made strong contributions. This book is designed to act as a 'bridge' between the wider research design and methods literature and the specificities of our field. This is what we have sought to provide in this text, with specially commissioned chapters in which we have asked authors to focus particularly on the 'craft' of doing research work in the planning field, the diversity of methods that are applied in our field, and the particular challenges generated by 'doing research' in planning.

The specificities of doing research in spatial and regional planning

The purpose of this section is to set out a basic, working definition of what 'research' is and explore some of the defining characteristics of research in the planning discipline. One of the most widely used definitions of research is that set out in what is known as the *Frascati Manual* (OECD, 2002). The definition is one that was devised to evaluate research and development (R&D) activity, but it has been adopted and applied more widely, including in academic institutions. The manual states that research comprises "creative work undertaken on a systematic basis in order to increase the stock of knowledge, including knowledge of man, culture and society, and the use of this stock of knowledge to devise new applications" (p. 30). In the exercise designed to assess the research quality of academic institutions in the United Kingdom, research is defined as "a process of investigation leading to new insights, effectively shared" (Higher Education Funding Council for England, 2011). There are several important components within these two definitions. There is an emphasis on knowledge, which may be new knowledge or, as implied in the second definition, knowledge that is applied in such a way that it leads to new insights. This knowledge is acquired through a process of investigation. One of the defining features of this investigation is its systematic nature, and this sets it apart from more general inquiry and other forms of investigation or 'finding out' about the world. Systematic investigation implies careful and thoughtful design of the processes by which data is gathered, a clear conceptual framework to guide collection and analysis of data, and a general sense of rigour and craft in the overall conduct of research activity. The two definitions, when taken together, also emphasise that research is both an interactive process – with an emphasis on that knowledge being 'shared' – and a very practical one, with an emphasis on 'application' of knowledge.

It is this last feature of research – the 'application' of knowledge acquired through the process of investigation – that is an especially important one for the planning discipline. Many people who start a research study from a planning background want their work to contribute to solving some problem in the practical world. Some even hope that, through their research, they can produce a policy proposal or even a plan for a specific situation. So our field is defined by a practice focus. There are endless debates about how best to describe this focus, and there is never likely to be a single answer. For our purposes, we have taken 'planning activity' to be a form of collective action centred around the development of place futures (Healey 2010; Albrechts 2004). It is, in effect, a form of place governance and it involves processes which bring knowledge to bear on action possibilities (Friedmann, 1987). And, as many emphasise these days, the knowledge involved not only is based on forms of systematic inquiry that underpin the formal definitions

of research outlined earlier – that is, 'scientifically-robust' knowledge claims – but also draws in all kinds of experiential, practical and 'local' knowledge (Schön, 1983).

So what role does systematic inquiry play in the planning field? The contributions to this book offer many suggestions and they are not always consistent. To generalise, systematic research inquiry both consolidates and evaluates experiences (what works, for whom, what is at stake – why, when, where, how) and develops and evaluates techniques, tools, future option concepts and practice habits. Much planning research also has a descriptive and explanatory purpose, asking questions about 'what is going on here'. In this respect planning research is often much closer to research inquiry traditions in the social science and natural science fields. Yet, despite the alignment of much planning research with the traditions of broader, social scientific or natural scientific research, there are characteristics that make the activity of doing research in the planning discipline a distinctive one. None of these characteristics are exclusive to the planning discipline. It is, we argue, the combination and prominence of these characteristics, and the way in which they frame planning research activity, that result in a distinctive environment in which planning researchers go about their systematic investigation, and the generation and application of knowledge. One of the principal contributions of this book is to encourage further reflection on the traditions and practices of our research discipline. In our own reflections on this issue as editors, we have identified the following as the key disciplinary specificities or characteristics of doing planning research, many of which reflect broader issues of relevance to planning:

- *An action orientation:*[1] This demands that attention is given in our research activities to the social and political reasons for undertaking a research project in the first place, and to the ambition that research findings will 'make a difference' in relation to these reasons.
- *An explicit normative focus:*[2] Doing planning research involves recognising the values which generate the research interest and underpin the reasons in some cases for wanting to 'make a difference' in the practical world. Planning research is always carried out within a complex framework of different interests' views about 'what should be'. Research, as an activity generating knowledge and insight, is therefore inevitably engaged in shaping power relations.
- *A recognition that systematically produced knowledge* has value in shaping and evaluating interventions in the practical world
- *A substantive interest in place qualities and spatial relations:*[3] as a result of recognising that many different forces and relations shape how place qualities are produced, and that what happens in one place has complex connections with what happens elsewhere. In this respect, planning research shares some characteristics with other spatial disciplines, such as geography.
- *A sensitivity to disciplinary and paradigmatic diversity:*[4] that demands attention to the epistemological and ontological underpinnings of different research traditions, both within and outside of the immediate discipline of planning.
- *A recognition of the political-institutional contexts within which knowledge is produced and used*, requiring an awareness of who is likely to use the knowledge produced and how it might be used.
- *A sensitivity to the ethical dimensions of knowledge production and use,:*[5] involving explicit attention to what and whose values are in play, and to the ethical conduct of a researcher.

The various contributors to this book emphasise different elements of the foregoing list in their individual chapters. So, for example, some will focus on elaborating the specific political-institutional contexts for their own research, while others demonstrate a clear, transformative intent through their research and aim to change planning practices in their respective countries.

Yet we maintain that a researcher engaged in researching planning should be aware of and understand all of these specificities, and demonstrate an appreciation of their implications for the design and conduct of research.

These specificities of conducting research in the planning discipline can make problematic some of the components of the formal definitions of research which we introduced earlier. For example, undertaking systematic investigation often means narrowing an issue down in order to focus on key elements and relations, often referred to as the 'unit of analysis' (Yin, 2009; Remenyi, 2012). This can be very frustrating to a planner with a burning issue to investigate arising from some practical experience or purpose. In action mode, those of us working in the planning field need to be aware of multiple dimensions and relations as they impact on a particular practical issue. A key practical skill is the ability to 'integrate' and synthesise diverse concepts and elements into an idea, or plan or strategy with which to shape, explain and justify specific interventions.[6] But in research mode, the emphasis shifts to in-depth exploration of maybe just one of the significant relations. One of the greatest challenges for a researcher is working out the appropriate core focus of an investigation and what, for the purposes of the study, has to be left as part of the contextual penumbra.

The applied and practical nature of much planning research, and its action orientation, also has implications for the conduct of planning research. For example, it is often supposed that a PhD student and a researcher in an academic context are free agents in choosing and shaping their research topics and modes of inquiry. However, just as in other walks of life, this is rarely the case,[7] and especially in the planning field, systematic research is undertaken in all kinds of institutional contexts with all kinds of expectations placed on the researcher. While researchers may be driven by their own motivations and the stimulation of research inquiry, we are all constrained in some way or other. Doctoral students have to pay attention to the demands of their funders, particularly if their doctoral studies are funded or partly funded by collaborating or sponsoring organisations, and to the concerns of their supervisors. Academics are encouraged to secure funding from outside sources, which generates demands and expectations which are often not easy to negotiate. Planning researchers may work in agencies and consultancies doing practical planning work, demanding inquiries focused on their immediate needs. Specialist research institutes and specialist policy advice agencies may value systematic research activity by their staff, but will have particular agendas which will shape what is researched and how findings are received. In the final part of the book, we explore the tensions that these different research situations create. All of them, however, demand careful ethical and sociopolitical sensitivity. Research ethics courses and texts often focus solely on the appropriate ways through which researchers should relate to research 'subjects' and the appropriate methods for relating evidence to findings. Especially in the planning field, however, it is also important to pay attention to the ethics of the relation between research inquiry and the funders and users of research findings.[8] Planning researchers also need to be aware of the sociopolitical context for their and others' research. Research can be undertaken to sustain the status quo and the interests of sponsors, or it can be empowering and transformative. Consequently, what a researcher chooses to investigate, and what funders identify as their priorities for research, can never be regarded as neutral.

The organisation of the book

We have structured this book as a handbook for those engaged in research in the planning field, including those doing so for the first time. We hope it will also be helpful as a reminder and a prompt for more experienced researchers. A contribution to the richness of the planning field

lies in the range of inspirations and perspectives which people draw upon to select and investigate specific research questions. Yet this makes organising a research handbook challenging. The book has five main parts, each of which may be read as a stand-alone series of chapters accompanied by an introduction. We start in Part 1 by introducing readers to the experiences of other researchers in a biographical way. We asked ourselves and a few others to reflect on their own experiences of learning the craft of research in the planning field. The purpose of these biographical chapters is to relay the differing pathways that the contributors have taken through their research careers. They are also written with the hope of sharing our positive experiences with early career researchers, and providing some guidance on overcoming some of the challenges of doing research on planning. We conclude this part with a revised version of a paper by John Forester on the craft of academic writing. The act of writing is an important part of doing research, and is one of several means of ensuring that knowledge and insights are effectively shared.

The remaining four parts of the book consist of specially commissioned chapters by researchers working in various parts of the world. A review of books of abstracts and conference programmes of AESOP, ACSP and WPSC conferences during the past five years allowed us to shortlist research active planners and also to identify current trends and topics in research methods; once this initial list of potential authors was built, authors were invited to submit a short abstract. The abstracts were later reviewed by us and feedback was provided on how to build the chapters. In Part 2, we consider a range of general questions about the practice of research inquiry and its specificities in our field, as well as examples of researchers linking a particular conceptual tradition with a specific research strategy or method. The chapters address key issues from the fundamentals of overall research design, through to ethics in planning research and comparative research between different planning systems. It is the important questions raised in this part of the book that are often overlooked in the urgency to identify appropriate or specific research methods. A well-founded research study will explore these more fundamental questions, many of which open up issues of epistemological and ontological position. The chapters in this part of the book will also encourage readers to appreciate that planning is a discipline characterised by very different and sometimes conflicting perspectives on the function and conduct of research.

The most challenging issue for the organisation of the book has been how to organise the many and varied contributions on the use of specific methods in planning research. There are texts in planning theory which map out different theoretical traditions and perspectives,[9] which we might have adopted to structure the book. Yet the methodological implications of embracing these different planning theories are often implicit and are not always clearly articulated in the relevant literature. In some cases, different planning theories may share epistemological foundations, and may therefore raise similar issues of research design and selection of methods. In other cases, the adoption of similar methods may obscure quite different epistemological bases, resulting in very different approaches and outputs. Consequently, organising the text around particular theoretical themes is problematic and, given the diversity of perspectives of the contributors, would have resulted in a false and inappropriate partitioning of the contributions. The approach that we have therefore adopted to organising the main element of the book is to collate contributions according to their use of quantitative or qualitative methods in Parts 3 and 4 of the book. This is a very traditional and established way of categorising research methods in the social science literature.[10] There is no intellectual logic to this division, as a particular research question may involve a combination of qualitative and quantitative methods, as is evident in the increasing use of mixed-methods research. The organisation of the book into

quantitative and qualitative methods does, however, have the advantage of aligning well with how research methods are often taught in academic institutions, as well as facilitating links to the wider research methods literature. In the end, different researchers will have different capacities and sensibilities, some preferring to express evidence and meanings in numerical forms and others in narrative forms. All research analysis involves some kind of 'interpretive' work, but some studies will interpret through calculations and others through text accounts. The contributions in this book provide evidence that both traditions are core to the planning discipline, although some of the contributors disagree on the appropriate balance between them.

In Part 5 we bring together contributions which explore the relationships between research and practice, and which also highlight some of the practical applications of methods. The chapters in this part look at how research does or does not have an impact on practice, how doing research on planning for government differs from more academic forms of research, and what issues arise in engaging with stakeholders and others through the research process in applied settings. The lessons derived from the contributions in Part 5 are especially important for those pursuing research careers in academia or in practice within the planning discipline.

Intellectual traditions in planning and their impacts on research practices

The research practices of any discipline are inevitably shaped by broader intellectual traditions and frameworks that give each discipline its particular form and character. Different intellectual paradigms are aligned with specific research designs and research methods. So, the manner in which a discipline such as planning has absorbed the dominant intellectual traditions will result in an affinity with certain research methods. The purpose of this section is to provide a summary introduction to the way in which planning ideas have developed, and to explain how this has resulted in the privileging of – or reluctance to embrace – particular research traditions and methods. For those who are engaging for the first time with the planning discipline, this section should be read alongside one of the key texts on intellectual traditions in planning (see, e.g., Friedmann, 1987). More experienced planning researchers will recognise the main contours of this section, and appreciate the inevitable simplification that is involved. For all readers, we hope to establish the relationship between the various intellectual traditions in planning and questions of research design and methods.

The multiple inspirations shaping the evolution of planning systems and practices

The planning field emerged as an array of practices before it evolved an academic dimension, and even then it built its academic foundations on those derived from a range of related disciplines. These practices had different emphases, political dynamics and institutional forms, related to different national contexts. In France at the end of the nineteenth century, the emphasis was on urban design and 'modernising' the form of the city, producing a tradition which was internationally influential. In Germany, and in some parts of the United States, a key concern was the regulation of urban expansion, to ensure building development was co-ordinated with infrastructure provision. This produced widely diffused practices of land use zoning. In Britain, the impetus for some form of urban planning lay initially in an urgent need to improve housing and infrastructure in the increasingly crowded and unhealthy cities produced by nineteenth-century industrialisation. Controlling urban sprawl added to this focus with the rise of the car and the building of London's railway network. In the mid-twentieth century, many countries added to

these urban concerns a focus on regional landscape management and, more ambitiously, regional and national economic development. In fully socialist countries, whole economies were the focus of planning.[11]

These different inspirations not only produced diverse foci of attention. They also demanded different kinds of expertise. Planning work, and the consolidation of a planning 'profession', came in some countries from a basis in architecture, and in others from land surveying and engineering. In many eastern European countries, planning work was dominated by people trained in regional economic analysis. These days, people develop planning expertise from all kinds of disciplinary backgrounds, although usually a formal 'planning' training is added to this.[12]

It is not surprising that such varied practice origins have generated an intellectual culture in the planning field which is accustomed to diverse knowledge traditions. The arena of 'planning theory' emerged as a way of consolidating these influences and has remained a diffuse discourse of conflicting inspirations and traditions.[13] But these discussions, or 'conversations', revolve around the agenda of issues raised at the start of this chapter. How these issues have been understood, however, has evolved through different intellectual traditions. In the following subsections, we introduce these intellectual traditions and their implications for 'research activity', and link these to the practices and institutional contexts for planning. An important point in reading the following account is to remember that these intellectual traditions are not conveniently arranged in some clean succession of historically consecutive paradigms, with one tradition superseding and overwriting an earlier one. Many of the traditions continue to exist in parallel, resulting in disciplinary diversity and a heterogeneity of coexistent intellectual traditions.

Early planning initiatives: the evolution of the survey in urban and regional planning

In the early days of planning work, in the late nineteenth and early twentieth centuries, whether the focus was on improving urban conditions or developing regional or national economies, the investigative emphasis was on 'finding out about places'. Planners needed information about spatial distributions and the scale of need. The data sets now available in most western countries were not then produced. The characteristics, conditions and potentials of places had to be investigated by various forms of 'survey'.[14] It is possible to identify three traditions in this 'survey' work. One was simple data collection under a variety of headings – population, dwellings, land use, different categories of employment, etc. This type of study gave little attention to the assumptions about place qualities and dynamics which underpinned the selection of aspects to consider and data to collect. We would now call such studies 'positivist' – treating objects identified as straightforward facts – and 'empiricist' – collecting descriptive data without thinking carefully about how to interpret its significance. Places investigated in this way were implicitly seen as an aggregation of phenomena, with little attention to the relations between them and the dynamics of cause-effect processes. A second tradition, influenced by French nineteenth-century geography, was strongly integrative, emphasising the culture of places, whether of regions or towns. Those doing planning work were encouraged by this tradition to consider the 'spirit' of a place. The great planning advocate of the early twentieth century, Patrick Geddes, managed to draw the two traditions together, emphasising the many aspects of civic life: social, economic, political and biological, the importance of field observation, and yet the need to draw such knowledge together into some kind of sense of a place and its possible futures (Geddes, 1915b/1968). His work proved inspirational for much subsequent urban and regional investigation for planning purposes.[15] Much of this planning work was undertaken primarily

in consultancy mode, by innovative experts promoting new approaches to place design and management, rather than as academic inquiry. Some of these consultants taught in the emerging planning education programmes which began to appear, which exhibited a very practical and applied curriculum, influencing a new generation of experts.

The social scientific turn: rational analysis, systems modelling and theory-building

Up to the mid-twentieth century, planning work was dominated by the city-building professions – architects, engineers and land surveyors. In the second part of the twentieth century, social science began to infuse the planning field, although this material built on historical roots going back to the mid-nineteenth century (see Friedmann, 1987). In socialist countries, economists were key experts in designing and implementing the practices of national planning. In North America and Europe, economists subscribing to a different set of principles and theories also began to exert a major influence on the design of public policy. The predominant approach grew out of Keynesian ideas about a mixed economy, in which the democratic state provided the framework within which capitalist operations were shaped and encouraged (see Healey and Hillier's (2008) introduction, p. xi). The emphasis was on cultivating material growth and ensuring that the benefits were distributed in a fair way. This required more sophisticated understandings than were available in the descriptive and cultural studies of the previous period. It is in this period that 'planning theory' began to take shape, in the lively debates centred in early schools of planning in the United States.[16] Developments in the management sciences and in institutional economics were drawn upon to develop technologies intended to become aids in shaping strategies and investment programmes.[17] Researchers were encouraged to devise models of social relations which could be used to predict future situations. Such models focused on specific systems, such as transport dynamics, on whole economies and on urban systems. The explosion of studies which followed can be traced in the planning journals of the period.[18] The focus of attention shifted in this work from descriptive questions (what, where, how much) to the relations through which events and outcomes were produced, and to their justification – that is, the focus shifted to questions of how and why.

This was for many a major step forward in the intellectual development of the field. It was accompanied by an expansion of professional training for planning work and influenced a growing generation of planners. But it embodied some conceptions which have been questioned, both historically and also in the period since. The political and economic context in which planning work was done was presented as stable, and on a linear development path to greater prosperity. The conceptions used assumed a model of knowledge adopted from the dominant mode in the natural sciences and in neoclassical economics. The expectation was that human and natural forces could be understood as they 'really' (i.e., objectively) occurred, a 'positivist' assumption. The research task was to produce hypotheses about relationships and test these, to identify universal laws about cause-effect relationships which could provide the basis for predictive models. This was coupled in many studies with assumptions about human nature drawn from neoclassical economics. These assumptions treated society as composed of individuals who made rational calculations about their preferences and interests. Such assumptions were drawn together in a famous model of the planning process,[19] which promoted the idea that comprehensive plans could be made for cities and regions through a rational process of modelling relationships, calculating preferences and predicting consequences. This was accompanied by the development of techniques for monitoring and evaluating progress along proposed pathways to

growth and development. These techniques of systematic, 'rational' calculation created a wide canvas of challenges for planning researchers, including students on doctoral programmes in the planning field which began to emerge at this time. But by the end of the 1960s, the ambitions of this programme of research were being questioned both from practice experiences and from philosophical reservations.

Radical critique in the 1970s: academic expansion, class-based approaches and the rise of action research

By the 1970s, as governments expanded their interventions in shaping urban and regional development, the demand for people with planning skills had expanded. This in turn led to an expansion of planning education programmes in universities and similar institutions. In countries such as Britain, consultancy activity shrank, replaced by planners in various levels of government and in academia. In other places, academics undertook a substantial amount of consultancy. Much planning research work was undertaken in universities, and in the research teams of planning authorities, as well as in special research institutes. Academia had arrived as a major force in the planning field! But by this time, the post-war Fordist growth dynamic had slowed down and some of the limitations of previous policies were being revealed. The idea of development as a linear process looked less convincing. The assumption of political-institutional stability was also called into question. The environmental costs of growth were becoming ever more evident, and the social benefits were failing to reach the poorest in society. In addition, civil rights movements highlighted divisions in society which were not just due to economic processes, but extended to race, ethnicity, gender and other forms of social difference. Many academics who came into planning schools at this time were sympathetic with the social movements of the period which challenged established approaches and practices.

This encouraged a more activist approach to research activity. While much research was focused on critical exposure of the injustice and ineffectiveness of a practice or policy initiative, other researchers wanted to get closer to the experience of radical practice, through 'action research'.[20] Researchers were often fuelled by a sense of the injustice or environmental danger of established practices, but fumbled to find a broader framework within which to locate these sensibilities. For many, the revival of Marxist political economy offered such a framework. This challenged the assumption of a society as an aggregate of rational calculators. Instead, it substituted a model of society exposing the ways social structure orientates human behaviour and was based on a 'structural' conflict between classes for economic dominance. If conflict was inherent to social processes, then there could be no assumption of political and economic stability. Capitalist classes extracted surplus from the working classes, so the poverty of the latter was produced by the exploitative growth-oriented practices of the former. The state was analysed as regulating the relations between capital and labour for the benefit of the former. Planning systems and practices were understood as part of this regulative, often exploitative, state apparatus. This intellectual and political orientation led to a research focus on social processes, the ways human practices are structured by these processes, how place governance took place and who benefitted from the outcomes of planning activity.[21] This analysis of the dynamics of social structure and struggle encouraged studies that revealed these exploitative practices, but these often provided little hope that planning practices could be pursued for beneficial ends. It did, however, effectively undermine the idea that social systems could be comprehensively modelled and outcomes predicted in a linear way. If outcomes were the result of struggles between classes, then linear prediction was not helpful in imagining futures.

The critical evaluative work which developed in the 1970s provided a valuable focus on practices, on what doing planning work involved. Some researchers, particularly those not subscribing to Marxist models of political economy, argued for a switch of attention from designing abstract decision technologies to a focus on practices of implementation.[22] Others began to look at what planners actually do in their work.[23] This highlighted the role of agency. People may not be rational economic calculators, but nor are we merely creatures of broad social forces. Planning academics began to look to other philosophical inspirations to explain their findings and focus their research endeavours.

The postmodern/post-positivist/post-structural turn

In the last quarter of the twentieth century, the conceptual paradigm[24] often referred to as 'modernity' and 'modernism' was increasingly challenged, although some elements of it strongly persisted, including in many planning practices. The idea of a general pathway to material 'progress', spreading across the globe, was replaced by recognition of uncertainty and unpredictability. Western models of social democracy seemed unable to deliver the promise of prosperity for all, while socialist models ran into political problems of corruption and economic misjudgements. Other societies challenged the materialism and colonial arrogance of the western models, and this was complemented by other forms of intellectual critique from within the discipline, including feminist approaches.[25] In this context, questions of what, why and how to approach place development were much more contested than previously. Researchers turned to intellectual ideas which recognised that identity and knowledge – ontology and epistemology – were complex social constructions, rather than simple, predefined 'realities'.

This philosophical shift has been vigorously promoted and discussed in the planning theory literature and has taken many different directions.[26] These directions share a critique of the positivist assumptions lodged in much twentieth-century science and social science. This critique argues that, however material and 'real' is the world in which we humans live, we can never fully grasp this reality because of the limits of human sensibilities. Our understanding is always a partial 'interpretation' of what is going on. And our interpretations cannot avoid being shaped by our particular histories and geographies. As Schön (1983) famously argued, this means that people, and especially professional experts, need to cultivate the ability to reflect on the assumptions which inform their work. This is even more the case for researchers. Such a philosophical perspective implies that a key aim of critical evaluative research is to reveal social processes which are hidden in the taken-for-granted flow of everyday life, while researchers accepting this position need also to make clear their own assumptions.

Within this tradition of research, there has been an explosion of studies which analyse policy 'discourses' in various ways.[27] Other studies examine the workings of stakeholder partnerships, participatory forums and collaborative design processes.[28] There are also studies of what planners and other participants in planning processes actually do and think about what they do, as well as accounts of participant-actors analysing the situations they have been involved in.[29]

Much of this work has been done by planning and other academics in university settings, though many studies have been funded by governments and international bodies. Methodologically, such studies make extensive use of case studies, which are particularly relevant to place-based, spatial disciplines, such as planning. These may be produced by research strategies which may combine several methods, including documentary analysis, participant-observation, surveys and other statistically based manipulation of evidence collected, such as content analysis. The key challenge for such 'interpretive' research is the construction of a narrative which

presents the findings in relation to the concepts and questions used to frame the inquiry. Rather than generalising from an individual case to some larger 'population' of cases, such interpretive research generalises to a proposition derived from some conceptual framework (Yin, 2009). This framework may itself evolve or even be developed in the course of the research study. As many a doctoral student has discovered, it is hard to do such work well. But this kind of work has greatly increased our understanding of practices – of how planning and place development processes work, how they vary with their context, and how agency initiative and broader forces interact. It has also highlighted the complexities of the normative agendas which are so important in our field. Questions about what to do, why, and who benefits remain major issues focusing planning research, but these now have to be addressed with a much richer grasp of the diversity and fluidity of identities and values.

This 'interpretive' research tradition has been advanced by an expansion of texts on 'qualitative' social science research.[30] But the philosophical shift can also be identified in the work of those developing earlier ideas of the analysis of systems. Whereas in the 1960s, those who modelled transport systems or land use systems imagined a world of stable relations, with systemic dynamics tending to equilibrium, the new fractal geometry has discarded such assumptions. The understanding that the world and its people are made of complex relations and that uncertainty plays an important part in modelling these complex systems should be a key acknowledgement in planning (Batty and Longley, 1994; Openshaw and Openshaw, 1997; Batty, 2005; de Roo and Silva, 2010); the work developed in other research domains by von Neuman, Morgenstern and Ulam and Turing on game theory and micro-macro behaviour is now starting to be fully understood in planning. This work is based on the assumption that the physical processes are not sufficient to explain the world, and that behaviour is impacted by, but also impacts, how we construct and act in the physical environment and how we relate with others. This acknowledgement in turn requires a perception of both physical and human systems (of spatial and a-spatial features) as evolving and adapting in time and space and that due to that adaption allow for emergence and the creation of very different places, behaviours, patterns and processes (Silva, 2011; Wu and Silva, 2013, 2012). The concept of a one-size-fits-all type of model should therefore be abandoned for a more customized approach that looks at the portfolio of methodologies, models, data and the selection of the one or ones that best fit the problem and goals at hand. In this new paradigm, customization will require the openness to learn from other disciplines, an awareness of what is available in terms of methods and data, an awareness of what is possible (and not possible at the moment) and the abandonment of the preconceived certainty that we are comfortably used to.

Epistemological and ethical sensibility in planning research

The foregoing brief account has presented a historical story, as if one approach displaced the next. This is by no means the case, as examples of all traditions can be found in current published research studies, and in research done for a specific practice purpose. In countries where there is little data and tradition of place description, basic survey work may still be needed (see Chapter 5.5. by James Duminy). The assumptions of positivism live on in the natural sciences and economics, filtering into the planning field in work on environmental issues, in evaluation procedures and in the practices of the new public management in public administration. In some practice and research contexts, 'empiricism' survives, with factors and data being used in a very diffuse way. Sawicki (2002) has described the development of the 'indicator' movement as a kind of 'empiricist' myth, developed for policy purposes with little systematic conceptualisation behind it (see also Cecilia Wong's chapter in Part 4).

Moreover, the developments in social theory and in complexity science referred to earlier have helped to erode the traditional distinction between quantitative and qualitative research approaches. The philosophical shift has eroded the hope that the world could be fully known to science. Instead, most researchers these days share the recognition that any research study is only a partial insight into the complex and dynamic realities in which we live and in which planning work is done. Methods which originated in the 'positivist' tradition can still be useful, especially where stability in contextual relations can be assumed, where there is reasonable agreement on key relations and meanings, and where the presence of power and inequality does not prevent their useful application. Work in the 'interpretive' tradition may help to set the parameters for research inquiry which proceeds in a calculative way.

The existence of various perspectives and research traditions requires that researchers explain the choices that they have made in focusing a research question and designing a research strategy. Theories provide ways of contextualising and framing a research study. The craft is to address a research question framed in a specific way and provide some new insights which may not only elucidate the question asked but also lead to some re-conceptualisation. Moreover, in a world of different institutional contexts, power relations and value-driven theories, the choice of research topic is not a neutral one. Depending on the research topic, question and outcomes, research can thus be either emancipatory or rather supportive of existing power relations. Researchers also need to be aware of the limits of how research can inform practice. It is important on the one hand to explain to the users of research that a practical decision cannot be 'read off' from a research study. The role of research is to feed into the practical judgement of those doing planning work, not to replace it. On the other hand, research should not become detached from questions in practice. However, carried away by the excitement of encountering some of the recent post-positivist philosophers and social scientists, some doctoral students and writers of academic papers are encouraged to indulge in over-lengthy theoretical expositions which then only weakly connect to the empirical inquiry that follows. Overall, the message for the twenty-first-century planning researcher is to avoid simple oppositions and to position a research study carefully. This involves imaginative as well as systematic endeavour in conducting research.

These intertwined intellectual traditions, as well as the general contours of the planning discipline, suggest that it is important that planning researchers develop a series of key research sensibilities. The most important of these sensibilities include the following:

- Developing an awareness of the societal context relevant to the issue that is being researched;
- Being able to articulate clear assumptions about how people and other forces are likely to behave – so an understanding of ontology is important;
- Carefully positioning a research inquiry in assumptions about how knowledge is produced and validated – requiring an understanding of epistemology;
- Being able to provide clear justifications for the selection of a research strategy that is appropriate to the context, questions and assumptions made;
- Demonstrating careful attention to how a 'research account' or a 'research report' is constructed and expressed, which includes an appreciation of how this is undertaken depending on audience.

However, as indicated at the start of this chapter, research in the planning field is not undertaken just for the purposes of the general advancement of knowledge. It is undertaken also to inform, evaluate and even help to transform practical activity. In the next section, we explore this relationship.

Research in practice: the interaction between research and practice

The relationship between theory and practice has often been the subject of extensive debate in the spatial planning literature.[31] The relationship between research and practice, however, has been afforded less attention. The earlier part of this chapter identified an 'action orientation' as one of the defining characteristics of planning research, although this is one of several relationships that exist between planning research and the realm of practice. The contributions in Part 5 of this book identify the varied and complex relationships that exist between planning research and practice, some of which highlight important questions about 'who' conducts research, the role of stakeholders in the research process, and the relationship between those engaged in research and those who commission it. Reflecting on these relationships between research and practice is important. This section highlights four key relationships between research and practice in the field of spatial planning. These are simplified ways of setting out this relationship, and a common criticism of them all is that they tend to privilege the position of 'the researcher', a position that the contributions in Part 5 show is increasingly subject to challenge.

Practice as a source of 'ideas' for research

The first of the key relationships between research and practice is that of practice as providing a source of problems and issues for investigation and research. This characterises a traditional model of knowledge in which practical problems are presented in practice and then referred to research institutions, including universities, so that useful knowledge can be generated and presented back to practitioners. This model has been clearly documented and also criticised by Schön (1983). The model is premised on a clear distinction between the knowledge generated through high-level research in academic institutions and what Schön (1983, pp. 42–43) referred to as 'the swampy lowlands' of practice. Still, the fact that many planning researchers will be looking for practical problems to solve means that practice is often a source of issues and ideas for investigation through systematic research. Students on spatial planning courses will often be asked to identify a problem in practice that becomes the focus of their investigation. This 'relevance to practice' also features in other relationships between research and practice (see ahead), but here the emphasis is on practice as a source of puzzles, problems and areas for investigation through research. Some organisations – such as government departments and professional bodies – may usefully set out their research priorities in the form of research agendas designed to shape the research that is carried out by others. In other cases, the nature of the 'problems' or issues in practice that are to form the focus for research may be less obvious or less well defined. In these circumstances, there is an important role for the researcher in defining 'the problem'.

Practice as the 'place' where academic research is carried out

Practice is often the 'place' or 'site' where empirical research is carried out by academic researchers, but many other interests may also be engaged in 'doing research' in practice. Academic researchers use the term 'the field' to refer to going outside of the academic institution to do fieldwork. Academic researchers will speak of 'going out into the field' to do their research. The field will usually comprise practice environments, such as planning offices, public spaces, the workplaces of interviewees and so on. The way in which practice is referred to as 'the field' implies that it is a place separate from the academic institution – a 'place' where one goes, eventually returning accompanied by data of one kind or another that has been extracted

from practice. Doctoral researchers may well be 'in the field' for significant periods of time, in a place other than the university, before returning to engage in analysis of the data. This is, however, a very traditional way of understanding the research process, and recent contributions have emphasised that research activity is a collective activity that involves stakeholders as active partners in the process of conducting research.[32] As a result, traditional distinctions between 'the academy' and 'the field' have been challenged and reassessed, and this has required researchers to adapt to new roles and mechanisms for conducting 'their' research.

Practice as a place where research is undertaken

The beginning of this introduction highlighted the wide range of institutional and organisational contexts where research is carried out. Many of these are 'in practice', in places such as think tanks, government departments and consultancies. Research may be commissioned that informs the preparation and evaluation of policies and plans at a variety of scales. National government may want to underpin its planning policies with research, or a local council might wish to ground its plan-making in some evidence base generated through research. This relationship between research and practice is not the same as the relationship between academic research and the field – rather, it highlights that research is often a part of practice. It is here that some of the similarities and differences between doing academic research and doing research in practice are most clearly highlighted. For example, carrying out interviews as part of an academic research project may involve recording, transcribing and coding them in detail. In practical research projects, simply noting a few key bullet points as an *aide memoire* may be all that is required (see Harris's reflections in Chapter 1.3). In this environment, the systematic research activity outlined in the beginning of this introduction may be better described as consultancy that is directed at supporting the short-term, immediate needs of a client, given its apparent lack of rigour when assessed against the traditional criteria and standards of academic research and systematic inquiry. Certain aspects of 'research in practice' may also become highly routine, standardised and grounded in established methodologies and toolkits. Consequently, much of the effort of crafting an appropriate methodology that characterises academic research may not be apparent in practice.

Practice as the object of academic research

The final relationship between research and practice reflects the efforts of researchers to inform and shape practice through their research activity. This is captured to some extent in the changes to the earlier highlighted definition of research to include the *sharing* of insights generated through research. The significant emphasis that is increasingly placed on evidence-based policy making and the 'impact' of research[33] locates research and practice in another important relationship – where research aims to impact on what is done in practice. In some cases it can be clearly shown that insights generated through research have had an impact on practice. What is more difficult is demonstrating the longer-term and more diffuse impact of research on what is done in practice.

Navigating between research and practice

One of the particularly interesting aspects of spatial planning is that these different relationships between research and practice interact and combine to produce a very particular kind of research environment. University-based researchers engaged in doing academic research may

also be active in doing consultancy-style projects, possibly in collaboration with planning and research consultancies in the private sector. They may also be actively engaged in professional networks and therefore cross over between academic and professional contexts. This may mean that they navigate multiple roles and affiliations, sometimes researching planning practice, sometimes engaged in doing practical research, at other times trying to shape practice and sometimes being users of research. This is well illustrated in the biographical reflections in Part 1. The sometimes professionalised context for doing spatial planning research also adds another important dimension to the environment for undertaking research, in which academic researchers and the planning schools that some of them are located in form part of a wider professional and disciplinary project. The key issue for anyone engaged in planning research is to identify and reflect upon their 'position' in relation to practice, and to understand the implications of that position for the conduct of their research.

Conclusions: useful reminders for embarking on your journey into planning research

We conclude this introduction with a series of useful reminders as you navigate the remainder of the book. Firstly, researching planning is a process of systematic inquiry, yet we have also in this introduction described the act of research as a 'craft'. Research inquiry in our field is absorbing, creative work and the personal reflections in Part 1 illustrate this. Planning research demands that we combine observational intelligence with critical and imaginative insight. It involves an ability to conduct systematic inquiry with analytical and interpretive skill. The 'craft' of research inquiry in the planning field involves many complex judgements which will shape how a research study is initiated, focused, carried out and written up. These judgements are not just about intellectual orientation and analytical coherence, although these are important. They are influenced by the institutional context in which the research is done and the reasons why a particular study is being undertaken. *You should therefore pause during the early stages of your research to reflect on the institutional and wider context for your research, in what circumstances the research has been initiated or commissioned, and to what purposes the eventual products of your research endeavours might be addressed.*

Secondly, planning research work, particularly in comparison with many other sciences and social sciences, tends to be strongly oriented to a practical purpose. Those doing research in the planning field have therefore to meet the challenge of the 'so what?' question. You should ask this question of yourself before others ask it, and be prepared to be critical of the answers that you provide. This strong practical orientation also generates demanding requirements both with respect to research design and writing up of findings and with respect to research ethics. These ethical challenges relate to respectful care and attention with which researchers are expected to address research 'subjects' and sources. Such challenges are dealt with in the codes of ethics which researchers are expected to follow.[34] But in our field, researchers also need to be particularly sensitive to the tensions and responsibilities arising from the practical and institutional contexts in which we do our work, and to the ways in which our research findings may be used (see Thomas and Lo Piccolo in Chapter 2.3). This includes sensitivity to the sociopolitical meaning of conducted research and of the choice of the topic. *Consequently, you should ensure that you reflect on your research as you progress with it, explore the relationship between your research activity and the world of practice, and think carefully about issues of research ethics.*

Thirdly, it is important to remember that planning is a spatial discipline, with much of our research focused on exploring, evaluating and trying to understand places and their spatial relations. Research is often interested in discovering and explaining how particular places work, and

there is a great deal to learn within our discipline from comparative studies of how planning is experienced elsewhere (Sanyal, 2005). *You should in your research keep in focus the specific qualities and characteristics of the places that form the basis for your research, and try to understand what explains different outcomes in different places.*

Finally, the chapters in this book illustrate how skilled researchers have found and devised ways to rise to the challenges of this complex craft of doing planning research. None of the contributors provide a precise 'recipe' for how to do a research study, even if that were possible. A standard recipe may all too easily deflect a researcher from probing carefully into the specifics of a situation and a question. In the end, it is down to each researcher to make, justify and explain their own judgements. These will centre on connecting the issues of concern to an appropriate conceptual lens with which to frame a study, identifying what is researchable about the issues and turning this into a research question or puzzle, a research strategy, a package of appropriate methods and a way of analysing and reporting what has been discovered. We hope that the material in this book will help to inform, inspire and enrich these judgements. Given the range of disciplinary inspirations influencing our field and the different philosophical approaches which shape concepts of ontology and epistemology, today's researchers in the planning field have to steer a path through conflicting positions through which particular issues are conceptualised and appropriate research strategies devised. *You should therefore think of yourself as continually steering a pathway through the research process, being prepared to adjust your direction as you progress with your project, and noting carefully your reasons for taking one path as opposed to another.*

Notes

1 See Friedmann and Hudson (1974) for an account of the relationship in planning between knowledge and action, and Friedmann (1987) for a development of that account.
2 See Harper and Stein (1992) for a particular exploration of this normative dimension to planning. Also see Howe (1990) for a further account of normative ethics in planning.
3 Chapter 2 in Healey (2010) provides an introductory account to this characteristic of planning, and provides some useful references for further reading.
4 Again, Friedmann's (1987) classic account of different intellectual traditions in planning is a useful place to start an exploration of this diversity.
5 See Lo Piccolo and Thomas (2009) on planning research ethics; for wider discussion of ethics in planning, see Hendler (1995).
6 See Davoudi and Pendlebury (2010), Campbell (2012) and Kitchen (2007, Chap. 8).
7 Along with the growth of 'science' as a mode of inquiry, the notion of academic 'freedom' developed through struggles in the nineteenth century. Yet most fields of scientific inquiry have been pushed forward by practical concerns, and universities have long been places devoted to the training of an administrative class, initially for the church and later for the state. Recently, the notion of 'academic freedom' has been subject to debate. The slow science movement criticises growing pressure of specific industries and markets on research and concomitant loss of academic freedom. It also argues for a 'citizens' science'. See, for example, slow-science.org.
8 See Lo Piccolo and Thomas (2009).
9 See Friedmann (1987), Hillier and Healey (2010), Allmendinger (2009) and Fainstein and Campbell (2012).
10 See Berg and Lune (2012), Given (2008) and Gorard (2003) as examples, as well as Yanow and Schwartz-Shea 2006.
11 See Sutcliffe (1981), Hall (1988), Ward (2002) and Birch and Silver (2009).
12 See Rodriguez-Bachiller (1991).
13 See the debates in the journal *Planning Theory*, Friedmann (1998) and Davoudi and Pendlebury (2010).
14 See Geddes (1915a/2000) and Engels (1845/2003) as later and earlier examples of this survey tradition.
15 See Hall (1996), particularly Chapter 5, and Meller (1990), Chapter 6 on the influence of Geddes's work, and Ward (2002) on the planning traditions of the twentieth century.

16 Friedmann (1973).
17 See Dahl and Lindblom (1953/1992) and Simon (1945).
18 The key journal at this time was the *Journal of the American Institute of Planners (JAIP)*, later to become the *Journal of the American Planning Association (JAPA)*.
19 See Taylor (1998) for a summary account of the rational comprehensive model and critiques of that model.
20 Action research involves systematic reflective inquiry by researchers who are participants in the situation they are researching; see Reason and Bradbury (2008) and McNiff and Whitehead (2006), as well as the chapters by Uttke *et al.* and Kotval and Mullin in Part 5 of this book.
21 Flyvbjerg (2001) argues that 'who benefits' is a key question for the planning field.
22 See the seminal work of Pressman and Wildavsky (1973), and also Barrett and Fudge (1981).
23 See especially the work of Forester (1989, 1999) and Hoch (1994).
24 The term paradigm means a system of concepts used to frame a scientific issue.
25 See Greed (1994) for an account of these and their relationship to the planning discipline.
26 See Volume 3 of Healey and Hillier (2008), and Hillier and Healey (2010).
27 See Hajer (1995) on environmental discourses and Jensen and Richardson (2004) on European spatial planning discourses as examples of such work.
28 See Healey (1998, 2006) and Innes and Booher (1999).
29 See Tewdwr-Jones, M. and Thomas, H. (1998).
30 For general methods texts see Silverman (2011), Berg and Lune (2012) and Yanow and Schwartz-Shea (2006), as well as Flyvbjerg (2001) and Jessop (2005).
31 See Alexander (1997), Harris (1997) and Allmendinger and Tewdwr-Jones (1997) for an exchange on the relationship.
32 Max-Neef (2005) and Chapter 5.3 by Cassinari and Moulaert, this volume.
33 See Chapter 5.2 by Davoudi in this volume, as well as Davoudi (2006) and Krizek *et al.* (2009).
34 These codes will sometimes vary by discipline. One framework applicable to social science research conducted in the United Kingdom is that of the Economic and Social Research Council (2012).

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PART 1

Personal reflections on research careers

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1.1
INTRODUCTION

Patsy Healey

Doing good research is not just a question of following appropriate technical procedures. It takes complex judgements, imaginative insight and intense critical exploration of the topic in hand. Research requires professional skill, just as doing good planning work does. And as with the development of planning skills, it takes education, experience and time to mature. How can we build these skills in the planning field? To introduce this question and the book as a whole, we begin the discussion of research methods with biographical profiles of planning researchers, to illuminate the diverse personal journeys people have taken in developing their research focus and expertise. These profiles are not just career descriptions. They are also reflections on many of the conceptual, methodological and institutional issues raised in the rest of this book.

The profiles are by some of the editors, and a few others, to reflect a range of research careers and academic/practice environments. Finally, we were very pleased when John Forester agreed to add his paper, which had been circulating for some years informally, on how he learned the art of academic writing. So we have contributions from myself and John, now in or near semi-retirement; Mee Kam Ng and Heather Campbell, in senior professorial positions; with Neil Harris and Elisabete A. Silva, at mid-career stage. Our research training and experience range from the UK, Portugal, Hong Kong and the US. We all acquired doctorates, the younger ones in the context of well-structured programmes. Some of us, in addition to doctorates, acquired children as well! All of us have been challenged by the demands of combining research activity with practical work, social activism, academic teaching and our non-academic commitments. And we have all stumbled along through pitfalls and uncertainties, which somehow are always present, however experienced you are. So we hope these personal reflections will give some reassurance to those starting out on a doctoral programme or an academic career in the planning field about how to get through what lies ahead!

All of us are different, and so each reflection is different in style and content. But several themes emerge across the contributions. One is how we got into the planning field and then discovered that we were absorbed by research inquiry. As with life trajectories in general, our stories show a mixture of accident, personal background, inspirational teachers and work experiences, encouraging supervisors, a book or paper which showed us how to go on, and growing self-awareness about what we really wanted to do. Several of us did not expect to become researchers, and found out only through doing it that undertaking research inquiry driven by the problems and dilemmas of the practical world was such an absorbing and rewarding activity.

All of us, however, have been stimulated by the complex relation between research and practical activity.

Another theme is the variable experience of an academic environment in the planning field. Heather and John have some harsh words to say about how academics behave! Heather sought to change her academic environment through creating a different departmental culture. John provides advice about how to make constructive use of the criticism we receive, however motivated. All of us have had to combine the varied demands of working in an academic context in a field which also values practical engagement, and have found that such engagement has often inspired our academic work. Neil and I have undertaken consultancy contracts from an academic position. Mee Kam has linked her teaching and research work with active community involvement. Elisabete focuses on skill development in spatial analysis, drawing on practice involvements. Heather has used her experience in academic organization to learn about practical engagement, while John has focused his research on how practitioners go about their work. But it is never easy to manage the competing demands of practical engagement, academic teaching and the administration that goes with it, along with a substantial portfolio of research activity, as Neil discovers. Different emphases may be needed at different times and in different contexts. Yet, as John stresses, teaching is not a distraction from research work, but can help to consolidate and contextualise research activity.

Our collective experiences also illustrate that research work in the planning field is done in many different social contexts. Sometimes we work in an individual way, in control of our own project from start to finish – rather like a standard PhD but without the supervisor. But often we work in teams, and we have to pay attention to research funders or practice-based clients. This book has examples of research activity in all kinds of institutional positions, and these personal reflections give an introduction to the challenges of different situations. And there are always tensions between the demands of a situation – to get a contract completed, to stick within a budget, to get the PhD written up and examined – and the time it takes for our ideas, insights and understanding to mature, to get 'cooked', as John explains. One of the advantages of an academic career is that a research interest can build through the years, allowing us to explore different avenues and make mistakes as we go along. John and I can confirm that we do not always agree with the written work of our younger selves. It is not only our ideas and interpretations which develop, grow, shift and change with time. It also takes time to build an academic research career. Elisabete gives good advice on how to go about this, having moved in her trajectory from Portugal, to the US and then to the UK. She emphasises the importance not just of doing research but also of getting published so that our work is recognised and shared. John takes us into the spills and setbacks of the writing experience. Heather warns against trying to mimic the established disciplines too closely. Instead, she argues, we should aim to combine good scholarship with the special insights which come from our engagement with planning practices.

So these biographical reflections will take readers into the messy business of becoming a researcher in the planning field and doing research through an academic lifetime. It takes time and struggle to build skills, experience and confidence, and a good dose of determination as well. But we all acknowledge the great good fortune we have had in finding ourselves contributing to, and continuing to learn from, a rich and stimulating vein of academic scholarship and practical endeavour.

1.2
LEARNING THE CRAFT OF RESEARCH
A continuing process

Patsy Healey

Embarking on a doctorate

I have often told the story of how I came into the planning field. After a few years working in the planning department of a London borough in the 1960s, during which I got my professional planning qualifications by studying part-time, I still felt I knew little about the planning activity I was involved in. I did, however, come from an academic family, so I thought that by doing a PhD I might get a better idea of the nature of the planning endeavour. This led me to get accepted for doctoral studies at the London School of Economics (LSE) in 1969. I was lucky at the time because a new master's and doctoral programme in urban and regional planning had just been established, and my interest and professional background seemed to fit the profile of the students they were looking for.

As with so many doctoral students, I came to the LSE with a vague idea that I wanted to investigate how far planning – as an idea and activity – could contribute to transforming societal conditions. 'Planning and change' became the overarching theme of my inquiries, and the eventual title of my dissertation. My supervisor suggested I should look at the experience of new and expanded towns in the UK, but at the time I had the opportunity of going to Latin America, where urbanisation was proceeding apace. This seemed much more interesting, and after a few months, the UK experience was quietly dropped. But that still left me with an enormously broad canvas, and I spent months in the LSE Library exploring what the social sciences had to say about the trajectories of countries experiencing development and about the relation between societal development and urban development. These journeys into different disciplinary fields were adventures into the thought-worlds of diverse epistemic communities.[1] Grasping the complex relation between concepts, research questions, research methods and interpretive analyses was a challenge. Each field, with its own multiple strands and debates, was so different. 'How do they come to think like this?' I often wondered. Debates on urbanisation and development in sociology, anthropology, geography and political science had different foci of attention and different ways of framing issues, investigating them and justifying findings. But the explorations proved excellent training in how to enter into and draw ideas from different disciplinary fields, as well as developing my sensitivity to interpretive approaches.[2]

However, back then, there was little mention of interpretive approaches, as the social sciences which I encountered were dominated by a mixture of positivist science and empiricist method. And in those days in the UK, there was little tradition of training doctoral students in research methods. I drew, in an unreflective and unstructured way, on what I had learned in undergraduate days in geography (descriptive ways of identifying and mapping phenomena) and social anthropology (ethnographic ways of immersing the researcher in the life / thought-worlds of others). Supervisors left us mostly to our own devices, and to our discussions with each other and in seminars. I used to prepare papers for my supervisor, and only occasionally got feedback. However, I discovered that an imagined supervisor could be valuable. I used to think about how my actual supervisor might respond to what I had written, and in such reflections began to construct all the criticisms that I thought he might make. In this way, I lodged the critic inside my head. Through supervising others, I have since come to think that a key role of a PhD experience in an academic career is to develop this auto-critical capacity. Good scholarship demands a difficult combination of confidence to drive forward with new explorations and insights, and humility in the face of the difficulty of grasping, even in a small focused study, how the world goes on.

So my doctoral experience was a messy, 'do-it-yourself' kind of training experience, through which I learned a tremendous amount, including about the tradition of ideas in the planning field and about how such ideas came to life in practices – in my case, in Venezuela and Colombia. In retrospect, I wish I had had more exposure to discussions of research methods. It would also have been helpful to have had some opportunity to discuss the different epistemological traditions through which systematic knowledge could be produced. Such philosophical reflection was lacking in the intellectual climate of British geography and planning at that time, until David Harvey came along.[3] But on completing the thesis, I found enlightenment in phenomenology, to which I was introduced by Joe Bailey, who was then teaching sociology to planners at Kingston Polytechnic, where I had a lecturing post for a few years. Joe introduced Marxist analysis and phenomenological ideas (Bailey 1975), a combination which was later brilliantly articulated by sociologist Anthony Giddens (1984). Through David Silverman's work in particular, a sociologist then interested in organizational dynamics, I came to know of all kinds of ways of doing qualitative research investigation.[4]

My first funded research project

By this time, although I was by then at the Oxford Polytechnic (now Oxford Brookes University) and involved in the design of planning programmes, it had become clear to me (and others) that I was fuelled by curiosity about how planning ideas came to interact with the practical world. This was in effect a more modest reformulation of my earlier interest in planning and change. In my Latin American work, I had found different ideas about planning coexisting and sometimes clashing in the development of urban governance practices. Remembering my planning experiences in London a few years before, I wondered what ideas were influencing planning practices in the thirty-three London boroughs.[5] This led to the design of a research project, Planners' Use of Theory in Practice, funded by the Centre for Environmental Studies (CES).[6] Brian McLoughlin was a senior researcher there at the time, and proved very supportive to an unknown and inexperienced researcher.[7] Such people are very helpful to early-stage researchers, and I was lucky to find him.

This new study was much more methodologically aware than my PhD. It combined participant-observation with interview survey to investigate planners' use of theory in practice. Jacky Underwood, who had also worked as a planner in a London borough, became the research

associate who spent six months in one of the boroughs.[8] We both did the interviews with planners at different levels in each borough planning department, using semi-structured questionnaires and the careful writing up of each interview. We also followed Silverman's advice, and discussed our draft research reports with those who had been the subjects of our research. This proved both challenging and enriching, as we had to make sense of the reactions and comments they made. Where possible, I have used this procedure in subsequent research. However, such a practice takes time and demands careful attention to ethical concerns.

It was on the basis of this research that I created my first map of the planning theories in circulation in practice.[9] But we concluded also that the dominant ideas and practices (we might now call these 'communities of practice', after Wenger 1998) in each London borough were influenced by the configuration of local politics and the development challenges faced in each place. This led on to research which focused directly on the way that development plan-making work was shaped by its context. In these investigations, I got used to working in teams, and also with clients. Funding from national government for studies on how the planning system was working had the benefit of both providing significant financial support for research activity and facilitating good access to the working practices of local authorities.[10] But there were also significant tensions. I have described elsewhere the pressures a client can put on a research team to change their findings.[11] We also had to keep in mind a double audience for our work. On the one hand, we had to produce research reports which conveyed our findings in a format that would reach our client's audiences. On the other, we needed to report our investigations to a more scientifically minded academic community. This double reporting was a time-consuming and demanding process, but very productive of new insights.

Changing locations

In the late 1980s, I moved to the University of Newcastle (United Kingdom). There I was challenged to understand a very different context to that in affluent southern England. With colleagues, we explored a variety of policy initiatives aimed at the physical and social regeneration of the Newcastle area, sometimes as participants, sometimes shadowing key actors as they went about their work, sometimes working with community groups to give voice to their perceptions of an initiative as it evolved. In terms of research strategy and design, perhaps our most sophisticated study was that on a city centre revitalisation project.[12] This project was funded by national government, but was always in tension with local government. In this case, and building on our experience, we had articulated a concept about what might lead to the transformation of established governance processes.

The core hypothesis was that the energy for such transformation of established governance processes (we used the term 'mobilisation' to capture this idea) would be the result of qualities of the knowledge resources and relational resources available to, and generated through, the governance initiative as it interacted with its wider context. We used this concept – of 'institutional capacity-building' – to structure our research inquiry into the evolving governance processes of the partnership agency which was set up to pursue the project. We were a team (Ali Madanipour, Claudio de Magalhaes, John Pendlebury and myself) with different capacities, with Claudio pushing us towards coherence in our methodology. We shadowed the agency's chief executive officer (CEO), attended partnership meetings, conducted semi-structured interviews with people selected through a systematic stakeholder analysis and reviewed a good number of documents (reports, minutes of meetings, etc.). We analysed all this material through detailed textual work, making use of the programme NUDIST, a software package for the computer-aided analysis of textual data.[13] We then drew the analysis together around four themes arising

from our initial concept. We wrote the work up in a detailed research report, but also in papers which emerged in two books.[14] What we found was that, although the agency pioneered new ways of working, and that this effort was underpinned by the mobilisation of considerable knowledge resources and social networks, these were not sufficient to have wider effects on the governance landscape. This led us to conclude with a broader conception, that transformation episodes had the chance to penetrate into the institutional landscape of ongoing governance processes and the wider governance culture, but whether, how and when this happened depended on wider contextual forces as these interacted with local histories and geographies.[15]

Perhaps *finally* I had come to learn how to do what most PhD students are now trained to do! And my most enjoyable research experience was the study of spatial strategy-making practices in different European countries,[16] where, having formally retired from teaching and academic administration, I could become my own research assistant, and work a bit like a PhD student once again! But, as we older people say, we are not quite the same as when we were starting out all those years ago, because we (hopefully) have a richer experience and more confidence in all the many judgements, small and large, which go into the creation of a piece of research inquiry. The value of this experience and these judgements is, of course, for later generations to assess.

Some general reflections

As my research activity has developed, I have come to understand that I like to work in a particular way, more akin to the methodological traditions of sociology and anthropology than those of economics or psychology. I am fascinated by engaging with the fine grain of what goes on, and in the small details I find inspiration and clues about the wider processes which are fuelling events. We all have our particular sensibilities. But I have also found myself continually reviewing and refining my craft. One aspect of this craft which I have always found challenging is how best to write up research findings. As John Forester discusses in Chapter 1.7, this is a significant skill for any researcher. Some studies I was involved in never moved beyond a report for a client, though the learning we got from it lodged in our collective heads, to feed into other projects and writing. But I have also found myself writing for several different audiences. Although the core message (the 'findings') may be the same, the relevance of the findings will be different for different audiences, and each will respond to a different language style. I have had to learn how to hone my own writing to be disciplined as well as expressive, and to avoid the long complex sentences which sometimes have poured out of me. (I could write lots and fast when at school, and did not learn how to discipline the flow until much later!) It is a great help in learning to write well, as Forester underlines, to have some critical friends who will read a text not just for meaning but also for style. But that still does not meet the need to relate to audiences who read and absorb material in different kinds of ways. For that, the best approach I have found is to think hard about each audience and how they might relate to what I am trying to say. Of these audiences, perhaps our academic peers as they review our papers are the most complex to predict, for the many reasons that Forester discusses. But there are other audiences as well, many of which are not interested in the issues which concern academics. It is a hard task to synthesise complex concepts and findings – which must always be accompanied by caveats about the limitations about what can be known, with the time and resources available – into clear policy messages and practical advice to particular audiences. The previous sentence, for example, is far too long for such a purpose!

People outside the sphere of research often wonder what all this endeavour is *for*. Many look for a clear answer to a practical question. But the more I have engaged in research, the more I

am acutely aware of the limitations of what we can know about any particular issue. Our work as planning academics may provide a really useful input at a particular moment in the evolution of a planning project or the development of a particular policy. This impact may arise through the written word, in a paper or a report. But more often, such impacts arise through interaction between academics and practitioners, in discussions about a problem or an issue. Some impacts occur on much longer timescales, as a new generation of students reads the work of a previous generation. And sometimes a new contribution has to wait until the wider world has caught up with the way of thinking begin presented. This leads me to two conclusions. Firstly, planning researchers should not expect a simple linear relationship between a research study and a practical outcome. Yet, secondly, as planning researchers we should always be conscious of the implications of our research for the wider world. We should always ask, having concluded our study, so what? What is the implication for the policies and practices which are the focus of our attention?

Throughout my research career, I have been conscious of treading gingerly through thickets of ethical dilemmas. In my PhD research, I puzzled over a core ethical concern for all scientists: who will believe me? Or rather, what is the status of my interpretation of what I have found? At that time, I buttressed my accounts with an overload of empirical investigation, much of which never appeared in the thesis. I then learned to interact with subjects to see how far my accounts related to theirs. As time went on, I got much more sophisticated, making more use of concepts and hypotheses to structure investigations. But this is only one layer of my ethical challenges. There were questions about confidentiality. How much about what I have found out from one source should I convey to another? And what guarantees of confidentiality should I give to those interviewed? And am I exploiting my informants? What should I give back, in return for their preparedness to be involved in my study? In the end, my answer to these dilemmas was to treat everyone with respect, although this is not always easy! Sometimes you just have to stay silent, having given guarantees of confidentiality, knowing something which would be very useful to the person you are now talking too. There are also times when wonderfully rich material just cannot be written up publicly because to do so would compromise the ongoing work or position of a key informant. When I started working with others, there were other ethical issues about responsibility – for team management and 'care', and also about the attribution of the work we did. In two books in which I was lead researcher, we discussed carefully exactly how the authorship should go, in relation to the amount of work done by each team member.[17] These days, when academic production is so important for people's careers, it is good practice to discuss these authorship questions early on! Beyond this are wider questions of moral responsibility, especially where there are tensions between researchers and clients. These issues are discussed more fully by Lo Piccolo and Thomas in Chapter 2.3.

So I have learned a lot through experience about the craft of research in our field – the experience of doing research, of working with others, of helping new researchers learn the craft, of working with clients with specific questions and of interacting with all kinds of critical friends and audiences. If research methods books and teaching had been as available when I started as they are now, I might have learned much of what I now know faster. I have also often dipped into familiar research texts when thinking about a particular step in a research project, just to prompt myself of what I need to think about. The research methods texts are there to remind us of the rich possibilities about strategy and technique on which we can draw when engaging in an investigation. But in the end, the key to good research is an arresting preoccupation which animates the inquiry, an imaginative perception of what is going on in the empirical world examined, coupled with the craft through which a preoccupation is turned into a systematic and achievable study. All this requires a capacity for judgement, so that the exercise of the craft does

not get reduced to a technical procedure which so distorts the world in which we live that it cannot 'speak'. It is the insights from the experienced world which jolt us out of our preconceptions and assumptions and startle our imagination into new interpretations and understandings.

Notes

1 The notion of an 'epistemic community' originated in studies in the sociology of science, and refers to a group of scientists who develop and validate their work using similar perspectives, concepts and ways of validating their research (see Haas 1992).
2 Interpretive approaches are now well established in the social sciences. For reviews focused on the policy analysis and planning fields, see Fischer and Forester (1993), Wagenaar (2011), and Fischer and Gottweis (2012).
3 Harvey's *Social justice and the city* (1973) was inspirational for many planning academics as well as geographers.
4 David Silverman has continued to provide research advice for sociologists, with several regularly updated books on qualitative research methods; see Silverman (2009).
5 There are actually only thirty-two boroughs; the thirty-third is the City of London.
6 The CES was a government-funded research centre, which was closed in the Thatcher era, a period hostile to both planning and research.
7 Brian McLoughlin, who died in 1994, was an academic with planning practice experience. He is best known for an enthusiastic text on a systems view of planning (1969), a view which he later rejected, and for a careful analysis of the extent to which Melbourne's development matched the planning strategies intended to guide that development (1992).
8 From her detailed study, she produced an account which became well known in the UK in the 1980s, *Town planners in search of a role* (1980). She moved after this work to the School for Advanced Urban Studies in Bristol.
9 This emerged in Chapter 2 of Healey, McDougall and Thomas (1982).
10 This work is the basis for Healey *et al.* (1988).
11 Healey (1991); also in Lo Piccolo and Thomas (2009).
12 See Healey *et al.* (2002, 2003).
13 But we concluded that there was no need to elaborate more than one analytical layer in this formal technique.
14 Cars *et al.* (2002); Hajer and Wagenaar (2003).
15 This idea was summarised in Healey (2004).
16 See Healey (2007).
17 These were Healey *et al.* (1988) and Vigar *et al.* (2000).

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1.3

SHIFTING BETWEEN ACADEMIA AND PRACTICE

Reflections on doing planning research in a university environment

Neil Harris

Introduction

I hesitated when my fellow editors suggested the idea of providing autobiographical sketches of our research experience as part of the opening of this book. My experience to date in doing planning research has been mixed. My account is not one that provides a manual for a successful research career. I have certainly engaged in a range of research projects of different types and recall some of that experience in this account. Yet I have also struggled at times with sustaining an active research profile. Research has been one of those parts of my academic life to which at times it has been challenging to devote sufficient time and effort. I expect and hope that I am not unusual in that regard and that some of the reflections I provide here resonate with or are useful to others.

Studying in a research-led institution

My first exposure to research in planning was as an undergraduate planning student in the early 1990s. I had made an early decision that I wanted to pursue a career in planning and the built environment, and enrolled on a professionally-accredited undergraduate planning degree at Cardiff University, UK. The university, like many others, defined itself as a research-led university with the expectation that all staff would be active in undertaking research. Being research-led also informed my department's teaching and the culture of learning. Academic staff would relay projects they were engaged in as part of the delivery of their teaching. Some of the lecturers would inform us that they had just been engaged in a research project and that we might be interested in some of the ideas and materials generated by the project. Academic staff highlighted their involvement in research projects for government departments, which would resonate well with students on our professionally accredited course. A key part of the curriculum was the delivery of research methods and skills, and all students at undergraduate level were expected to design and deliver a research dissertation. These dissertations were typically expected to involve the development of a research design, the carrying out of fieldwork,

and the collection and analysis of data. The conduct of research was expressed as a key part of a planner's skill set. The research skills we were taught were mainly academic ones and reflected the department's strengths in quantitative research and statistical analysis. The model of hypothetico-deductive research – a model based on establishing a hypothesis and falsifying or confirming this by reference to empirical data (see Webster in Chapter 2.6) – featured prominently in our teaching and learning. Nevertheless, we were also exposed to the types of real-world research conducted for government as part of its planning research programme. This appealed to me much more than some of the abstract principles covered elsewhere, given its focus on practical problems and the resulting recommendations for change to the planning system. The principle that research could lead directly to changes in the planning system was an important and exciting one.

This undergraduate experience of doing research was also the first occasion where I had to define the focus of my own dissertation – an opportunity to explore and investigate a topic of my own choice. Today, as a supervisor, I point out to students that the dissertation or individual research project should be the part of their course that they are most enthused by. They choose the topic and focus of the project, after all. I recall very clearly sitting in a darkened bedroom and devising a long list of interesting topics, producing a short list of three or four contenders, and finally opting for the one that I thought would be best. Key criteria in that final selection were currency – in the sense of being a topical or current issue – and practical relevance. The period when I had to choose my topic was one of local government reorganization in England and Wales, and I was concerned as to how this would impact on the shape and delivery of the planning system. On reflection, this was the early development of a long-standing interest in planning systems and how effectively they function. I was encouraged by a young member of the academic staff to publish from the study and this triggered an interest in an academic career (Harris and Tewdwr-Jones, 1995). Nevertheless, I had embarked on a planning course with the intention of becoming a professional planner and progressed to a placement year in practice as part of my sandwich course.

Working in a practice environment

The placement year was an interesting experience, based in the activity of development control in a local planning authority in the UK. I became intrigued by how rules and procedures worked, how policies were interpreted and applied, why certain mechanisms for making decisions appeared to work, and why others did not. Most importantly, it was interesting to see how planners worked in practice, to see how they interpreted situations, how some issues were important to them and others were not, how they managed politically charged situations, and how they exercised decision-making power within prescribed limits. I do not think I made a very effective development control officer.[1] I was more interested in how decisions were made than in making them myself. On conclusion of the placement, a colleague remarked that 'maybe you would be better off working in policy', which on reflection I take to be an indication that I was not so practical. I have always interpreted this as recognition by others that I was interested in more abstract concepts, and so it's a small step from working in policy to working in academia.

The relevance of this brief incursion into planning practice is that it opened up to me a whole new line of inquiry and a field of interest. On returning to university for my final year of professional studies I was exposed by one of the lecturers to the works of North American academics who were researching 'what planners do' (Hoch, 1994; Forester, 1989). This literature resonated with my placement experience in that these authors' works demonstrated that

planners were engaged in messy, practical, everyday activities through which we could learn a great deal about professional judgment, the constraints on planning work, and ethical issues too. It was dawning on me that if I might not be cut out to be a planner, then I was certainly interested in observing and trying to understand the activities that planners were engaged in. Healey (1992) helpfully captured some of the methodological aspects of trying to document a planner's day, while a supervisor's recommendations for reading helped to fuel this interest in what planners do, why they do it, and the relationship of their work to the notion of a profession (Healey and Underwood, 1978; Underwood, 1980; Reade, 1987; Evans, 1993). I had yet another dissertation to complete as part of my professional diploma, and used it to explore some of these issues in relation to who makes decisions and how in relation to planning proposals (Harris, 1998).

The doctoral research experience

I look back on the conclusion of my professional diploma as a moment when I had two pathways available to me – a career in practice as I had always intended or a pathway to an academic career through completing a PhD. I secretly hoped that I would secure the funding for the PhD that I had applied for. I had framed my proposal around some of the literature that engaged me at the end of my professional diploma, but linked some of that material to the emerging paradigm of communicative planning theory (see the introduction to this book). I secured the funds and this meant that I was now a PhD student with a three-year funded period of research ahead of me. My generation of PhD students was one when the notion of doctoral research training was developing and in its infancy. I was required to enrol on a diploma in social science research methods during the first year of my PhD. Such programmes of doctoral research training have developed significantly in the period since, but my programme introduced me to a wide range of ideas across the social sciences. We were taught in multidisciplinary groups in which other PhD students were engaged in researching diverse subjects, including criminology and suicide, the recognition of medical conditions, education, sexuality and gender, and so on. The lecturers delivering the programme were drawn from similarly diverse backgrounds and used their disciplinary material in sessions. They would relay experience of ethnographic fieldwork, situated experience in the field, and explored what from my own disciplinary background appeared to be creative and even dangerous subjects for research. This experience contrasted significantly with the hypothetico-deductive models and quantitative approaches that had featured as part of my planning education. So, an engagement with social science helped me to understand a different way of seeing the world, and one that provided a full range of qualitative and quantitative methods. The key contribution from this engagement with social science during my PhD training was the array of methods for doing qualitative research and analysis in a structured, systematic way that made these methods legitimate and defensible as a way of doing planning research. I learnt that planning research could be so much more creative if it embraced this range of qualitative methods that had not featured strongly in my own planning education. I also learned that each discipline has its own traditions of doing research. This is as true of planning as it is of any other discipline, and that is a key issue that this edited book tries to elaborate upon.

I look back on my own personal doctoral experience – as do many others – as a curious period of highs and lows. For the highs, then it was an almost unique opportunity to engage systematically and in detail with the research project and research interests that I had fashioned for myself. It is very unlikely that an opportunity to study so intensively for three years with no

other commitments or distractions will ever occur again during an academic career. It appears to be an almost luxurious opportunity with hindsight, even if it felt quite different at the time. The PhD was similarly an opportunity to engage with research methods that can be applied only by a full-time researcher working on a single project without any other commitments. I used it as the opportunity for sustained fieldwork, hanging out in planning offices and following planners around for months on end. There was also the opportunity to read widely, including beyond one's own disciplinary boundaries, as well as to reflect on that experience (Harris, 1999). I also had the good fortune to have a supervisor in Mark Tewdwr-Jones, who helped to give me confidence and encouragement throughout, which I needed at key stages of the thesis. It was also helpful to have others in the school who I could periodically engage with to test out ideas. I often failed to convince these people with my arguments and had to go back and reconsider my thesis. Many of these people later became colleagues, including Huw Thomas and Jon Murdoch, and some of them still help to kindly point out to me where my arguments are less than convincing.

Despite the freedoms and support of the PhD experience, I found the whole experience quite an isolating one, with many uncertainties and questions about the value of what I was doing. These days I reflect on whether the PhD experience becomes a self-fulfilling one of isolation, uncertainty, dead ends, etc., or whether this is simply part of the process of doing PhD research, a process one must go through in order to come out the other end as an academic researcher. I left the thesis where it was on securing the PhD and decided to write it off as a chapter in my career that I did not wish to revisit. It occasionally resurfaces to my horror when my PhD supervisees take up someone's advice in PhD guidance books to read their supervisor's own thesis! Nevertheless, I recall some discussion at my viva voce on whether I felt as though I had developed a subject expertise, having focused on evaluating a body of theory. I remember the helpful advice of my examiners – that the key issue is having developed a set of skills and qualities that one could apply throughout a research career to whatever subject was of interest to me at the time. I could happily leave the thesis behind and move on to whatever now interested me.

Working in academia

The next stage of my academic career was to be thrown straight into a lecturing position. Research was now undertaken in bits and pieces of time that I could find or create around the commitments of delivering lectures, marking work, and seeing students. I struggled with that and I still do. Similarly, there was very little scope to go out and do sustained fieldwork of the type I completed during the PhD. Another important change in making the transition to doing research in an academic post was that research became a collaborative enterprise rather than an individual pursuit. I became a member of teams that tendered, sometimes successfully, for research projects. These teams would sometimes be made up of colleagues, but might also involve third parties too, such as planning consultants. Research was now often driven by the expectations of staff to secure funding for research activity, different in some ways to the PhD research funding I had relied upon for the previous three years. Research was driven more by a client's needs than my own specific research interests, although the challenge is always to align these as best as one can. Projects were now also of a different character as the research needed to be completed in periods of three or six months, rather than the three or four years I had to complete my PhD thesis. These issues probably reflect the type of research activity I have engaged in since taking up an academic post.

Some of the research I have completed since might not readily be distinguished from consultancy-type research that private companies engage in. Indeed, we partnered with those organizations on occasion, and this provided insights into how research methods are applied differently in a practice environment than in academia. For example, the pragmatic use of an interview in 'government-as-client'–type research is very different to the fully transcribed, coded, and carefully analysed interview that characterises careful academic inquiry. For an academic this can lead to concerns about the rigour of the research and whether the findings are robust, or whether there might be alternative analyses and interpretations of the data that time does not allow for. The fast pace and immediacy of this type of research can be enjoyable, but it clearly distinguishes the different requirements and traditions of academia and practice. There are alternatives to this model of client-driven research, including longer-term work funded by research councils and other, similar organisations, and such research probably reflects a more academic model resembling more closely the types of research underpinning a PhD thesis. The need to demonstrate the impact of research[2] also became more important in a way that never influenced my PhD research, although work for government clearly provided input to the development of planning policy and ideas in practice.

One of the challenges of becoming involved in client-driven research in academia has been how to utilise the insights from that work for academic purposes, including for academic publication. There are examples of where we have revisited work generated for a client with a more critical, academic, and conceptual perspective (see Harris and Hooper, 2004, and Harris and Thomas, 2011). This can lead to the curious position of exploring conceptual frameworks after fieldwork has been carried out, but I have found that this is a useful way of understanding the data in greater depth, as well as helping to fashion and explore concepts. One of the other challenges of being engaged in client-driven research is that it demands more than just understanding something about the world – it demands that practical recommendations are made or that good practice is distilled. This inhabiting of two worlds – academia and practice – and the shuttling back and forth between them is interesting for many reasons. Even in cases where I have engaged in what I would describe as more indulgent, academic work of a more theoretical nature (see Harris, 2011), there has been the challenge of explaining those ideas to potential interviewees in practice in a way that makes practical sense. A key task is translating one's own academic, conceptual, and theoretical interests into practically meaningful terms. How exactly does one take the Foucauldian concept of panoptic surveillance, as well as other concepts of lateral surveillance, and explore with planning enforcement officers how they go about detecting and investigating breaches of planning control (Harris, 2013)? This is one of the delights of bridging academia and practice.

Conclusions

Many readers of this edited book may be engaging with research in planning for the first time as part of their undergraduate or postgraduate studies and already be based in research-led educational institutions. They may be struggling with defining a topic for their own research project, be uncertain about what legitimate and appropriate methods are for researching their topic, or what purpose doing that research serves. They may instead be embarking on the challenging task of doing doctoral research and embracing the opportunity to explore the limits of the spatial planning discipline and what lies beyond it. In all cases, the material in this book should provide help and support on doing research within our specific discipline of spatial planning. Yet the purpose of these biographical sketches is to highlight both common themes and

important differences in our own engagement with doing research in the spatial planning field. If there is one contribution that I wish to emphasise in my own account, it is the value of bridging academia and practice through the conduct of research activity. I sometimes feel as though I could never be comfortable in either practice or academia alone – and maybe I do not fit either well – for it is the inhabiting of these two worlds where I find most interest and enjoyment in exploring ideas, concepts, and practices through research.

Notes

1 The term 'development control officer' is used in the UK to describe a planner who deals with applications for planning permission. Such an officer would manage a caseload of applications for planning permission and make recommendations to senior officers or elected politicians on whether planning permission should be granted.
2 Universities in the UK are required to submit periodically – approximately every five years or so – for assessment of their performance in research. An increasingly important part of these assessments is to demonstrate the 'impact' of their research. This impact is explored through assessing case studies of the impacts or benefits of research beyond academia. See also Davoudi's contribution in Chapter 5.2.

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1.4
RESEARCH METHODOLOGY AND MY LIFE

Some personal reflections[1]

Mee Kam Ng

"You have come a long way!" This is a remark made by my PhD supervisor, Professor John Friedmann, on finding out that my parents were factory workers without much education. And on reflection, this is a perceptive comment, especially considering I am a woman coming from an Asian (Chinese) culture.

I was a young Marxist!

A number of things had imprinted a leftist outlook in my young mind. When I was a child, our family of five lived in a very small room in a squatter area at the fringe of the infamous Kowloon Walled City in Hong Kong. I still have vivid memories of my parents and many uncles and aunties standing and sitting on broken benches in a circle, discussing communal issues such as sorting out water metres or handling solid waste and sewage problems. That phase of my life as a "slum dog"[2] has always directed my later research interests to the needs of the "underdogs" in the urbanization process. Also for some unknown reasons, my parents sent me to a kindergarten run by a left-wing trade union. Those two short years surprisingly have had lasting impacts on my life. Compared with my peers, I am not afraid of China and I do have a natural sense of indescribable love of the land and people in the vast country. One particular incident implanted a question in my mind that I have continued to ask today: How can she (the teacher at that time) be so sure that she is right? This question emerged in my little brain when my teacher told me that the newspaper my father used to read was not a good one (Hong Kong society was polarized politically into pro-left [Communists] and pro-right [Nationalists] camps in the 1960s and the newspaper that my father read was one that tried to be more neutral). These early education experiences help explain why I was fascinated by Marxian and Maoist thought when I was in secondary school. However, Hong Kong then was a colonial society and discussions on politics in schools were forbidden. My reading of Karl Marx's *Das Kapital* and Mao's thought was done "secretly".[3] And I was too young to consider the relationship of these extra-curricular readings with regular school work that focused on memorizing model answers for examinations.

It was the Liquefied Petroleum Gas (LPG) tanks that drew me to urban planning!

About half of the population in Hong Kong lives in public housing. Our family was very lucky in the late 1970s to be able to leave the squatter area and move into a public housing flat with an expansive sea view. However, just across the road from our public housing estate, at a stone's throw distance, were some LPG tanks or, in planning jargon, some hazardous installations. Opposite these tanks was a private housing estate. Hong Kong started to introduce district administration in the early 1980s, and a group of young social workers who aimed at running for the position of district councillor started to mobilize the local community to explore the potential risks of having these LPG tanks next to residential land uses. As a fresh university graduate, I joined them enthusiastically and had my first taste of community activism. Instead of trying to resolve problems within the community like my parents' generation, we proactively visited different government departments, undertook questionnaire surveys, studied carefully the confidential consultancy reports, raised community awareness and held a press conference to share our knowledge about the potential danger of the LPG tanks to the nearby residents and question the wisdom of the urban planners. The activism work paid off eventually – the LPG tanks were removed many years later. The experience inspired my interest in urban planning and I decided to return to school to earn a master's degree in urban planning.

Three of the teaching faculty members in the Master of Science in Urban Planning programme at the University of Hong Kong then were neo-Marxists and took an anti-planning stance. Given my leftist imprint, I read extensively and was captivated by literature such as David Harvey's *The limits to capital* (1982). However, the restriction to using one single approach to account for everything had produced a rather stifling and demoralizing result within the small class. Some classmates even gave up because of the difficult neo-Marxist jargon used in many of the readings. I was puzzled and felt rather helpless and debilitated in front of the structuralist arguments, such as whatever urban planners do, they will benefit only the capitalist class. At one point, I was so desperate that I went back to my undergraduate teachers and asked if I had entered the wrong programme.

Liberated at the University of California, Los Angeles (UCLA)!

I worked briefly in the government as an administrative officer after graduation and discovered that I could not be a good bureaucrat. With the award of a fellowship set up in memory of Sir Edward Youde, a governor much beloved by Hong Kongers, who died in Beijing during the Sino-British talks on Hong Kong's future in 1986, I decided, on the advice of a professor at the University of Hong Kong, to pursue a PhD degree in urban planning at UCLA. As a student whose whole career had been memorizing model answers (including the neo-Marxist arguments) to obtain good grades, the UCLA experience was life changing. I still remember the day I left LA to return to Hong Kong after two years of residence and had to say goodbye to John Friedmann, when he remarked, "Your thoughts have turned upside down!" It is so true. I set off to UCLA dreaming of learning some readily applicable regional development theories to apply to Hong Kong and the then emerging Pearl River Delta. I soon discovered that such theories did not exist and, indeed, there was no model answer to the emerging regional development problems. For the first time in my life within a formal education system, I was encouraged to apply myself to thinking through issues[4] – something that I had done all the time outside the

formal education system but somehow strangely forgot to apply within the formal system. It was an absolutely liberating experience, and my joy and excitement multiplied each day during my two short years at UCLA.

To satisfy the curriculum requirement, we had to take a number of courses outside the planning school. Two courses on methods of sociological analysis made a huge impact on my intellectual life. While these two courses made my grade point average (GPA)[5] less than perfect, the principles that I learned and synthesized are relevant up to this very day. To cite a few examples:

- Be a good craftsman and avoid the fetishism of method and technique. Be your own methodologist and theorist (Mills, 1959, p. 224).
- Ask a concrete, definite and specific question to "specify ignorance" of an existing phenomenon concerning "humanly important problems" (Merton, 1987, pp. 9, 1, 19) which can be answered and solved.
- Formulate the research question in terms of interrelated hypotheses into a unified analytical construct about "a cultural phenomenon which is historically significant" (Weber, 1949, p. 75) and always look for connections among questions about what, where, whence, why and when (Bunge, 1959, p. 281).
- Always remember that the research question is just a "one-sided accentuation of one or more points of view" (Weber, 1949, p. 90), which, together with the context (reality in totality) out of which the 'isolate' (the research object) is ripped, is space- and time-specific (Bendix, 1963, p. 533).
- The research question should not just allow us to "understand the characteristic uniqueness of the reality" (Weber, 1949, p. 72); it should also allow us to discover empirical regularities which can shed light on other similar situations.
- It is important to understand the ideas and intentions of historical actors (Roth, 1976, p. 316) who are embedded in different types of relations with other individuals within a multidimensionally described social structure (Przeworski, 1985, p. 393).
- When we compare, we need to measure things with the same meaning (Zelditch, 1971, p. 11). And the units to be compared should be of the same level (Zelditch, 1971, p. 280). Comparative studies should not only allow us to identify particularities but also help us formulate generalizations, test our explanations and detect the realm of possibilities in comparable historical instances. Hence comparisons could be intra-historical or inter-systemic, at the level of parts of sequences or the entire sequence of events.

The emphasis on identifying humanly important and historically significant research questions echoed the intellectual concerns deliberated in the planning school. Many of the professors in the planning school at UCLA then were interested in empowering the community and promoting radical planning. The planning school was the practice ground of such empowerment ethics. Hence, students were given a say in even the recruitment of faculty members.

I wish I had stayed at UCLA for a longer time but my family needed my financial contribution. I would never have completed my PhD studies in four years if not for Professor John Friedmann's efficient, meticulous, critical and constructive comments – all sent promptly by airmail over the Pacific Ocean. His guidance and mentorship have been my role model throughout my academic life.

From Mars back to Earth

I was very lucky to be able to take up a part-time position at the University of Hong Kong as one of my undergraduate professors was on sabbatical. I was then offered a temporary, full-time

position in the planning programme where I had earned my master's degree. Hong Kong in the early 1990s was still a city with very strong top-down planning system. The vocabularies such as community empowerment and dialogue in planning practice that I had learned at UCLA became dangerous, alien language when spoken in the context of Hong Kong. It took me a long time to reorientate myself to reconcile the many prescriptive theories that I learned and believed in, the realities that I needed to understand and interpret, and the methodologies that would be appropriate to bridge the two. This was not an easy task for someone who used to memorize "knowledge" and had only two short years of training in critical and independent thinking at UCLA. Many, too many, have told me that Western theories would not apply in the unique context of Hong Kong and my views were too idealistic and out of touch with reality. Yet my life experiences as a "slum dog", my nationalist education as a kindergarten student, my extracurricular reading of Marxist and Maoist thought – all these experiences have kept alive in my heart an interest in the prescriptive theories, even though they seldom square with the daily realities of Hong Kong, driven by a strong executive-led government. And I am particularly interested in identifying the critical moments and conditions when society in Hong Kong as a whole will be able to conceive of the possibilities of alternative development pathways. And these research efforts were done amidst heavy teaching and administrative duties in the university, raising two boys on the domestic front and advocating for more progressive planning practices in the community. And in the Chinese as well as the Christian culture, as a wife and mother, I am expected to prioritize my family before my career. And trying to at least put equal weight on all these life responsibilities is no slight challenge!

Triangulating research, teaching and community services

The most important lesson that I can so far gather in my twenty years of involvement in over twenty-five research projects is the need to *triangulate research, teaching and community services (and for this matter, nurturing of our children) through a vigorous dialogue among theories, empirical findings and practices*. A humanly important research question helps us leverage our limited resources to produce the maximum impacts. My life experiences, together with academic training at UCLA and the specific context of Hong Kong, have shaped my research interests towards understanding the politics of planning and development in an urban context, especially the power relationships between the government and the civil society.

The struggle to develop a theoretical framework (a set of interrelated tentative hypotheses) to guide field research and to allow research findings to judge the quality of the preliminary conceptual construct is necessary in all basic research work. For instance, in the search for theoretical insights on the practice of urban renewal in Hong Kong, we used the prescriptive, comprehensive and multi-sectoral model put forward by Roberts and Sykes (1999) as a starting point; borrowed Henri Lefebvre's theories on the "production of space" (1991) to understand the discrepancies between the plans produced by the renewal authority and people's lived experiences; adapted Flyvbjerg's "phronetic approach" (2001) to capture minute details in case studies, ask value-driven questions in the research process and create ample opportunities for different stakeholders to scrutinize and verify the research findings; and referred to the works of Forester (1989), Friedmann and Douglass (1998), Healey (1997) and Sandercock (1998) for hope and strategic actions.

With these theoretical insights, we interviewed policymakers, talked to urban planners, shared ideas and findings with social workers, visited and surveyed different types of residents such as owners and tenants, and attended various advocacy fora organized for or by affected communities. Through the adoption of Flyvbjerg's "phronetic research" approach, we discovered that the

renewal practice in Hong Kong is light years from the ideal model of Roberts and Sykes and verified Lefebvre's argument that plans produced by the government have not respected people's lived experiences. And recommendations have been provided to address the issue of unbalanced power relationships in the renewal process and highlight a need to institutionalize a more collaborative planning process that would produce a more inclusive and diversified society, treasuring use as well as exchange values in space and places.[6] Such a journey also provides valuable teaching materials. To further verify our research findings, my colleague and I have successfully built a community planning workshop into the planning curriculum to encourage students to talk to different stakeholders on issues of urban renewal in a local district. And over the years, on the practice front, I have tried to provide my social worker friends and social activist comrades with empirically verified theoretical insights and have encouraged them to further test the theories in real-life situations. The inclusion of social impact assessment in the Urban Renewal Strategy and the experiment of collaborative planning in the Harbourfront Enhancement Committee (see my chapter in this book) are cases in point.

Searching for the right method: a lifelong pursuit

Urban planning research is different from general social science research because we are always interested in the implications of our research findings on actions. Very often, ours is action-oriented research work. For instance, in answering the question "Is Hong Kong a sustainable city?" we have to develop a set of sustainability indicators. Throughout the process of searching for the right indicators for Hong Kong, I had to rely on continuous local community inputs to frame and scope the meaning of sustainable development, select and prioritize the set of indicators and interpret the research findings. In a sense, the general public became my research partners and we achieved mutual learning throughout the process. It is experiences like this that have reinforced my recent interest and advocacy for community-based urban planning or asset-based community development (ABCD) (McKnight and Block, 2010),[7] which tries to move urban planning beyond community engagement to become institutionalized at the local district level, building community competence through identifying community capacities, values and assets.

"Speaking truth to power" (Wildavsky, 1987) in a non-democratic society with a strong executive-led government requires a lot of courage. Besides being easily labelled as "radical", one may lose many opportunities of being appointed to membership in high-level committees. And in an academic environment that recognizes publications only in top international refereed journals, advocacy work at the community level is seldom truly acknowledged. In an economically and socially polarized society such as Hong Kong today, attempts to view issues from different angles and persuade conflicting parties to communicate and collaborate are increasingly difficult. Yet my life as a "slum dog" reinforces my conviction of the importance of empowering the most disadvantaged and, when necessary, speaking out for their rights. My rigorous academic training at UCLA by Professor John Friedmann and many other great scholars confirms my understanding of a quality life – it is not fame or fortune that characterizes a good life. Instead a good life is all about healthy and nurturing human relationships. While I was attracted by neo-Marxists and Maoist thought when I was young, I have come to realize the importance of transcending conflicts and arguments in striving for a certain degree of consensus. My research proves that planners as well as other stakeholders all have a choice to take an action or make a decision that is not confined by the structural relationships they are in. The question is whether they have the courage to do so.

Notes

1 The thoughts shared in this chapter were partially supported by grants from the Research Grants Council of the Hong Kong Special Administrative Region, China (Project numbers CUHK749309 and CUHK750610).
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3 Bureau of the Chinese Community Party Central Committee (1972). *Complete Collection of Works by Marx and Hegel (Vol.23)*. People's Press (in Chinese); Mao, Zedong (1977). *Selected Works of Mao Zedong: Vol.5*. People's Press (in Chinese).
4 Even during my master's degree years, we were forced to adopt the neo-Marxist perspective to look at planning issues, which in retrospect is not particularly educational.
5 GPA measures how well one performs academically. At UCLA, the highest GPA one can get is 4.0, which is equivalent to an A or A+ grade.
6 In the development process of Hong Kong, priority often goes to the production of space that will facilitate the creation of high exchange value. On the contrary, spaces heavily patronized and used by the old communities (high use value) are seldom treasured or conserved.
7 The Asset-Based Community Development Institute at Northwestern University in the US has promoted ABCD since the 1990s. They believe that even marginal communities are full of resources and advocate the use of capacity inventories as a starting point to mobilize communities to do things for themselves. See www.nwu.edu/IPR/abcd.html for more information.

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1.5

IT TAKES MORE THAN JUST *LOOKING* TO MAKE A DIFFERENCE

The challenge for *planning* research

Heather Campbell

Introduction

I registered as a doctoral student in planning in 1987. At this time very few of the academic staff in the Department at the University of Sheffield where I undertook my studies had a PhD, and none were female. The central role of a professionally accredited planning school was to teach, and the main quality necessary to be an effective teacher was to have been a planning practitioner. The assumption, as with many professional disciplines, was that you had to have been there and done it, and, perhaps on a part-time basis, remained professionally active. The tension between the so-called academic and professional runs deep and has long excited lively debate within planning and beyond. This is manifested in a perception that scholarly excellence and professional relevance are inherently incompatible, and, moreover, that the intellectual and the practical are worlds apart, each diminished by cross-contamination, rather than mutually invigorated. However, as I started my doctoral studies, pressures beyond the planning community in the UK were in the process of changing the landscape. Margaret Thatcher's administrations of the 1980s brought with them not just a retrenchment in higher education but more particularly the introduction in 1986 of the first Research Assessment Exercise.[1] The quality of research produced by academics was to be measured and ranked, with those departments performing the best being financially rewarded. For good reasons or more sinister, research excellence, as an intellectual aspiration or more narrowly a performance measure, had arrived as an issue for planning schools.

It is the theme of the relationship between the intellectual and practical that I have decided to take as the focus for my reflections, for in many respects my career has run alongside the maturing of research capacity within the planning academy. Hence, by the time I was appointed to a lectureship in 1991, a PhD had become a key requirement for an academic position, at least within research-intensive universities. There is no doubt that for some within the planning community the appointment of the likes of me, damned by the term 'career academic', and even worse 'intellectual', epitomises all that is wrong with planning education. What can I know about the real world? What do academics actually do that makes a difference to practice?

Research often seems to be perceived as some arcane pursuit undertaken by dusty folks in ivory towers, speaking a barely decipherable language, and of virtually complete irrelevance to the nitty-gritty lives of practitioners, or for that matter real people and real places. I would certainly not contend that all evidence runs counter to such perceptions. And from inside the academy, there remains a disdain for the so-called applied or professional disciplines as somehow not really intellectually respectable. Only second-rate academics would find themselves cast into such disciplines; as A.J.P. Taylor observed in 1967 about post-war developments in higher education, 'Universities nowadays have Professors of almost everything – Brewing at one, Race Relations at another, Town Planning at a third.' With the sensibilities of forty years these appear a somewhat contentious combination, but the broad thrust of such commentary echoes debates which have reverberated for centuries over the capacity for the achievement of scholarship in fields concerned with professional education. How far does the intellectual become compromised, even debased, by its engagement with the practical and professional? As a planning researcher it is easy to feel caught in an uncomfortable trap between the worlds of the profession and the academy. But the relationship between scholarly excellence and relevance asks fundamental questions about not just the planning discipline but also the more general role of intellectuals and universities in society.

The danger with reflections is that they can become nostalgic and backward-looking. My purpose is to try to draw on my past experiences to look forwards. If once I thought that what planning needed was to embrace the rigour of the traditional social sciences, I am now reminded that the relationship is not one-way, and that planning's appreciation of the interplay between theory and practice (research and action) is a necessary prerequisite to drive forward intellectual scholarship, both within planning and crucially beyond. As research competence matures within the planning community, we should have confidence in being *planning* researchers (dare I suggest, *planning intellectuals*), rather than mimics of the established, traditional disciplines. It may be challenging, but I see no incompatibility between scholarly excellence and the capacity of knowledge to make a difference.

In the remainder, I first draw directly on my own experiences as a researcher, and sometimes uneasy traveller within the planning discipline, and then secondly, focus more specifically on the activity of social science research – more especially, what it is we see, or perhaps more particularly do not see, as researchers. In the conclusion I return explicitly to the myths and challenges concerning the relationship between scholarship and relevance.

A journey in planning research – learning to *look* like a researcher

Let me start with an admission. I became a PhD student somewhat by accident[2] in a discipline that I was deeply unimpressed by, at least for the most part. I have no tale of being propelled into a PhD as the result of the unlocking of an intellectual spark. I had come to planning as a master's student and fully intended to go and work in practice, (something I still held as the most likely option while I was undertaking my PhD). By the end of the first term of the masters I came to the conclusion that planning seemed somewhat shallow. I wonder now at the arrogance of my judgement, although not the substance! Much of the content of planning writing was descriptive, largely procedural in nature, focused on matters of detail and seemingly unquestioning and uncritical, while also absorbed by a fractious turf war with its big, bad, older sibling, architecture. In fairness, while the discipline could hardly be described as at the forefront of intellectual thought, there were individuals determined that research and scholarship were necessary to drive forward both the intellectual and professional aspects of the discipline.

There was little structure to my PhD studies and only a handful of other students, mainly from overseas. I attended a couple of somewhat hurriedly organized classes for doctoral students across the social sciences and had to give a departmental seminar about six months into my studies outlining my research proposal. But generally the development of my research was a matter for me and my supervisor. I met regularly with my supervisor, but by current standards, I was left to go my own way, to make my own discoveries and my own mistakes. It was inevitable that my research questions would point me towards ethnographic research, and mine was the first thesis in the department to embrace such an approach. In retrospect, perhaps strangely, my research approach, which involved being based in two local authority planning departments for several months, did not prove a matter of particular contention. However, it mattered a great deal to me to be employing what I regarded as radical qualitative methods. Hypotheses, statistical surveys, modelling and spatial analysis smacked of outdated, outmoded, even conservative or reactionary ways of thought. I have since come to realize that the qualities of research cannot be assessed according to method alone. Research can be good, bad or, more frequently, mediocre, but such qualities are not confined to any particular methodological approach. Sadly, divisions over methods continue to deflect attention away from much more profound questions about the real merits of our individual and collective research output. I was asked recently, "Are you qualitative or quantitative?" The nature of my journey is indicated by my response: "Neither!"

I learnt much through trial and error about the nitty-gritty of doing research. For example, the art of effective in-depth interviewing was central to my research and continues to fascinate me: how to word a question or frame an intervention, how to use an eyebrow or shrug of the shoulder, so as to unlock insight rather than to close off discussion; how to encourage the interviewee to tell you more than intended when you first met; how to listen; and how to work out what matters. There is a tendency in preparing to undertake fieldwork to concentrate on the researcher's relationship to the interviewee. But I wasn't just listening and watching them; they were watching me. I also became conscious that the world tends to assume that if you are young and female, you necessarily know very little. While frustrating and at times exasperating, this does leave scope for the deployment of those most penetrating of questions – the (seemingly) silly or naive. As an aside, my experience suggests that youthfulness and intellectual gravitas are seldom regarded as coexisting. Despite a world sensitive to issues of identity and exclusion, it seems youthfulness (or the appearance of youthfulness) tends not to be associated with academic credibility and standing.

I was also aware that my research participants were not just watching me but also prepared to probe the possibilities of what use I might be. For some, having a researcher about the planning office was a source of suspicion – was I the bosses' nark? – while others wondered whether I might act as a useful conduit to pass on information. Related to this, while gatekeepers are invaluable to researchers, it is crucially important to be seen as demonstrably independent. More significantly, what were my responsibilities to those who so readily, for the most part, allowed me to occupy their space and time? The giving of time and knowledge by my research participants would (hopefully) enable me to gain a PhD and subsequently provide the building blocks for publications, but what would they gain individually or collectively? I remain to this day amazed how frequently doors, which in other circumstances would remain firmly closed, are opened by the statement, "I'm undertaking a research project and wonder if you'd mind if I asked you a few questions?"

A PhD, however, is not just about acquiring competence as a researcher. It also provides an initiation into the academic community. A crucial, although oft-times overlooked, aspect of

most doctoral programmes is how the behaviours of supervisors and other academics provide role models for the future. Would we personally wish to be treated in the way some doctoral students have to endure? Beyond the basics of actually turning up to supervisions, I recall seminars in which fellow students were destroyed by criticism from staff, which was actually directed less at them than at their supervisor. The seminar was used as an opportunity for the airing of academic prejudices and jealousies, not for the student to receive critical but constructive feedback and advice. I was relatively fortunate and was generally treated with respect. However, while it is inevitable that we all have our grumpy moments, the way academics behave towards their doctoral students, colleagues and research participants matters in itself, as well as for the wider messages which are conveyed about what it means to be an academic.

At the completion of my doctorate, perhaps the most powerful message I took away was a sense of the messiness of research. The journal papers I read and the seminar presentations I heard, regardless of epistemological starting point, all seemed to suggest a clarity to the process of doing research: research problems precisely identified, methods determined, empirical evidence unproblematically collected and analysed, conclusions derived and, bingo, an original contribution made. Yet my experience suggested otherwise – of a much more messy process, riven with uncertainty, of never being quite sure what I was doing or what I had found. Intriguingly, while those around me suggested I always appeared to have a clear focus, that was far from how it felt to me. The key lesson I derived from the satisfactory completion of my PhD was that uncertainty is inherent to doing research and as my thesis had come out okay, I might hope the same would be the case for future research projects. But this did not detract from my wider sense that so much about the actual research process was swept discreetly under the nearest carpet, while a mythology was perpetuated of control, order and clarity. The relatively isolated and lonely nature of doctoral study at that time further encouraged such feelings. I therefore finished my doctoral studies invigorated by the experience, but also clear that doctoral planning programmes could and should be better.

At interview for my first lectureship in 1991, I expressed a keenness to develop the department's approach to doctoral education and on taking up the appointment was told, "Do it . . . on you go". I was given no brief, no objectives, no work allocation hours, no terms of reference and no one to report to; I was just told to "do it". With a contemporary eye, it may seem grossly irresponsible that the most junior member of staff was given free rein with the department's approach to doctoral education. Sure I made mistakes, lots, but making mistakes is not such a bad thing; it is inherent to learning, and I suspect if my elders and betters had thought I was going completely off the rails they would have intervened. This may seem part of a bygone age of irresponsibility, both for me personally and for the department, but I relished the freedoms I was given in this role, and in many ways too with respect to my PhD studies. The quest in recent years to provide greater support and structure was probably necessary, but there are dangers and a need for wariness that the academic endeavour is not becoming standardised, reduced to tick box templates. Structures should facilitate, not constrain or, worse, diminish.

My starting point for what I wanted to achieve with the Sheffield doctoral programme was relatively simple – opportunities for PhD students to come together, find they were not alone and learn from each other. That was to share their real experiences of doing research: of the challenges of negotiating access to a case study; of translating between different languages and working with research assistants; of struggling to secure secondary data sets; of cultural variations in the etiquette of conducting interviews; of always sensing there was more to be read and that someone else had already done the research; of how to make sense of voluminous empirical material; of transcription nightmares; of undertaking interviews immediately following an

earthquake; of getting stuck, literally, in a monsoon; of writing blocks; of children being born; of computing failures and lost data sets; of vivas successfully negotiated and examiners tamed; and, yes, also, of how to manage your supervisor. It was about being a community of researchers not just with interests in our own narrow specialism, but also with an appreciation and respect for a wider world of knowledge. It was in our weekly seminars and discussion groups that I started to learn that no methodological or epistemological position has a hold on truth (including those that acknowledge there are no truths). Often the less I knew about a topic or approach, the more I was challenged to rethink the assumptions and understandings about my own area of study. Moreover, what could be more exciting than working with the next generation of planning scholars? Any academic discipline is only as strong as its doctoral programmes, but for planning schools traditionally founded on the demonstration of professional excellence alone, such a premise represents a profound change of orientation.

As I was beginning to explore how to develop doctoral education in my own planning school, the Economic and Social Research Council (ESRC) began to formalise its own practices and related processes for the recognition of departments deemed worthy of holding scholarships for ESRC-funded students. I was invited to contribute to the writing of the research training guidelines for planning and eventually chaired the subject panel in the late 1990s. Involvement in these processes raised some challenging questions for me about the foundational knowledge for planning scholarship. For the established social science disciplines such knowledge had long been the subject of well-rehearsed, not to say contentious, debate. But internal tensions were matched in equal measure by an ability to articulate to the wider academic community clear intellectual boundaries, and hence assert disciplinary distinctiveness.

Similar debates within planning were much less well developed. After all, planning schools had little intellectual tradition and had come into existence to train (I prefer educate) planners. At a personal level I relished the absence of disciplinary protocols and boundaries by comparison to my undergraduate experience as a geographer. I could dip in and out of different domains, without anyone bothering too much. But the research training guidelines for planning could not just say "do what you like", and nor was that really what I thought. As I sat around tables with the representatives of other disciplines, I became ever more convinced that we were selling short the planning researchers of the future if we did not provide them with a capacity to relate their research to the broader world of intellectual ideas, both as such ideas were understood within planning and crucially beyond. This also implied the need to have an understanding of the full range of research methods. Admittance to the scholarly community required such knowledge, accompanied by a rigorous approach to undertaking research. This was a question not simply of being able to talk the language of social science research but also, more importantly, of having the intellectual grounding to be taken seriously in questioning and challenging taken-for-granted ideas. Furthermore the planning profession would not be well served by a research community which lacked the insights and capabilities necessary to generate research of the highest quality.

I do not claim that there was, or is, consensus within planning about this approach to doctoral education. There remain tensions between what are portrayed as the different needs of practice and research, and the implications this has for the priorities of planning schools. However, in the late 1990s I had little sense that, while the intellectual understandings and methodological rigour of the social sciences were (and are) necessary prerequisites for the development of planning as an academic discipline, the development of such capabilities was not the complete answer, and that further, perhaps more profoundly important, challenges lay ahead.

Is *looking* like a researcher enough?

My doctoral studies taught me how to look like a researcher, and I soon also acquired responsibilities for ensuring that others were similarly, hopefully better equipped than I had been. So what does this mean to *look* like a researcher? I had been taught how to frame a research problem and define researchable questions, how to position a research study within the existing literature and to develop an analytical (or conceptual) framework, how to identify and apply appropriate research methods, how to analyse empirical findings using the framework already established and how to derive conclusions and identify the conceptual and practical implications of research. This is what was required to achieve that most highly of regarded qualities in research design and implementation – namely, rigour. As in many areas, understanding the principles and executing them satisfactorily are not one and the same. However, they are at least a basis on which to build, and I have never doubted the vital importance of developing these capabilities. But is this it – all there is to being a researcher?

As time has gone on I have become increasingly preoccupied by two issues: firstly, what is it we actually *see* as researchers; and secondly, what is this idea of *rigour* which so shapes the way we conduct research? Societies trust researchers, even allowing us to alter our title to 'doctor' on the award of a PhD, because of the presumed independence and incisiveness with which our research interrogates the world. But what of the nature of the researcher's eye?

What do researchers see (and hear) when they look (and listen)? I have long mused over why when I undertake fieldwork I do not necessarily see the same things going on as others. Am I not looking hard enough? Do I not understand? Am I misguided or plain wrong? How open am I to seeing all that is going on? Of course we understand that we all carry our own preconceptions and cultural sensibilities, but could there be different qualities of looking?

Good research design, meaning fundable research, requires the identification of a well-defined problem and hence researchable questions. By its nature this means that attention is focused on some things and not others. Moreover, as empirical investigation lies at the heart of the vast majority of research studies in planning (as with the social sciences), this in turn means that we literally look at some things and not others. The use of the term 'we' in the previous statement is interesting, as for the most part, after doctoral and postdoctoral work, the 'we' doing the looking (the research) is not the same person as the person who wrote the proposal or who will largely write the research papers. Research assistants are employed to collect and often also analyse primary or secondary evidence as part of studies which generally last little more than a couple of years. So looking in practice often resembles a game of Chinese whispers. In an effort to minimise the distortions on route, standardised protocols are developed, but I cannot help but conclude that something must be lost along the way. Is there not a vitally important connection between seeing and thinking?

Intuitively it is easy to be drawn to arguments that suggest a need for more practice-based research, meaning studies grounded in the real world of planning practice and the communities that planners seek to work with and for. But if our research activities are interrogated, how practice-based are any of our empirical studies? To start with, our empirical evidence carries the template of the underlying conceptualisation. That is how a problem is rendered researchable, and hence how we know which evidence to select. It therefore follows that a Foucauldian analysis generally finds a Foucauldian-looking world, a political-economy perspective, a political-economy looking world, and so on. Our looking (or to be precise that of our research assistants) is shaped by our frameworks. What we see is that template. The resulting articles select

the evidence they present. I am not suggesting any misappropriation of evidence, but merely that there is more than just evidence being reported.

Contrary to accepted assumptions within the academic world, my most important research experience so far was being a head of department. The presumption is, of course, that taking on an administrative role is akin to ending one's research career. One of the most crucial lessons I learnt was that doing and making decisions in real time is very different from observing decisions with the benefit of hindsight. We can all be wise after the event. However, doing is about reasoning and synthesis, while observing is about describing and explaining, the analysis of events which have already occurred.[3] I constantly found myself intellectually surprised, in ways which had not and would not have occurred to me in the course of undertaking a research project. For example, I have long had something of prickly relationship with the ideas of the American pragmatists, yet in response to an endless meeting in which members of the Faculty of Architectural Studies (including the Departments of Architecture, Landscape and Town and Regional Planning) were agonising over the very essence of their disciplines as the basis for determining which faculty it would be best to join given an inevitable university restructuring, I found myself saying, "This isn't a question of foundational principles, but which will work best". I have not as a result become a card-carrying pragmatist, but this moment has given me cause to ponder and think, as did numerous others. More generally, as researchers in planning we encounter every day the world of our concerns, certainly not just when we are engaged in the equivalent of donning the lab coat and undertaking research. It might be suggested that my experiences as a head of department are mere anecdotes, not proper research. The question that must then follow: what is proper research?

This takes me to my increasingly uneasy relationship with that great pillar of academic research – rigour. Rigour is a quality most usually associated with well-conceived methodologies, as described previously. Hence, to obtain research funding, studies need to demonstrate the tightness of their research design, not the relevance or pertinence of the questions being addressed to societal challenges. Moreover, to achieve the necessary level of rigour the research can be only marginally different from that which already exists, for otherwise there would be methodological loose ends and uncertainties. The consequence of this can be seen in the types of studies funded by national research councils. Such studies score very highly on rigour and hence the empirical validity of the research (which of course is not unimportant), but the findings tend to be far from cutting edge, and even mundane and quite dull. It is inherent to the current process for assessing research proposals that they are largely evaluated on the basis of inputs rather than outputs. Such studies have the qualities of the tin man (in *The Wizard of Oz*), exemplifying supreme technical competence but lacking a heart. Perhaps more questions need to be asked of the ethical value of the research which is undertaken. As a consequence, despite an increasing desire by some funders to support riskier forms of research, reflecting recognition that research has got into something of a rut, there will be a lengthy learning process as adjustments are made to understandings of the nature of research excellence. This will challenge the assumptions which underpin much of our research infrastructure, but it is arguably the challenge of greatest importance confronting the research community. How might the nature of research change if ethical value rather than methodological rigour was to become the cornerstone of our intellectual endeavours?

In the end it is not really rigour with which I have a problem, but rather its exclusive methodological association. Rigour of this type undoubtedly restricts the types of research questions that can be asked. Such research currently brings the award of grants and lists of publications

(which few will read), but does it bring research that makes a difference? It is entirely plausible that the research industry, of which universities are a part, is currently producing more and more knowledge about less and less. There is a need to develop an equally incisive understanding of rigour, which opens up the possibility for different forms of research questions and places stress on the quality of argumentation and the likely implications, not just the qualities of the methodology. This will not be a lesser form of rigour. If anything it will be a more exacting and demanding form of rigour. Further, and importantly, it implies an understanding of rigour, where rigour and relevance coexist, not as currently, set in opposition to one another.

Conclusion – it takes more than just looking . . . to make a difference

My journey as a planning researcher has seen the research undertaken within planning become better grounded in the traditions of social science research – that is to say, more rigorous. Research studies undertaken within planning are now published in the leading journals of the traditional social science journals. But is this enough? The challenge as I see it now is to remain uncompromising with respect to the importance of intellectual scholarship, but while not losing the essence of the understandings which come from being a *planning* researcher. We need to have the confidence not merely to be mimics but also to be able to harness the clarity of understanding that results from appreciating that it is not just looking that is important; that intellectual and practical insights lie at the interplay between knowledge and action. The societal problems with which planners are concerned – spatial inequality, climate change, cultural inclusion – do not come readily defined with labels marked 'sociology', 'politics' or 'economics', nor for that matter 'practical' or 'intellectual'. Importantly the knowledge base for professional practice requires a capacity to interweave knowledge, effectively and selectively, so as to frame questions and link the analytical to the normative.

One of my undergraduate lecturers spoke of the importance of "seeing the world in a grain of sand". I am not sure at the time I really understood what he was implying, but it is a phrase that has stayed with me. Despite the increasing technical competence of our research, I fear we end up knowing more and more about individual grains of sand, without striving for the possibility of seeing the world. We see fragments and parts, not the whole. We analyse but fail to synthesise. Our systems and increasingly standardised research procedures encourage yet further descriptions of yet more individual grains of sand, but not the integration of what we already know or what we do not yet understand, or more crucially the identification of the questions that really matter (see Part 2 for further consideration of such issues). There is an accretion of ever more facts, or interpretations, but not the capabilities to judge what they mean, or whether or how such knowledge might make a difference. We are becoming somewhat more knowledgeable, but not wiser.

A world of individual grains of sand becomes a world of seeming increasing complexity. Yet, as my own PhD supervisor remarked to me, "it is not complexity that is difficult, it is simplicity." That is not the simplicity that is trite or oversimplified, but the simplicity that offers possibilities for a better future. So to quote William Blake more fully, the real intellectual challenges are

> To see a world in a grain of sand,
> And a heaven in a wild flower,
> Hold infinity in your hand,
> And eternity for an hour.
> —William Blake, *Auguries of Innocence*

Notes

1 Research Assessment Exercises (RAE), now known as the Research Excellence Framework (REF), have since 1986 evaluated and ranked the quality of research across the whole of the UK higher education sector about every five years or so.
2 I was diagnosed in the March of 1987 with type 1 diabetes and, amongst many other pieces of information which were thrust my way, was the evidence that diabetes reduces life expectancy by 10–15 years. Given this, the opportunity to do a PhD looked like something to be grasped, rather than left until another day.
3 See Campbell (2007, 2012).

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1.6

THE LIFE-CHANGING TRANSITIONS OF AN ACADEMIC RESEARCH CAREER

Elisabete A. Silva

The first steps: from primary school to university

Compared with other children, I started my primary school late, when I was almost seven years old. In Portugal, children start school when they are six years old, but if by the registration day they are not yet six, they need to wait one more year. I was in this latter position and as a result of that one more year of extended freedom (and also a natural aptitude to be outside of enclosed spaces), at the beginning of my 'academic career' I didn't like school.

The beginning of the 1970s was a difficult time for Portugal, marked with the euphoria of the transition from dictatorship to democracy, but at the same time there were counter-revolutions and instability following the peaceful military coup of 25 April 1974.

Following my parents' decision to move back to my grandparents' village in the countryside, I was able to understand the dichotomy of city and countryside (at a time when people used to say that 'Portugal is Lisbon and the rest is countryside'). As the result of a prolonged dictatorship and a complete closure to the outside world, Portugal was at least fifty years behind in development when compared with most central and northern European developed countries. I still remember my shock when realizing the existence of those two different worlds.

The first two years of primary school were agonizing, with the school teacher mentioning to me and my parents that I didn't pay any attention in the class, preferring to spend much of the time in the last desk of the room, close to the door or window, looking outside. In the third and fourth grades, something changed following a decisive meeting that my father had with the school teachers. My father mentioned that at such early ages all children should have the same comprehensive and demanding level of knowledge and attention. At that time my third-year teacher (who happened to be my aunt) decided to take an initiative that was extremely important for me. She decided to place me in the first row, facing the blackboard and far, far away from the window. These actions were important in my life, acting as substantial triggers that allowed me to refocus in the class and get down to learning. I started to pay attention, and by year four the family concern that there was no hope for me seemed to reduce. For reasons that I can't fully explain, I started to enjoy school . . . in a crescendo.

When I was ten years old, my parents had to move to the Lisbon Metropolitan Area for professional reasons. Closer to the centre, I could once again compare the differences of resources

allocated to the city and the countryside. By seventh grade, and already in Lisbon, I really enjoyed learning, and by tenth and eleventh grade I was clearly competing for maximum grades. It is true that I always selected the options I enjoyed, and managed to mix sports and study well together. I was particularly good in football, the scouts, history and geography. I owe my interest in geography and history to two excellent schoolteachers, in particular Esmeralda Duraes. She was very demanding, but with an inspiring teaching style. She was clearly the best teacher I had and a very good friend (I ended up inviting her to my graduation ceremony). My final exams were somehow exciting. I decided on history, philosophy and geography, and during the three terms managed to achieve straight As, a difficult achievement as social sciences students tended to get lower marks, as these weren't objective subjects like the sciences and therefore it was more difficult to assess an exam as 'fully answered'.

The university years – applying and living in geography

After my final exams, and feeling very self-confident, I decided that I would be a lawyer or a geographer. While law was the subject that would grant me wealth, it was geography that I really enjoyed and that would bring me close to field trips with other people and exploring the world, as in the scouts. We could apply for a dozen university degrees and I knew exactly what I wanted to do. I decided that I would apply to three degree programmes (two in law at two different universities and one in geography and planning at the University of Lisbon). I must say that these universities were considered the most demanding and in order to make it more demanding I applied to do only physical geography. I remember thinking that if I made it to this stage it was better to choose something that was really challenging. I was accepted in physical geography, a subject that required maths, geology and biology and for which I was obviously not prepared.

These were the years of the first wave of European funds. In 1986 Portugal became a member of the European Community. For those who experienced the difficult times of the dictatorship and the tremendous economic crisis of the 1970s, these were years of abundance.

At that time university degrees in Portugal lasted four or five years (mostly five years). During the first year I remember considering changing to law, but by the end of the first year I was enjoying the Geography and Planning programme so much that when the day of the application to transfer arrived, I decided that I wanted to stay in Geography and Planning, even if my confidence in my abilities was reduced to almost zero (in terms of the number of hours spent in learning basic maths, geology, chemistry). Nevertheless, I never regretted the decision and later considered it was the best thing that happened in my life.

But during those years something had changed – the way I measured my self-confidence. In my secondary years, I felt that if I, 'the least skilled person in the world', could get to the top, it was just a matter of working hard – there was no need to be bright, and everybody could do this. By my university years, my concept changed slightly, as I realized that people need to develop the background necessary to construct further knowledge. As a result, my first years in physical geography were of extreme hard work, three times more than my colleagues, who had already studied maths, biology, chemistry, etc. But I was clearly enjoying the fieldwork and the maps; drawing maps wasn't my strong point, but I really enjoyed the end result. And, if everybody complained about the high demands of the lecturers, requiring a lot of homework, continuous fieldwork and multiple examination processes, and the nastiness of not being awarded high marks . . . well . . . we were all in the same boat, but we were all amazingly enjoying our small twenty-five or so close-knit group of physical geographers.

I paid particular attention to Professor Denise de Brum Ferreira and Professor Maria Joao Alcoforado. They had both managed to raise a family and still be very good researchers and

excellent teachers. I thought I could do the same. There was a future for me at the university level. During the 1980s and 1990s, there were jobs for most of the university graduates in Portugal. There were very few universities, and very few people ended up doing a university degree. At that time most geographers ended up being teachers or working for the public administration. But by year two of my degree I already knew that I wanted to be a researcher. There was more to explore and understand, and while a lot of it could be uncertain and unknown, I was ready to search for answers, even if by that time I was already fully aware of my limitations!

Starting research, working for the state and doing consulting

There have been three moments in my life that represent important transitions from one phase to another. I can now tell that there was a clear 'before' and 'after'. Some life events and choices have ended up triggering changes without which my life would be completely different today. The first such transition was certainly my third year of primary school and the fact that I had someone who bothered with me and tried to understand why I wasn't paying attention. The second most important event in my life was my geography and planning degree. Geography provided the best possible background for someone who wants to know everything about the world, from physical to human geography.

In my last year of geography I realized that I wasn't much good at *drawing* maps, though I liked the work and found it very useful. To my surprise I realized that there was a new way of doing maps – automated cartography using computers. This was not yet available in courses in a geography or any other university degree, but there was a recent state department that was already doing pioneer work in these areas. The Centre for Geographic Information Systems (CNIG) was created to introduce the digital world, and in particular geographic information systems (GIS), at all levels of the government and the private sector. I offered to do an unpaid internship in my last year at university, and was accepted. By the end of my degree I had a research position at this new institute. My supervisor at CNIG suggested that I do an MPhil at the New University of Lisbon as he was a lecturer there for the MPhil in Planning and that it was possible to link the MPhil to GIS. The first year went very well, and after the first year of coursework I had to do a dissertation. It took me two more years to finish my MPhil. As a working student things took more time, but the expertise which I gained was brilliant.

My CNIG and MPhil years were very important – the expertise in computer-assisted geography and planning, the work with local, regional and state departments and some consulting in the private sector. All of this was happening at a time when everything was missing (no skills/expertise) in Portugal. With the first waves of EU funds reaching Portugal, it was a land of opportunity for newly qualified people. There was so much work and it was so diverse in nature that we all learned a lot (but we also learned that the secret for the successful delivery of a request to produce work was the importance of organization and the importance of 'timing your time' correctly).

It was during one of those research projects at CNIG that I ended up going to the US. We had a joint project with the US and one of the US researchers invited me to join his doctoral programme (Professor Jack Ahern and Professor John Mullin). I had to do my TOEFL and GRE exams[1] and, if I passed those exams, University of Massachusetts–Amherst (UMASS) had a scholarship that would pay for my tuition (together with a scholarship from the Luso-American foundation, which would pay for my living expenses). The last two years of my PhD were paid by the Portuguese Science Foundation, as I wanted to make sure I would finish my PhD in five years.

My PhD

This was the third most important phase transition in my life. These three phases, together with the contiguous support and incentive that my mom and my father, and my two sisters, always gave to me, are at the basis of everything that is good in my life. I always felt that I was given more than I will ever be able to repay.

In the US, the structured knowledge of a PhD programme brings all students from around the world to a similar level of knowledge by the end of the first year (independent of background, every student ends the first year with a similar basic knowledge to start his/her research; theory, history, methods and some expertise in the substantive area of research will be taught to all PhD students). There I solidified my knowledge and learned a lot about the need to publish (and not to keep work on a dusty shelf unable to help others to progress).

While in the US I developed my PhD at UMASS, but because one of my co-supervisors, Professor Keith Clarke, was at UC Santa Barbara (California), I ended up also being a researcher at NCGIA – the National Centre of Geographic Information Analysis – also based at UC Santa Barbara. Through my experiences at both UMASS and UC Santa Barbara, I grew as a researcher. A lot of the computer models that I use were just starting to be developed at that time at NCGIA. I matured as a university academic (I was a researcher and teaching assistant during two years at UMASS Amherst). Many staff contributed to my education, but in particular John Mullin, Jack Ahern, Julios Fabos and Keith Clarke became good friends. With them I knew I could develop my ideas, and this is still what I say to my students: when doing a PhD please first look for a suitable supervisor in an area that you want to work on for your PhD and your future professional life – this is the key. The selection of the university should be a result of that initial selection of supervisor and topic.

The international contact with students, as a colleague and as a teacher, was amazing. Speaking and learning with and from students from all corners of the world, learning from teachers from around the world and experiencing best practices found in different countries were a new world for me – the lectures, the social events, parties and the exchange of food from different countries, the different celebrations and festivities. Paulina Volpe, my landlady, became a very, very good friend. All these are very beautiful memories of the best times. I still encourage my students to enjoy their PhD, the only time in life that you will be able to dedicate completely to your own research.

Preparing for life after the PhD was another piece of advice I was given at both universities in the US. With one year to go before submitting the dissertation, we were advised to start going to conferences more often and to publish – 'to make yourself known, to make sure people know that you exist, to make sure people know that you may be helpful in their organizations too' – and we were told this in a pragmatic and proactive way. I now tell my students to prepare for their future in the short, long and medium range. These plans shouldn't be set in stone, but serve as guiding action plans.

Life after the PhD and as an academic member of staff

Besides the importance of the key transitions I have made, another thing that I now realize is that it is important to prepare for a transition (for a new post, for a promotion, for a sabbatical, for the development of a new lab, etc.). Some of these transitions will be structural triggers that change your entire life. They may be planned by you or appear as a result of the suggestions or actions of others, but that still leaves you to plan your response.

In my case, and following my supervisors' advice, during the last year of my PhD, I started applying for jobs in the US. The US job application process is well structured. Usually students apply to jobs that are advertised at ACSP (the Association of Collegiate Schools of Planning) and APA (the American Planning Association) and have their first interview during these associations' conferences (a good opportunity for employers to evaluate research and presentation skills and also to interview as many applicants as possible). I passed that first phase and was already being shortlisted for interviews at US universities. At that time, a professor from Portugal told me that I wasn't being very patriotic, and that the two years of funding by the Portuguese National Science Foundation should require work in Portugal afterwards. Probably few people would say yes to move from a secure position in the US to a postdoc in Portugal, but I said yes – making it clear that I couldn't stay as a postdoc forever, as was current practice in Portugal. I stayed in Portugal for four years (two as a postdoc at the IST-Technical University of Lisbon, and two as a lecturer at the School of Engineering of Catholic University). In Portugal the economic crisis was already a fact in 2002–2004. By 2005 the lack of money for research, together with the reforms of the Treaty of Bologna that required a reduction of degree length from five to three years, seemed to point to a trajectory of decline in terms of funding and academic progression. During the first term of 2006, I spoke with the dean of my school, mentioning that the Portuguese economic situation, in particular at the university level, was worrying me. I had invested a lot of my money and time in my professional future and felt it was the time to move to a different country where opportunities were available.

The US was the obvious option (having a PhD from there), but I decided to see what was available in Europe. I visited the website of AESOP (Association of European Schools of Planning) (two jobs available at that time: one in Vienna and another in Leuven – the deadline for application was only in three or four months' time) and the website www.jobs.ac.uk (that had one job advertisement whose deadline finished in four days' time, a lectureship at the Department of Land Economy in Cambridge, UK; while the reputation of the university was well known, the city and the department were unknown to me). I felt that this short deadline at Cambridge would give me the incentive to have everything ready for future applications and I decided to apply . . . and forgot about that during the following two months (to be frank, I didn't think they would consider me). This was my first application. After one month I sent my application to Vienna and when I was ready to submit the paperwork to Leuven I got an email from Cambridge, inviting me for an interview. The day after the interview I got the job offer.

And that is how I came to be in Cambridge. In three months I ended up changing university and country. These changes are not easy. If you don't define milestones and challenges, you will end up being too accommodating to the demands of others, and lose momentum on your own trajectory. It is important to be flexible, as sometimes things don't happen as we want, but you need to be prepared to act. I am still astonished by the number of postdoc researchers that persist in the same university where they did their undergraduate and doctoral degrees, and who, now in their forties, find themselves in a postdoc position just because they are unwilling to move (or in some cases they really can't move for personal reasons). This is probably one of the things that I find most concerning about our present academic life – the number of research staff without a secure position, always on the verge of unemployment if research grants disappear and/or aren't awarded, but now unable to move to other more secure positions.

I had to make those decisions in my life. You need to be analytical about your options and understand the number of places available in the subject areas of your competence, and the probabilities of being considered for a post (e.g., having some teaching experience or a previous affiliated or lectureship position may be important). Periods with a postdoctoral fellowship

shouldn't last more than three to five years, which means you should start to consider your next move after the third year). There may be positions as a researcher or senior researcher. In some countries, this is a semi-permanent or permanent position. Or you should consider applying to university lectureships. Most PhDs finish their degree when they are in their early thirties or late twenties. This is the time when they still don't have children and are still available to do long commutes (in some cases across the Atlantic). These initial university positions open the door later on to tenure-track positions. Not doing this at the right time will have substantial consequences, as later on it will become extremely difficult to make that move, as partners, children and family should take precedence. A very frank conversation with your department head or director of research is always a good thing. Describing the need to move on as a stepping stone, and the openness to return to that department if a position is open, seems a fair way to start planning your initial career development.

During the first years of an academic career there is a probability that you will change places a lot (three years as a postdoc in University A, two as an affiliated lecturer in University B, etc.). But you also need time to build on solid ground. This will allow you to have a deeper knowledge in the institution where you are, and to have the time to focus on your own research (moving around and restarting too many times might prevent you from maturing your own research). One piece of advice – even if you need to move during those initial years, always promise to finish the work you started (you will see that people will be thankful and will find you reliable).

Now at this stage of my life as a university senior lecturer, there are other concerns that I have. Certainly a lot of them are related to research, but increasingly there are concerns with the logistics, procedures and processes of the system, particularly when I am just a small grain of sand in these big institutional arrangements. Interestingly enough, I no longer just think about me and my options. I have started thinking about my legacy, my impact on the system and how much I can improve the lives of my students by making certain things work better. Are my students proud of me? Am I facilitating their progress? Am I increasing their chances that they will become good researchers and teachers, and have a job?

Final remarks

When I look back, I see that my generation was lucky. In Portugal we were all opening the country to the outside, to Europe, following the years of dictatorship and several world economic crises. The funds from the EC in 1986 allowed an increase in graduates and ended up bringing vast numbers of people out of poverty. Those were the enlightened years in Portugal, and to a certain extent in Europe at the start of an expanding European Union.

At this moment (2013), in contrast, the Portuguese government is cutting to virtually zero the number of scholarships abroad by reducing tuition fees (and applying this reduction retrospectively) to a value below international entry requirements in most US, continental Europe and UK universities. Hopefully, this is not a premonition of the darker inward-looking years of the past. In Europe, including Portugal, there are the dark clouds of universities being closed or merged (that seems to be the case in Portugal, Spain, Greece and Italy). In Portugal the University of Lisbon is merging with the Technical University of Lisbon. The European Project seems to be at risk, and the years of austerity seem to be the start of a fragmented Europe. In this context, where do universities sit? How can I prepare my students (many of them international students)? Can I keep attracting the same students to a continent that obviously is facing tremendous challenges and in a dozen years might be at risk of losing its status as a centre of

research and innovation in the world? How can I contribute to an improvement of this situation, here in the UK, in Portugal and in Europe in general? And where is all this change heading?

I have had experiences in many different academic environments – Portugal, the US and England. I can say that the differences of the last decades are reducing with the standardization of programmes and practices. The Anglo-Saxon system is still more pragmatic than that of continental Europe. But if we compare England and the US, PhD programmes take a longer time – five years in the US and three in England. The structured PhD programmes of the US have now arrived in most European universities (which are now advertising their PhD programmes and universal transfer credit systems). The emphasis on publication seems to be spreading, propelled by journal citation reports, impact systems, H-factors and author citation records.

In Europe, rhetoric points to universities as the centre of the 'creative system'. Nevertheless it seems that it is in the emergent countries that most investment is being made in universities (with results clearly seen in the increase in the number of universities entering the ranks of top university lists). My contacts with Asian universities and visits to their university campuses make it clear that this is where the new lands of opportunity are and probably where a lot of new researchers will be able to make their own life-changing transitions to develop new avenues of research and development.

Note

1 TOEFL stands for "Test of English as a Foreign Language", and tests the applicant's ability to use and understand English in an academic environment. GRE stands for "Graduate Record Examination". It is a standardized test, and tends to be an admissions requirement for US graduate schools, as well as other worldwide graduate schools and business programs. It aims to measure verbal reasoning, quantitative reasoning, analytical writing and critical thinking skills that have been acquired over a long period of time and that are not related to any specific field of study.

1.7
LEARNING THE CRAFT OF ACADEMIC WRITING[1]

John Forester

Part 1 of this chapter examines my attempts to learn to write in, and after, graduate school. Part 2 presents a series of cautions and suggestions, lessons I never expected to learn.

Trying to learn to write

Every day I sat at the Underwood manual typewriter I used, and after eighteen months I had made no discernible progress on my dissertation. I'd been in the doctoral programme in City and Regional Planning at UC Berkeley for several years of coursework, exams, and now writing, and I was not pleased. Then affairs of the heart took me away from the writing for a few months. At last, having lost all patience as well as guidance from any faculty, I sat down desperately to do nothing each day but write.

My dissertation

I began with the second chapter because I thought I could write that. I produced thirty pages of six sections so thin that they each needed real work. For the next six months I wrote, and that second chapter became my dissertation. It included much of what I'd abstractly envisioned and roughly outlined, but in a wholly different order and emphasis than I'd outlined time and time again. I felt sick about the product. Only when I looked at it for the first time again, five full years later at Cornell, was I surprised to find that only one chapter was really pretty embarrassing. The writing experience had not been a good one. If the dissertation was anything like downing too many stiff drinks for medicinal purposes, the writing experience persisted as an enormous hangover. At best, having my dissertation done meant that I was free to do further work; at worst, the prospects of further writing were bewildering, almost nauseating.

I had known to talk to people, but it hadn't helped. I groped along, writing each day. Here and there were signs that someone knew what was going on. One day my wife-to-be returned from a party at the School of Public Health in Berkeley, where she'd been working. She told me that one of the Public Health faculty had asked about me. She said, "When I told him that you were writing your dissertation, he asked, 'Is he at the three-year-old or the six-year-old stage yet?'" I had a friend doing doctoral work in planning at Berkeley after he'd spent five years at the

National Institute for Mental Health. He once called his dissertation writing "the most infantilizing experience of my life." Now I knew what he meant, but I didn't have a clue what to do about it. Still, one friend, Shimon, did help enormously, and I have more to say about him ahead.

As I was three quarters of the way along, with six rough chapters in hand but no clear sense of coherent conclusion, I was asked by one of my Berkeley professors, Jack Dyckman, to cover for him in his Planning Theory class while he had to be out of town. He'd assigned Habermas's *Legitimation crisis*, a book that we'd read together in a discussion group the year before (Habermas 1975). As I started to prepare for the class, I started writing: Habermas's strategy of analysis, not any particular argument, suggested a possible solution to the problem of concluding my dissertation. I had been stumped. But here came thirty pages from my typewriter a few days before that class – and those pages became the guts of the last two chapters of my dissertation.

More had happened too: finishing my dissertation, for the first time I had an insight into what Habermas was actually trying to do. I had read several of his books and essays, but they hadn't figured into my dissertation at all – until the very end. Now many pieces promised to fit together – not least into a hunch about how to use this abstract and ambitious work empirically in research assessing planning practice. No one had done that.

So I had survived the dissertation.[2] Hardly emerging unscathed, I nevertheless glimpsed the outline of a potentially large research programme I might explore – if the opportunity and skill were available. I was lucky, at least, to have had the opportunity.

Writing and teaching

At UC Santa Cruz, a year of part-time teaching and full-time searching for an academic job fuelled the fire for me to write. The kindling had been lit. Since my dissertation had been unconventional to say the least, I knew I had to write. In Berkeley, another of my professors had been candid: "With what you're doing, you have to write it clearly and get it out, or you can just forget it." In Santa Cruz, I had said to a friend, obsessively and melodramatically, "Writing is like climbing a ladder out of hell." She raised a dubious eyebrow. The problem was that I was serious: I was writing and writing, waiting for journal editors to respond, hoping to publish. But then came the good fortune of coming to Cornell. My new colleagues expected me now to teach and to write. But how was I to do that?

The experience of my dissertation did little for my confidence – the serendipity of Jack Dyckman's having assigned Habermas and asking me to fill in for him notwithstanding. In Berkeley, true to form, my friend Shimon agreed with me only about how little I knew – though now I would learn to write, in particular by sending him "just one simple fifteen page paper," "that gets it clear," "that just says what you really want to say." That proved very difficult to do – so difficult that even six years later, Shimon was still asking for that paper, though he'd shredded and edited virtually everything else I'd written in the meantime.

I did have to write, but I felt ill prepared to do it. I'd learned a lot in graduate school from my professors, but not how to write in any sustained way. My advisor insisted upon clarity and chastised my constant hyphenations; so I came to split sentences with dashes instead of linking words with hyphens – was that progress? The Berkeley faculty's own writing varied enormously, of course, and though in the slow moments of my dissertation I sought advice, the idiosyncratic anecdotes I heard didn't seem ultimately to do much for me. How could they? One prolific sociologist wrote on different projects in different places and at different times. Another distinguished sociologist told me something about trying to write ten pages a day, but I was too stunned to ask, "Ten?!" A planning professor had fifteen projects in the pipeline at any given

time, and out came whatever he needed to respond to outside demands as they came along. But how, I wondered, did he write his books? If I was prepared to write or knew anything about it, I was the last one to know it.

I had read C. Wright Mills's wonderful essay "On intellectual craftsmanship" and reread it too (Mills 1959). Yes, I too found new things when I reorganized my files; I found too much. Even so, this appendix to *The sociological imagination* was the only thing I'd read that seemed to speak to the writing problems I faced. Another dissertation survivor had given me the writing chapter of Jacques Barzun and Henry Graff's *The modern researcher* (1970). How right their stress on rewriting seemed, but what did I know about rewriting when I wondered what I'd ever have to rewrite? I was ready to rewrite, but a step was missing: the writing, what I'd now call the drafting, laying it out or, even as I say to others at times, the "thinking with your fingers."

Many years later I found political science professor Aaron Wildavsky to be an astute student of academic work habits.[3] Describing me perfectly, he noted how inefficient so many academics are, and he mentioned a piece he had once written on his own graduate and subsequent professional writing. Entitled "Things I never knew," this remarkable essay provided variations on the theme: "Common knowledge in the University said you couldn't . . . (combine teaching and research, and thrive at both) but I didn't know that, so I did (teach X, Y, and Z, and write a book about Z)" (Wildavsky 1971). The spirit of the essay combines homage to his teachers and an irrepressible sense of what's possible to do with steady work, reading, research, and writing a bit each day.

Wildavsky's essay gave me such a shot in the arm that in the three days after I read it I wrote an essay that I'd been meaning to write for at least a year. As if in a flash, there it was, and accepted four months later for publication with only slight revisions necessary. "In a flash"? Hardly. The essay had been presented as a lecture several times, and it had "cooked" for well over a year. I felt lucky to get it out of the oven at all.

Would I show Wildavsky's essay to graduate students? I was careful, afraid that Wildavsky's bravado, to say nothing of his productivity, might only bury someone's last shred of self-confidence. If I had read the piece in the middle of the desert of my dissertation, I might have packed my bags and quit. Wildavsky wrote in a major key; I write, obviously, in minor. There's a simple test to take here. Read Wildavsky's wonderful "Things I Never Knew" when you're not completely swamped with work. If it makes you want to write, fine: do it! If not, why worry? But I still wondered as a new assistant professor: How could I learn to write?

I had drafted several articles at Santa Cruz. First, I reworked the third chapter of my dissertation into an article. Accepted provisionally by a journal that then folded, this piece has still never been published. I wrote a second article as a synopsis of my dissertation. After several journals had rejected it and I'd made some revisions, it was finally published three years later. I revised a third article from the appendix to a paper I'd done years before in graduate school. The other students in a graduate political theory seminar had curiously liked the appendix better than my paper. Searching for life after the dissertation, I revised that essay on "Listening" but only published it two years after leaving Santa Cruz, five years after first writing it.[4] I drafted a fourth piece over one long weekend after Polly Marshall, a student at Santa Cruz, had asked me how Ivan Illich's *Medical nemesis* related to Habermas's work, if it did at all, and I found the answer interesting and striking enough to fill thirty pages. With some luck and not too many surprises, that essay was finally published nearly seven years after it was written. So much for immediate gratification! Finally I prepared a fifth short essay for a public administration conference in the spring, thanks to a friend's invitation and encouragement. I sent that piece off to

Public Administration Review. Editor Gawthorp was interested, thoughtful, firm, and negative. I was only beginning to learn about the human qualities of editors and their judgments about style, audience, and fit – in addition to content. That essay was published in a smaller journal two years later. So nothing – and I felt it as exactly that, nothing – was published quickly in the years following my dissertation.

During my first year at Cornell I tried to keep up with classes and the usually fruitless letters to journal editors. One editor said of one piece, "Too narrow"; another said of a second essay, "Too broad." One Very Important Person solicited essays for a book project, so I dutifully worked up an article I hoped to publish as a chapter; I didn't hear anything from him for fifteen months except "still working on it," until I finally learned that the whole project had been scrapped. So much for publishing with VIPs. At the end of that first year I talked to Terry Terauchi, an old friend practicing poverty law in San Francisco. I told him that it looked like I'd never publish anything, and if that were true, then I might as well move back to sunny California and pump gasoline. He thought that I should keep at it awhile. He voted with friend Shimon, who was no less persistently and provocatively demanding, "Just one clear fifteen-page paper that says what you really want to say!" I was ready to keep at it, but if this was what writing in the university was like, I wasn't going to be making any long-range plans.

Writing my dissertation had been the most isolating experience of an otherwise wonderfully collegial graduate school existence. Would the work of my dissertation really be, in retrospect, as unique as many people assured me, or would all scholarly writing be like that? The first year at Cornell was so full that I only had more questions, not answers. There was indeed life after the dissertation; that was a discovery second only to my glimpse of a promising new research program. So I still had to learn to write – but about a literature, critical social theory, that might as well have been in Greek as far as my colleagues and students in planning were concerned. I'd put "Hermeneutics and critical theory in practice" in the subtitle of my "Listening" paper, and a senior colleague quipped, "Herman who?" I was too new, and too junior, to be amused.

But friend Shimon edited ruthlessly, and I paid attention and rewrote. My papers became shorter and clearer. Sentences were still long, phrases were abstract, and the language at times was closer to German than to English, but the responses from journal editors improved. I wrote and rewrote more. Shimon was insistent, never satisfied, sure that I might yet produce something with more substance and less promise. Just fifteen pages . . . just fifteen clear pages! Was I about to satisfy, and thus perhaps stop, such a source of help and encouragement?

I found writing after my dissertation both isolating and not, both highly personal and deeply common. I found that I began, and years later have only yet begun, to develop skills of listening, editing, revising, adjusting style and gauging voice – that I still barely understand. After five years or so, it seemed I'd published enough to make two coherent books of related essays, with a fair bit more "in the pipeline."[5] Yet I perpetually felt that I worked far below capacity, and so I kept on trying to learn more: how best to write?

I found that graduate students generally find very little that helps them to anticipate or learn to do the writing that they will increasingly do. So I made several notes about the problems of professional-academic writing that students or faculty may confront, as I did. Some of these problems surprised me, and others bewildered me; all were, I found, important to face. To paraphrase Wittgenstein speaking of his *Tractatus*, the notes that follow are only steps on a ladder to be left behind as readers find their own idiosyncratic ways to write more powerfully (Wittgenstein 1972, 6.54).

Things I never knew about taking the risks to write: cautions concerning the seamy side of the academy

1. Fundamentalism

I did not know to watch out for academic fundamentalism: the hyper-critical inclination of colleagues to damn a writer for not resolving the problems of truth, justice, legitimacy or – to achieve all three in one fell swoop – of making the revolution. By the fundamentalist criterion, the whole tradition of political and social theory is simply a record of failure. Each "new" theorist can be shown to be old, fundamentally flawed, a false hope, a source of insight leading inevitably down a blind alley. The implication for the beginning writer: expect intellectual quicksand and little progress. What Jeremy Shapiro characterized brilliantly, when he wrote of neo-Marxist, intellectual sectarianism, as "the leftwing samurai tradition" finds itself practised as aggressively in the graduate school tradition as well[6] (see also Mee Kam's experience in Chapter 1.4). If writing a dissertation, though, turns out to be reconstructively synthetic as well as de-constructively analytic, we can easily feel ourselves not well served by a graduate training prizing critical analysis to the exclusion of all else (see also Campbell in Chapter 1.5).

2. Literalism

I was ill prepared for the blinding literalism of many academics. Except when a researcher is particularly concerned with the conceptual evolution of a theory itself, he or she must always ask why the analysis in question exists – whether it's a theoretical argument or a case study – and what it seeks to do, how it might be more clearly articulated. In this way we can build with our resources, not bemoan their limits. A gardener fertilizes soil rather than castigating it; we need to do as much with what we read. I found myself suspect for asking what seem to me to be essential questions: given a problem of interest, how does a theory direct our attention – tell us where to look? When we look, what else do we see? Why?

When we can make sense of the "what else we see," we have a chance to extend and not simply reproduce our theory. When we can explain how that "what else" matters, we can build upon our theory at hand. That's one significant part of the search in "research" – yet it's vulnerable: literalists will attack such efforts as deviating from the boundaries of the given theory. I try to remind myself: we should break those boundaries, or those theories and our results will never improve. If researchers should illuminate problems – the lived experiences – being investigated in new ways, then they should not wear the same blinders that others do. Subordinating theoretical literalism to life experience, Herbert Blumer argued that the first principle of research was respect for those studied.

3. Reductionism

I did not know to beware of reductionists or labellers: that my work would be so identified with the "theory" I often used (no matter how I changed it in appropriating it!) that at times my work would be stigmatized, or even dismissed, independent of my specific arguments or the real product of the analysis at hand. I now believe academic cowardice (or, slightly more defensibly, prejudice) to be as pervasive as that in any other segment of society, the rhetoric of the academy's courageous search for truth notwithstanding. Students who take any risks at all are likely to learn what I found to be this hard lesson. They will take their risks and find that

some readers hand them labels rather than arguments. Rather than facing criticism about what they've written, they'll be called "idealists," or "too quantitative," or "Germanic," or "Marxist," or "neo-classical," or "basically liberals." I was not prepared to have doctoral or faculty colleagues reduce my work to clichés and labels, if not wholly bury or dismiss it in the process. Some earlier warning, some assault perhaps on my naiveté about the "older, wiser, brighter," might have helped me.

I didn't know that the ivory tower is a glass house. So let me offer a warning: academics and writers will throw stones. You're writing about Marx? You'll be asked, "Didn't he produce Stalinism?" You're writing about Daniel Bell? You'll be asked, "Didn't he edit a journal with Irving Kristol, who's even closer to Norman Podhoretz, who edits *Commentary* . . .?" You're writing about Habermas, something on communication? You'll hear, "Doesn't he write those long Germanic sentences . . . 'communication' you say?" The more concerned you are with the substance of what you're writing, the more bewildered you'll be by snide ad hominem argument, name-calling, criticism by innuendo, invocations of loyalty oaths – all in place of detailed, careful criticism of your work. When you hear this from friends, feelings of bewilderment will turn into feelings of having been betrayed. There's only one thing to do: keep writing. Your skin will thicken, and you'll discover who your friends are. But this, I found, was the hardest lesson to learn.

4. Shortcuts that short-change or mystify readers

I thought that I needed to use several expressions that were not quite ordinary, but I did not anticipate the results of doing that very well at all. Including "hermeneutic" or "subjective probability" or "hegemonic" in an essay that's not written just for "theorists" may be dismissed because those terms are hardly "ordinary language." At least two points arise here.

First, I do believe I should write in as plain and accessible a prose as possible, without sacrificing the precision of the analysis. Anything said in long sentences can almost always – or always – be said more clearly in short sentences. By improving my prose, I can gain the trust of the reader that I need, once in a special while, to use a less familiar technical term. Ideally, authors should earn readers' trust through the care and clarity reflected in their writing, sentence by sentence.

Second, though, where is it written that an essay in sociology, planning, or philosophy should be simpler than an essay about biochemistry, microbiology, or zoology?[7] Anti-intellectualism too often comes masked in the clothes of the simple reader asking for something "easy to read." Laziness afflicts readers no less than authors. But that is no excuse for unnecessarily difficult writing, poor rewriting, inadequate editing, and so on. The effects of laziness upon authors are far more devastating, ultimately embarrassing, and ironically ineffectual.

So we should not confuse two issues: every author has the responsibility to be as clear and compelling, as editorially scrupulous as he or she can be, given the subject matter – but the responsibility only for that. The reader must not suffer an author's – a student's, a professor's, or a professional writer's – carelessness, laziness, or editorial fatigue; but that in turn is no reason for the reader not to work, not to think hard about what's written, or even to reread.

5. Jargon as a recipe for boredom

Nevertheless, I learned reasonably quickly not to use technical terms or the still more pervasive political clichés to which I've been too blind. Using unnecessary, unfamiliar terms does precisely what reviewer Barbara Grizzuti Harrison once criticized poet Adrienne Rich's political rhetoric

for doing: it bores the reader to disaffection. Jargon is a crutch with an ironic flaw: no one can walk on it (1979).

Graduate students are in a fix here. They have to read a scrambled, diffuse, rambling literature. In the social sciences and humanities they find polemical texts written in a variety of voices inevitably different from the students' own subjects. Every ordinary pressure, in the beginning at least, leads students to adopt sympathetically the style and sentence structure of the authors whose work the student finds particularly compelling. Yet that student must fight to write as clearly as he or she possibly can, for readers never to be met as well as for those indeed to be met. And that means only one thing: editing and rewriting, line-by-line, paragraph-by-paragraph, subsection-by-subsection (until it all fits together).

The only way I know to begin this process, and perhaps to relearn it with every new essay, is to have a critical friend read my work and show me, in a sentence here, sentence there, how to avoid jargon and write more clearly. The year following my dissertation was, I am grateful to say, full of such criticism. Friend Shimon attacked substance and style alike. Beside an all too typical polemical passage I'd written, one of his marginal notes read, "How dead does the horse have to be before we can stop beating it?" He had a way of making a point. After looking at the sentences he shortened, at all the periods (or "full stops") he inserted, I thought for a moment that perhaps his editing was a pointillist painting. Friend Victor worked on French health policy issues; he edited in a complementary way. Circling various phrases, he'd noted in the margins, "B.E.L." I knew better than to take the notation as a French adjective. I asked him to translate. Each of these circled phrases, he told me, reflected a "Bastardization of the English Language."

Slowly my friends were making their point. We write to convey an argument to someone. As Shimon might put it, every use of an unfamiliar phrase in a text can drive away readers the way that a strange object in a soup might deter diners. Writing with jargon is often just repulsive, and authors suffer the consequences along with their readers.

6. Daring and caring to be different

I did not appreciate the risks of being different. Learning slowly, I found that at times we have to ask research questions in new ways if we are to find new answers. If we shape answers to ready-made conclusions, our results are likely to be banal because they are predictable. We might answer important research questions not by asking what Marx, or Freud, or Keynes saw but (if we have learned from others' work) by asking what we now see that's important and surprising in the particular cases we are investigating. What reactions – considered thoughts and feelings – does our material evoke in us that have not been noted again and again? What's intriguing, fascinating, challenging, worrisome, threatening, hopeful, confirmable in what we see? Why?

When we respond to these questions, we write as authors who speak from experience – the experience of research, of continuing and careful search, of asking honest questions, of facing a situation and being able to wonder about it with all the care deserved by the case at hand. When we let ourselves care about what we are investigating, we find, as Hannah Arendt suggests, that caring and thinking have deep connections.[8] If we can explain what we see and what others may care about too, we will have something to say and our readers will have as much to think about.

The forced separation of thinking and caring sterilizes writing. Many social scientists forget that objectivity comes not from the divorce of intellect and emotion, but from processes of criticism in a community of inquirers (as Karl Popper wrote long ago and as Hilary Putnam and Martha Nussbaum argue so eloquently today).[9] Such criticism embodies the passion for inquiry, the passion to find out, to clear up confusion, to reveal processes not recognized before,

to be right in an argument whose other side seems deeply misleading. Far from being free of it, objectivity requires both passion and respect; respect for previous thoughtful and sensitive work, and passion to write as sharply, clearly, and insightfully as possible.

Consider it another way: authors bored with their material will bore their readers. Fascinated and intrigued authors who work to be clear can pass along that fascination and intrigue to their readers. But authors who suppress all emotion and care, passion and motivation, in a misguided quest for a detached objectivity are likely to murder their own prose. This is no appeal for a parade of an author's values, wishes, fantasies, or political biases. But authors should make plain, not hide, the significance and mystery of their subjects.

7. Fantasies of completeness

I did not know, but I learned slowly, about the lure of completeness – and equally, of course, about the temptation to mail off half-baked ideas, assertions without arguments, arguments without recognition of others' work.

Authors who send a few essays to journals for review can learn a lot, about both their own writing and the idiosyncrasies of the journal review process. Some comments from reviewers will be about the submitted essay: how it's crafted, how clear it is or isn't, how it's argued. Those comments turn the review process into a real learning process that generates constructive criticism and suggestions for helpful changes.

But there will also be other types of comments about the essay's general style, philosophy, or method. These comments simply indicate whether the author has knocked on the right door: does the essay fit the style of the journal, the type of audience that it seeks to address, the philosophy of the editorial board? Sometimes, though, the comments imply that the editor has sent the piece to a wacky reviewer; that happens.

One early article of mine was rejected as "a-historical and incomplete" by one journal, but accepted six months later as "an original contribution" by another. I cared less about their general judgments than about their specific suggestions to improve the text (when they provided some). So I ended up publishing the essay in the latter journal. The point: some, but not all, journal referees and editors can help us revise our writing, just as some colleagues can, but truly helpful ones will be equally hard to find.

What then of the lure of completeness? In some cases this is a compulsion – to be perfect or not to finish, for example – and there may be nothing to do but to look elsewhere for productivity, or for professional help. But many times an author really can avoid the dangers of overzealously having to read one more book, to include one more source, to go over it all one more time. Showing the work to colleagues can help a bit. But if you hold on to something that others whom you respect still advise you to submit and publish, the problem's likely to be more one of fear than of craft. Maybe other good counsel can help.

There's always more to be done. In the well-meaning search for depth, we can pile pages of notes upon pages of notes, type quote upon quote – and never have anything to show. Not showing our work means, practically, not being able to learn from the responses of others, as readers might puzzle over these arguments but find those interesting, or undeveloped, or novel. Not showing a draft – a tentative if not terribly rough one – means cutting off the ideas, suggestions, encouragement, and stimulation that feed everything we do in the first place. So the search for completeness feeds not just a state of conceptual hunger (one source of always wanting to do more) but a state of social isolation too: having nothing with a legible beginning, middle, or end to show a few people familiar with the issues, we cannot learn from anyone's advice and

counsel, if only from their "Section 3 is the weak part" or "The point is never made clear" or "How do these sections go together?" Such comments might not seem to say much, but they can be extraordinarily helpful.

But there's another problem of completeness that's common to graduate thesis writing and "first articles." As writers we can often confuse "introductions" with "backgrounds," and we can lose months. One doctoral student I know felt compelled, in a political-economic study of regional development, to begin his dissertation with four chapters, running 120 pages, that explained and introduced the methods of political economy, historically, analytically, and critically. His doctoral committee noted that several introductory political economy texts already existed, told him to take those first 120 pages out of his dissertation, and suggested that he begin with the next chapter, the first discussion of the particular problem of economic development in question. Ouch.

The introduction to an essay or graduate thesis should introduce the essay, or the thesis, not the subject matter. The introduction should tell the reader what's coming, what to expect, and why. Then a section or chapter can provide substantive background, but only as specifically necessary for the particular discussion to follow. To avoid overly formal beginnings, we might wish to write a prose that flows as smoothly as fiction, but we can hardly assume that we have the gifts of novelists. Too often, though, authors try to ease into their topics as they presume they have the gifts of accomplished storytellers, and we wind up with a supposedly analytic argument of thirty pages whose point isn't made clear until page fifteen and whose reader experiences far more confusion than clarity.

So I came to face the daily contradiction: (1) I had to write for actual readers and listen to their howls and nastiness when they responded to what I thought were decent drafts, and (2) I had and have somehow to believe in myself – or in my political or ethical commitments – enough to persist. Above my desk for many years was a quote from playwright William Golding, who wrote, "I know I'm not a critic's darling. But if I believed in what they wrote, I'd have slit my wrists a long time ago. No one likes criticism . . . You have to do the best you can . . . and keep on going."

8. Overcoming distraction and procrastination: two hours a day!

I learned, too, to guard against distraction, but this was a continuing battle at best. Almost anything else I could do in a day would offer more immediate gratification and assurance of a decent outcome than writing.

Writing and doing research is uncertain, ambiguous, and precariously balanced between saying the trite and obvious and writing obscurely and opaquely. This feeds the temptation to read just one more book or article that might vindicate our argument (or, we dread, tell us that someone has already said just what we hope to say). In competition with the time for writing, a thousand distractions easily appear as necessary tasks, vital obligations, simple duties, and one-time-only opportunities. Those tasks will be doable, the obligations fulfillable, the duties perhaps impeccably performed, the opportunities there to be seized and enjoyed. But without writing regularly, writing will suffer: continuity will simply evaporate. One's prose voice will be uneven or plural; discontinuity will cost dearly in terms of repeated and miserable start-up costs: hard as it can be to write, it can be even harder to begin. Tempting reasons not to write always arise – and to write anything, you have to resist those temptations. We can always find reasons to wait until just before deadlines come, but if we wait till then to write finally, we'll lose much valuable time. That's time we've lost for rewriting as well as for research, for discovering and transforming the argument and its significance every bit as much as assembling the raw materials.

The best way to avoid these many tempting distractions turns out to be simple, a challenge to implement, but profoundly important: *make a regular time to write each day*. Keeping that time to write means we do not go for meetings, movies, meals, coffee, walks, library tours, bookshop visits, tête-à-têtes with friends: it means that we write paragraphs, paragraphs that go together. If one day we don't know what to write, that's a problem to allow to percolate in the remaining twenty or more hours in that day – not in tomorrow's time to write. If it sounds as if we might as well say, "Write during the same time each day and keep to it *religiously*," it is not because of anything theological, but because it illustrates the commitment and the discipline that sustained writing demands of us. Violinists do it; basketball players do it; we can do it – every day, two hours a day, no matter what.

The subject matter at hand never expresses itself; to have the insight, hunch, or solution in our mind won't get it onto paper or into legible form: we must make the effort, with our hands no less than our minds, to construct and to craft the paper. We must say a resolute, "No" to all those distractions that threaten to pull us away from the difficulties and the miseries, the uncertainties and the ambiguities of writing: "No" even to reading when we should be writing sentences into paragraphs, paragraphs into sections, sections into essays . . .

Taking a class at Tanglewood, composer and conductor Andre Previn made the essential point: "If instead of making music you think about it, fantasize about it, that's a lost day. Down the drain, you'll never recapture it" (Drees Ruttencutter, 1983, p. 85). Nothing could be truer of writing. I can think and think and think about a problem, whatever that means. But only when I try to write through it do I make progress both conceptually and textually. So now I tell myself and my students not just to think some more about a problem, but to "think with your fingers": write and rework, manually; rewrite, and show others the product. Think about it as physical labour, and your mind will follow and even lead.

It's fascinating to watch the spillover from this cultivated routine, this habit, this daily discipline. Something in the rest of our day or our week must feed this daily appetite. Writing this way can help us – push, stimulate, require us – to develop research skills to keep pace, but only if we write pieces with beginnings, middles, and ends to be shown to others and criticized. Otherwise, we risk amassing facts and details and later bits of argument into an amoeba, an ill-defined mass without structure or shape. What can begin as the resolution to avoid a thousand distractions, then, can develop into a skilled discipline that combines research activity with the craft of writing, every day, just two hours a day.

In addition, daily writing provokes thinking. Many people write not only to order ideas but also to try actually to figure things out, to tease out the implications of their hunches, of what they seem to "think." We can write to work through problems we see, or to come to terms with a problem we care about. If it's possible to show coherent drafts to others and learn from what strikes them, so much the better.

9. Knowing when not to listen: cynical voices

But no one had warned me about what one might call "keeping cynicism at bay." I wasn't prepared for the naysayers, the pessimists, or, actually, the cynics and the self-indulgent. If we need to take risks and write, we must hope and believe that in our fields we can do better, that we can learn, that we can dispel a few of the myths that we inherit, that several other people might also care enough about the issues that interest us to help us extend or refine or reframe our draft as it now may be.

To write is to offer an argument, a way of understanding something. But offers can easily fall flat. The naysayers outnumber the plucky by at least 10:1; the cynics outnumber the hopeful by

at least 100:1, and the pessimists outnumber everyone else by the same ratio. This majority is not silent. If we get involved in only 25 per cent of the opportunities we have to discuss what's altogether wrong with this analysis, why that analysis can't work, or why that approach is fundamentally inadequate, we may well just forget ever doing any new work of our own, taking any risks of our own. Paralysis is abetted less by pluralism than by cynicism, and it comes cheap.

I do not mean that we should not listen to advice. But we have to consider not only the advice but who's giving it as well. Are they already set against the type of research we're proposing or considering, the arguments they're supposedly responding to? Are they likely only to respond to a general impression, to give us a pre-packaged idea, or to expound some general perspective in the guise of specific advice? Colleagues and friends can watch, advise, warn, or encourage, but only the person wishing to write can take the risks to write.

10. Yet another demonstration of what's been shown

I knew only a little about the internal distractions: the dangers of the *idée fixe*. That important realities like racial inequality are true, and can be shown to be true, is often far less important than showing in new, more powerful ways just how they are true.

John Austin remarked once, "Fact is richer than diction" (Austin 1961: 195). The world will always supply us with more than our pet theories or conclusions lead us to suspect. This does not necessarily disconfirm what we expect, for it can lead us to new ideas and insights. Any writer must certainly work in the face of ambiguity and uncertainty to bring order out of chaos, order out of an infinity of detail and possible descriptions. But our problem of research is often far less to prove a point (Power matters! Surprise?) than to ask how something in the world works, happens, is possible, is connected, or might yet be. Simply to amass evidence for a conclusion already reached leads quickly to others' suspicion, distrust, boredom, and one's own loss of credibility: for here we have not a search for knowledge but simply the selective presentation of evidence to support a point. That someone can find evidence to support a position is only as interesting as the position itself. The sixth thousandth demonstration that in yet another case "the market solves" or that "state policy favours the capitalist class" becomes banal, unless the research shows us something new about how that market works, how a policy favours one class and oppresses another. Like all inquiry, neoclassical and critical research need not only replicability but ever more powerful answers to the "how" questions.

Consider an example. That planners can be powerless in a given setting is a thesis, or a plaintive cry, as old as the profession. Taken by itself, the thesis is likely to evoke a response like, "So what else is new?" The research problem here is to explore just how, in previously unexamined ways, social relations of power (influence? authority?) and powerlessness *work* to provide whatever "power" planners might have in particular settings. Better, perhaps, as Berkeley sociologist Neil Smelser suggested in office hours one day, the problem is always to explore the *variations* in the investigated world. Upon what do the differences (e.g., in planners' power) depend? A given policy serves the ruling (or working) class – depending on what (variables)? Can anyone (who?) affect those variables? With answers to these questions, the research results become potentially "practical." A planner is more or less powerful in an agency if – what? Depending on what variables? If some of those variables can be influenced by planners themselves, or by other specific actors, then again the research results are potentially practical. Research is practical or impractical precisely as it directs readers' attention to aspects of the world they need to know about. Yet, political practicality aside, research can open up issues, suggest new connections and contingencies, show how something cared about in the world comes to happen in the first place. But one more breathless demonstration of an idée fixe will most likely advance not research but fatigue and new suspicions of researchers' hidden agendas.

11. Less flattering qualities of academic intercourse

I wondered about the so-called community of scholars that I might join as an assistant professor. Would this be a real community in any sense of the word? Competition seemed rampant; specialization separated members of the same field; jealousy and envy afflicted academics no less than any other group of people. Or more – a friend attributed a saying to George Steiner: "The reason that academic politics are so vicious is that the stakes are so low." That sounded funny, but, untenured, I certainly felt that I had a lot at stake.

What could one hope for in this academic "community of scholars"? The most common dissertation advice I'd heard concerned limits – "Take a manageable problem and don't try to do too much!" – but that would hardly fuel the fires of difficult and sustained research activity. I'd heard "manageable" as "conventional and mundane," which struck me as the kiss of death. Looking back many years later, I can see my mistake: "manageable" did not mean "not exciting" or "not fresh and new." It meant "achievable," so that I could live to tell the story and continue whatever good work I might have been lucky enough to do.

In graduate school, of course, the isolation of dissertation writing leads to crazy swings of mood. Feeling lost in three literatures at one moment, the glimmer of a fresh idea may feed what my friend Leland Neuberg called satirically "the Einstein complex" of PhD students. So dissertation committee members might provide desperately needed encouragement in one meeting, but smash unbridled hopes and stubborn adolescent fantasies at a next meeting.

We write at the edges of the shadows of giants. Seeking to go forward, we cannot really follow the baseball player Satchel Paige's advice: "Don't look back – they might be gaining on you!" So how, then, are we to write?

The problem is, in our time and circumstance, in our place, not for all time and places, what can we say to illuminate some problem that we care about? Had Marx and Weber, Foucault and Freud and company "solved" our problems, we might have little research to do. But we take these authors as seminal because they posed problems for us in fresh and powerful ways, and they continue to show us aspects of the world we still glimpse only dimly. We have further problems, though, because their world is not quite our world. So our questions evolve: given our inherited ways of thinking in and about the world, some ways of paying attention to what's going on around us, what now do we want to understand better, to recognize, to watch out for, to live with? We can address these questions as members of a scholarly community dispersed in time and space.

If we imagine readers bored with what fascinates us (and perhaps fascinated with what bores us), we might never be able to write. To write, we might need solitude, but we also need the textual companionship of other authors, living or not, who also cared to write about the problems we confront. As we come to realize that our problems have intrigued others in other times and places, and that these problems still call for attention, we may feel more confident and less isolated in our writing. Strangely, though, many of the people in our day-to-day lives may know very little (and care less) about the problems we're writing through – and that's as it must be. This peculiar social circumstance of the academic life makes it all the more important for us to remember that our textual companions can be as important to us as those with whom we eat and drink. Machiavelli put it this way when he wrote of his days near Florence in 1513:

> On the coming of evening, I return to my house and enter my study; and at the door I take off the day's clothing, covered with mud and dust, and put on garments regal and courtly; and re-clothed appropriately, I enter the ancient courts of ancient men, where received by them with affection, I feed on that good which is only mine and which I

> was born for, where I am not ashamed to speak with them and to ask them the reasons for their actions; and they in their kindness answer me; and for four hours of time I do not feel boredom, I forget every trouble, I do not dread poverty, I am not frightened by death; entirely I give myself over to them.
>
> *Machiavelli (1961: 142)*

How many of us, upon entering a library or personal study, begin to converse with the wise and brilliant voices of our past?

12. Help others help you: share coherent drafts

I had little sense of how my writing and research would progress. Fascinated in graduate school with the philosophy of science, as a new faculty member I had to write instead about issues of planning and policy. Full of sketchy ideas that could have taken me years to work on, I quickly discovered the coercive magic of deadlines.

If I had to present a paper in Baltimore at the Conference of the American Planning Association, I knew that I had to have a paper in hand, and twenty copies to distribute, by the day I'd have to leave home. Deadlines concentrate the mind and move the fingers, writing longhand or typing. Most of what I've written, and certainly the best of it, has been written originally for conference obligations I'd taken on months ahead of time. For months I'd ruminate, collect notes on the side, make false starts, and have the pressure slowly build until finally I produced a draft, honouring earlier outlines or not, that I could rewrite and rewrite and rewrite and show others. I could then put those drafts with carefully connected beginnings, middles, and ends in the mail, not in a file drawer: I tried to submit these quickly to journals for possible publication, once the conference deadline had forced me to produce a showable draft.

I learned a fundamental rule: never, never, never sit on a draft, never withhold a decent draft from the potentially helpful review of the referees of appropriate journals. Such drafts were coherent wholes, I thought, by the time I submitted them; yet nearly complete as they were, they often still needed 10–20 per cent more revision. Most often, journal referees' comments really did help to guide those revisions. With comments in hand, some much more helpful or relevant than others, I could usually revise and publish the submitted essay.

Often I found that I faced split reviews from the anonymous referees. One would recommend publication, perhaps with suggested modifications, and one would be more inclined to ask for substantial revisions before recommending publication. Editors usually dealt with this situation by making the cautious decision of asking me to rewrite and respond explicitly in a cover letter to both sets of reviews. So often I would respond by making clear where I could, or could not, rewrite to honour a reviewer's suggestion, and my apparent efforts to consider the reviewers' comments seriously almost always sufficed to have the journal editor accept my partial revision.

Of course I've also broken this fundamental rule; I have four or five papers sitting in files taking up space and waiting for revisions or just for stamps and an address before being resubmitted to an appropriate journal. Nevertheless, it's a mistake to have done all the work to draft a paper and not to submit it for publication – not to respond then to a reviewer's comments or, finding that impossible with one journal, not to resubmit it to another potentially more interested one. Drafts of papers should collect not dust but referees' comments and the acceptances of editors.

No matter what I understood about the journal editors' review processes, though, still I found that coercive deadlines organized my writing. At first I castigated myself for needing these crutches, but as I came to recognize the perpetually distracting forces and random demands that

disrupt an academic's time and attention, I began to appreciate the deadlines as guideposts for my own constructive use.

13. Sketch conclusions early, draft introductions last

Finally, I did know one thing, but I practised it only too falteringly. Bob Biller taught his Berkeley students to write their policy papers backwards: to begin with their tentative conclusions and then to do the research to attempt to disprove or to corroborate them. I found I did this naturally but not literally. I could not quite begin with a page actually labelled "Conclusions," but I would often, especially under the pressure of a deadline, make and then remake a short list of "Here's what I really want to say."

That list always evolved. Half of the original items remained to the end, and half evaporated as empty or wrong-headed or overly ambitious. Similarly, half of the final list reflected additions made along the way. But towards the end, as I saw that indeed "these five points are really what I want to say," then finally I found I could write the essay at hand. Before that, I had too little idea of where I was going. I couldn't write the beginning until I knew what the argument was going to be, but I didn't know the argument until I started with my bets, with my hunches and questions about a problem, and then worked out pages here and there about the major points that I thought my research would support. Often a page that I'd write would lead me to one simple thought that I hadn't had before, and then with it, I'd have to put aside the page and begin again to explore the point at hand. The search process in such writing is slow, preparatory work. But what's preparatory and what's not? There's no telling beforehand.

All that's clear is that writing involves cycles and circles, persistence and regularity. Before there can be the page(s) on "Tentative Bets/Possible Conclusions" that I now ask students to sketch, there must be some immersion, some decent familiarity with the material at hand. Otherwise, what is anyone to have conclusions about? But at the same time, without the sense of an anchor or destination, a rough idea of possible conclusions, and more than a broad purpose, one's writing can often be far too broadly formulated. Writing, like speaking and like acting, is all about choice and judgment. By balancing the exploration of a territory with a perpetual checking of desirable destinations, we avoid getting too far off track and lost. Given a problem and some study of it (by experience, knowledge of the literature, interviews, and so on), it's important, and enormously practical, to be sketching, refining, revising, adding to one's conclusions as – and not only after – one does the work to substantiate them. Only with a sense of destination can one decide ultimately which roads to take. At times it still sounds backwards to me, writing tentative conclusions so early on, but it's enormously helpful even so.[10]

Notes

1 Originally framed as "Notes on the craft of academic writing," this paper dates from 1984. Convinced that misery loves company, I wrote it for students and junior academics also struggling with writing. Edited slightly since, it appears shorter and edited once more for inclusion here.

2 Overreaching and underachieving, my dissertation was entitled, "Questioning and shaping attention as planning strategy: toward a critical theory of analysis and design" (UC Berkeley, 1977). Studying an environmental review office's staff in a metropolitan planning department, I explored the ethics and politics of the selective attention shaped via planners' practical (speech act) questioning as they did basic planning analysis of project proposals.

3 See also Wildavsky's *Craftways*, Transaction Books. New Jersey. 1989.

4 That essay on "Listening: the social policy of everyday life" appeared as Chapter 7 in *Planning in the face of power* (University of California Press, 1989), and its themes underlie and animate most of what I have written and tried to explore further since then. Both *The deliberative practitioner* (Forester 1999) and *Dealing with differences* (Forester 2009) develop theoretical and practical aspects of the (extra)ordinary practice of listening to and with others (see, e.g., Forester 2012a, 2012b, 2013).
5 These books would eventually appear as *Planning in the face of power* (1989) and *Critical theory, public policy, and planning practice* (State University of New York Press, 1993). Both explore practice in contentious political contexts: the former found an audience in planning schools, the latter – perhaps too theoretical for planners, too planning/policy oriented for political theorists – seemed to find no audience at all.
6 See Jeremy J. Shapiro, "Reply to Miller's review of Habermas' *Legitimation crisis,*" *Telos*, March 20, 1976, 170–176.
7 We can find it, actually, in Alfred Schutz's "postulate of adequacy," but that has its own problems. A. Schutz, *Phenomenology and Social Relations*, ed. H. Wagner (Chicago: University of Chicago Press, 1970).
8 See Hannah Arendt, "Thinking and Moral Considerations," *Social Research* 38, no. 3 (1971): 417–446.
9 See, for example, Karl Popper, *Conjectures and refutations* (New York: Basic Books, 1962); Hilary Putnam, *Reason, truth, and history* (Cambridge: Cambridge U. Press, 1981); and Martha Nussbaum, *Love's knowledge* (New York: Oxford University Press, 1992).
10 Written in 1984 (see note 1), I broke my own rule with this paper and did not submit it for publication because I believed it was too idiosyncratically personal. Fifteen years later I discovered that it had had an underground existence at Cornell's writing program, and I edited it slightly then to share with interested students and junior faculty.

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PART 2

The craft of research

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2.1
INTRODUCTION

Patsy Healey

Filled with a mixture of enthusiasm and nervousness, the novice researcher often feels the need to get immersed in empirical material at the start of a research project, to gather data and somehow build up a study from this. The chapters in this part of the book urge all researchers to resist this temptation! (See overall introduction.) Instead, it is important to stand back from the issues and problems which lead us to be interested in a specific topic and to consider the nature of the research to be undertaken. Such reflection will lead to some significant conceptual and methodological choices which will shape how a research question is set, the nature of the analysis undertaken and the way the validity of findings are to be judged. What issue or problem is the focus of the research study? What contribution will it make to the accumulation of planning knowledge, and/or addressing a specific, practical dilemma? What paradigms – perspectives on the world – shape the way you as the researcher are thinking about the problem or issue and how does this affect the relationships to be explored? How does this shape the methods which will be appropriate for the research? Who is the audience for the study and how will this influence how its robustness and validity will be judged?

The chapters in this part aim to help planning researchers think about these broader questions. But do not expect simple answers or recipes. There are no neat single answers. As outlined in the overall introduction, the planning field draws on several disciplinary traditions and intellectual perspectives. There are even disagreements about the focus of the planning field itself (e.g., contrast the definitions of planning provided by Moulaert and Mehmood in Chapter 2.5 and by Webster in Chapter 2.6). This eclectic diversity is a potential strength, as it provides a rich conceptual and methodological array available to the researcher. But approaching this range demands a creative mixture of imagination and rigour. Careful choices have to be made about how an initial research puzzle will be translated into a specific research question, analytical approach and detailed methods. To be robust, given the range of possibilities, researchers in our field need to think explicitly about what will make the findings of our project acceptable as valid 'truth claims', with what caveats and in what contexts. If such choices are not well made and well justified, findings of a study will be exposed to the kind of criticism which Webster makes (Chapter 2.6). The chapters in this part are therefore aimed to set you thinking. Some help to scope the range within which specific choices about strategy and method will be made. Others present a particular approach, from within their preferred perspective. Do not expect agreement! If we

authors were all in a seminar room together, some disputes would surely break out. Readers are encouraged to think about these as a way of clarifying the choices each will come to make. The rest of this chapter sketches out the rich resources to be found in the chapters.

In Chapter 2.2, du Toit introduces the general challenge of designing a research strategy and the range of possibilities for research studies in the planning field. He encourages researchers to think about the logic of a research strategy. He introduces various typologies which have been developed to distinguish different kinds of research. He links these to broad paradigms (positivist, interpretive and critical) about how to think about the world and how it works which inform methodological choices. He then develops these typologies to classify research designs in the planning field, richly illustrated with examples of such studies for readers to follow up. In Chapters 2.5, 2.6 and 2.7, authors position themselves very clearly within a specific perspective, and readers may be interested to review du Toit's chapter after having read them. However, du Toit does not argue that we have to make an exclusive choice between perspectives and methods. A research design may mix inspirations. In such cases, it is even more important to be explicit and systematic about choices made and the resultant logic of a research study.

Making such choices to arrive at a research design is a complex and value-laden process, even where a study is positioned within the positivist paradigm so common in the sciences. As a result, research activity is infused with ethical issues. In Chapter 2.3, Thomas and Lo Piccolo review how values enter choices involved in research activity, and the kinds of ethical issues which arise at different stages of a research project. They introduce the role of formal codes of research ethics and explain their value and limitations. They underline, however, that doing research is a social practice, only marginally affected by formal codes. Much more important is the research culture. They argue that what we research and how we do it are deeply affected by the institutional position from which we engage in research and the reasons why we do it. For researchers in the planning field, these institutional issues are especially challenging, because of the action orientation and value commitments which infuse the field (see overall introduction). Thomas and Lo Piccolo underline that there will be struggles over research paradigms and appropriate methods, with claims that some are more 'robust' than others. Such struggles may not be easy – for example, when a novice researcher begins to pull away from the preferred paradigm of a supervisor. Thomas and Lo Piccolo emphasise the importance of developing a culture of research practice which encourages such critical questioning and recognises that different research designs and logics are possible. Campbell in Chapter 1.5 describes her efforts to build such a 'community of researchers' among a group of doctoral students.

The next two chapters expand the discussion to consider research designs which involve comparisons, especially cross-national comparisons. These became common in the context of increasing integration among the planning research community in Europe from the 1990s, but are increasingly conducted across all parts of the world. In our field, it is inevitable that such studies have to confront the complex political-institutional differences between countries and cultures which affect how planning activity is understood and practiced. In Chapter 2.4, Booth introduces the challenge of cross-national research. He argues that all comparisons involve making some assumptions about similarities and differences. In the planning field, our focus in making comparisons is typically on qualities of places and of governance activity. Booth draws on a long research career comparing the philosophy and practice of development regulation between England and France. Apparently similar intervention tools and practices turn out, on investigation, to arise from very different governance cultures and histories, which shape the institutions and practices through which planning work is done. Booth also notes the significance of language, some concepts in one language being untranslatable in another. He argues that research

designs involving cross-national comparisons need to allow the time and space to grasp these important contextual dynamics.

In some of the work he refers to, Booth introduces the challenge of working with research teams in different countries and the importance of a common framework to guide the work of the different teams. This challenge is addressed directly in Chapter 2.5, where Moulaert and Mehmood draw on a range of large-scale, EU-funded, multi-sited research projects conducted in recent years. The particular focus of these projects has been on processes of social innovation in urban neighbourhoods. This work has been inspired by a normative concern to explore how collective action can make a difference to people's lives in situations of difficulty and marginality. The teams involved in this work have come not only from different countries but also have been multidisciplinary, demanding what Moulaert and Mehmood call a 'post-disciplinary' approach. The key to holding such an ambitious research challenge together lies in the development of a 'meta-framework'. They recognise that each situation investigated will have its own special characteristics and that the individual research teams need the freedom to work with the distinctive dynamics of each research site. But, at the same time, the individual cases need to be developed so that they can address the questions specified in the meta-framework, which itself is developed collaboratively among the research team as a whole. The challenge is then to identify recognisable patterns across the cases, which can be substantiated by robustly investigated empirical findings. Ontologically, this approach is positioned in a combination of du Toit's 'interpretive' and 'critical' traditions. It also draws on the reflexive methodology of inquiry advocated by pragmatist philosophy, and especially the 'holistic' approach to analysing the relations between 'parts' and 'wholes'.

In Chapter 2.6, Webster reiterates the importance of rigorous research design and robust empirical methods in the conduct of planning research. Like Moulaert and Mehmood, he is concerned with how generalisable knowledge can be created from disparate experiences through the search for, and testing of, patterns of behaviour. But he approaches this challenge from a different intellectual perspective. He locates himself within the behavioural tradition of emerging work on evolutionary spatial economics. His focus is on understanding the relationship between patterns of behaviour and patterns of urban form. This leads him to focus on individual behaviour, in contrast, for example, to Booth's focus on culture. Ontologically, therefore, he is a 'methodological individualist'. Epistemologically, he advocates the research methodology promoted by Karl Popper for the generation and refutation of hypotheses about such patterns. The core of his chapter is about what the methodology of refutation means for the design of a research project. But Webster does not lead us into an abstract discussion. He is deeply concerned with the development of robust ways to address the questions which politicians and practitioners ask – about the relation between health and urban form, or the behaviour of land and property markets. His chapter is a call to improve the quality of planning scholarship through carefully focused empirical investigation.

In Chapter 2.7, Palermo and Ponzini draw on a very different planning culture, with respect to both academic discipline and planning institutions and practices. In Italy, the planning discipline and its practices are still deeply influenced by the architecture and design disciplines. This leads Palermo and Ponzini to an interest in the way designing a project can itself be a tool of research inquiry. They introduce their discussion by positioning this tradition within a review of planning theory perspectives. They contrast the 'positivist', rational decision-making approach with pluralistic and communicative approaches, and seek to evolve the latter into an explorative research method centred on producing project ideas. In this way they arrive at 'design hypotheses', similar to those referred to by Webster. They then illustrate these approaches through the

work of three leading Italian planners from the 1930s to the present, arguing that the working methods of these exponents have been neglected in more recent discussions of planning theory and method. Palermo and Ponzini's argument is that linear conceptions of how research feeds into planning processes need to be abandoned in favour of more recursive and interactive approaches, as Moulaert and Mehmood also advocate. They also make a plea for more interaction and synergy between social science and architectural traditions of research in the planning field.

These chapters thus develop different approaches and arguments about the conduct of research in the planning field. They all advocate thinking carefully through conceptual and methodological issues, to focus a study into a researchable design, the logic of which can be explained and justified clearly. This may seem a hard challenge, but it need not be overcomplicated or ambitious. Nor should the search for an orderly research logic crowd out insight and imagination. As the reflections of researchers in Part 1 highlight, research inquiry is often a messy process, through which researchers develop their conceptual ideas as we learn through our inquiries. Research work is full of surprises, and flashes of understanding, along with the potential for wrong turnings and confusion. An initial research design may serve merely to provide helpful stepping stones or walking sticks as we embark on a journey into the as yet unknown. In the end, however, the report on that journey – the findings – has to be pulled together into a coherent and convincing account. A robust research study which produces useful findings lays out its approach explicitly, specifies the conceptual basis on which relationships are investigated, reports how and why empirical data were collected and the limits which apply to it, and explains the specific contexts in which such findings may have validity as 'truth claims'. In a world where knowledge claims fly about often with little empirical support, this is surely an important contribution which planning research can make.

2.2
RESEARCH DESIGN

Jacques du Toit

Why design research?

'Research design' can be defined as a logical plan to maximise the validity of research findings. It is often equated to an architectural blueprint for research. The notion of a logical plan deserves emphasis – a research design, sometimes also referred to as a research strategy, involves a particular way of engaging empirical reality that will allow the answering of a research question as unambiguously as possible. However, planning students and researchers often have limited exposure to what constitutes a research design and which designs are applicable to planning research. Consequently, the act of designing a study before collecting data is easily overlooked. Planning students often pose a research question and then proceed to collect data, only to find the data not really answering their question. It is not uncommon to read proposals claiming a study to have a quantitative or qualitative design, or that the design will be a set of interviews or questionnaires. Quantitative or qualitative research is not a design in itself, but merely an indication of the type of data to be collected. Similarly, a set of interviews or questionnaires is also not a design, but merely a form of data collection. What is the blueprint of the study – that is, what do the interviews or questionnaires form part of – a survey, case study or an evaluation?

Planning students and researchers are confronted with numerous textbooks, few of which emphasise the importance of design, let alone present typologies of designs applicable to planning research. This chapter discusses some of the more important considerations when designing research and presents a typology of ten prototypical designs for planning research. It then outlines each design's subtypes, specialised subtypes and noticeable areas of application in planning research and practice. The chapter maps a wide methodological terrain, thereby helping to contextualise subsequent chapters dealing with the application of particular designs.

Considerations when designing research

Designing a study involves choosing and customising a prototypical design that will maximise the validity of findings given the nature of the question being asked. Findings accepted as 'valid' have been obtained by a careful and systematic procedure accepted by others as appropriate. Although the research question is of overarching importance, there are several other considerations. You may have a topic that is strongly associated with a particular research paradigm

requiring you to use a particular design, or you opt for second best because you lack the type of data you need to answer the question. Nevertheless, all research has limitations, and the art of research design is to put together the best possible study, having weighed up all the relevant considerations.

Considerations can be grouped into methodological and practical issues. Methodological considerations are arguably more important because of the scientific imperative of producing valid knowledge, especially in an academic context. Practical considerations pertain to issues of time, money, politics, logistics, etc. Such considerations usually require you to improvise, like settling for a single in-depth case study rather than a large-scale survey. How you weigh different considerations when designing a study depends on good research practice, but also experience and intuition.

It is not possible to cover all possible considerations here, or how particular studies ought to be designed in particular contexts. Instead, I discuss six of the more important methodological ones, including: (1) research context, (2) research aim, (3) research purpose, (4) methodological paradigm, (5) methodological approach and (6) source of data.

The context and aim of the research

Probably the first consideration is the context and aim of the research. For whom and for what reason is research being conducted, and how will it influence the design of a study? A distinction is commonly made between the 'blue-sky' research of academics and the 'quick-turnover' reports of consultants, more appropriately termed basic vs. applied research.

Basic research is driven by theoretical aims and is conducted in academia for purposes of advancing fundamental knowledge about planning and the world that planning deals with. An example would be a survey at a housing project to test a theoretical model of residential satisfaction. Ultimately we understand residential satisfaction better, which may or may not lead to the improvement of housing projects. The scientific community is the primary audience, while research rigour tends to be quite high. Most planning theses and journal articles, although often driven by practical concerns, are probably closer to basic than applied research, while examiners and peer reviewers are likely to scrutinise the extent to which the research design has contributed to valid findings.

Applied research is driven by practical aims and is conducted in practice for purposes of offering practical solutions to concrete problems. An example would be a post-occupancy evaluation that informs authorities how residents are experiencing a housing project. Ultimately the findings are used to improve the housing project, although they are not necessarily codified as knowledge in scientific publications. Practitioners are the primary audience, while research rigour tends to be varied or moderate. Research in planning practice is probably closer to applied research, because clients are likely to expect the research design to solve a particular problem within time and budget (see Harris' experience in Chapter 1.3).

Basic and applied research represent two ends of a continuum with no clear distinction between them. Few studies, especially in planning, are purely basic or applied. While master's and doctoral studies tend to be more basic than applied due to the academic context, the very subject matter of planning often requires research into real-world problems, resulting in the generation of practical solutions besides theoretical findings (see overall introduction). Still, the more a study conforms to the systematic procedures of basic research, the more valid and defensible findings are likely to be. Researchers will probably prefer structured designs that allow greater control over the research process. The more a study conforms to applied research, the more

emphasis practically useful findings are likely to have, with a preference for flexible designs that can accommodate a combination of approaches.

The purpose of the research

Since research questions ought to be answered as unambiguously as possible, it follows that the purpose of a study, which is inextricably tied to the research question, is probably the most important consideration. What logic will be followed – that is, how will the study engage empirical reality, and what type of design will it require?

Exploratory research focuses on relatively unknown or little understood phenomena in order to generate more specific research questions for subsequent descriptive or explanatory studies. Exploratory research is therefore typically qualitative, providing a basis for further quantitative or hypothesis-testing research. **Descriptive research** simply paints a picture of reality, though rigorously and accurately. Descriptive studies, or studies that ask 'what', are arguably the most prominent type of research in planning, as many studies aim to provide a better understanding of the nature of planning itself and the reality that planning deals with. Since we usually plan on aggregate levels, descriptive research abounds into what reality looks like on neighbourhood, city or regional levels and what ought to be done about it. **Explanatory research** provides causal explanations for the occurrence of events or phenomena. Explanatory studies, or studies that ask 'why', are characteristic of hypothesis-testing research, which is less prominent in planning. Planning tends to be concerned with what 'X' looks like and what should be done about it, rather than the extent to which either 'Y' or 'Z' has caused 'X'. However, this is not to say that one type of research is less important than another. Planning certainly requires a body of knowledge that is informed by various types of studies that complement each other. Hypothesis-testing research does become important when designing interventions that are meant to have a cause-effect impact on problems. Yet planning research then requires some concept of the causes of problems and the potential of specific interventions in addressing them (see also Webster's discussion in Chapter 2.6). **Interpretative research** focuses on the meanings people make of abstract phenomena such as human artefacts, including texts, discourses, narratives, works of art, etc., as well as human culture and experience. Content or discourse analyses of planning policies and documents, biographies of influential planners and cognitive mapping or place-studies serve as examples (see 'Textual and narrative studies' in Tables 2.2.1 and 2.2.2).

Formative research is driven by planning interventions for purposes of decision making. It therefore *informs* practice; examples include site and settlement analyses, as well as plan and policy analyses. **Evaluative research**, on the other hand, *evaluates* practice by diagnosing or clarifying problems, monitoring programmes and measuring outcomes and impacts (see 'Intervention' and 'Evaluation' research in Tables 2.2.1 and 2.2.2). Evaluation research is perhaps better known in planning as *ex ante* and *ex post* evaluation. **Emancipatory research**, such as feminist research and research highlighting social injustices, aims to raise people's awareness, dispel false beliefs and improve social conditions.

The methodological paradigm

Methodological paradigms are philosophies that permeate various facets of a study, albeit in very indirect or subtle ways. More specifically, a paradigm is "a general organizing framework for theory and research that includes basic assumptions, key issues, models of quality research, and methods for seeking answers" (Neuman, 2011: 94). Although a paradigm addresses various

aspects of scientific research, ranging from why we do research, what makes 'good' research, to what is considered ethical, paradigms are primarily about the nature of reality (ontology) and the grounds of knowledge (epistemology). Different paradigms have (very) different ontologies and epistemologies, and consequently very different requirements in terms of research design. What assumptions does a researcher make, knowingly or unknowingly, about reality and knowledge, and which designs fit those assumptions?

Usually, researchers do not consciously design a study with a particular paradigm in mind, unless one specifically conducts, for example, postmodern or feminist research to demonstrate the relevance of such philosophies in a particular area of planning. Still, if your entire study rests on a particular form of mathematical modelling or testing hypotheses (see examples in Part 4), you are clearly suggesting to your supervisor and others that you assume reality to be measured objectively, and that the knowledge produced by your study will have some kind of instrumental value, like intervening in cause-effect relationships to (hopefully) change reality for the better. On the other hand, if your study rests on in-depth interviews in natural settings, you are suggesting that people experience reality subjectively, and that knowledge is meant to help us better understand others' life worlds and experiences from their point of view. It is therefore important that researchers have at least some understanding of the different paradigms to ensure a degree of philosophical coherence throughout a study and, if necessary, defend any fundamental assumptions underlying the study. Creswell similarly argues that

> Although philosophical ideas remain largely hidden in research (Slife & Williams, 1995), they still influence the practice of research and need to be identified. I suggest that individuals preparing a research proposal or plan make explicit the larger philosophical ideas they espouse. This information will help explain why they chose qualitative, quantitative, or mixed methods approaches for their research.
>
> *(2009: 5–6)*

Methodological paradigms are, however, quite abstract and make up a distinct field of study within the philosophy of science. Neuman (2011: 90–122) provides a useful overview and summary of the main paradigms in the social sciences. The three most prominent paradigms influencing planning research are positivist, interpretive and critical social science. Pragmatism, which is synonymous with the notion of pragmatism in planning thought (Healey, 2009), is nowadays considered also a research paradigm (Feilzer, 2010). Feminist and postmodern research are "nuanced positions" rather than distinct paradigms, while feminist research is associated with critical social science (Feilzer, 2010: 6).

Positivist social science models itself on the natural sciences. The reason for research is to discover universal laws that will allow us to predict and control reality. Reality should therefore be researched *objectively* because of objectivist ontology – that is, reality exists independently and beyond the influence of people. Consequently positivist researchers have a strong preference for quantitative designs, especially experiments (see Table 2.2.2). Most transportation, urban modelling and early environment-behaviour studies (based on environmental determinism) are typically positivist. **Interpretive social science** stands in direct opposition to positivism, aiming to describe meaningful social action that will allow us to understand social reality. Reality should therefore be researched *subjectively* because of subjectivist ontology – that is, social reality and their meanings are socially constructed and constantly changing. Interpretive researchers therefore prefer qualitative designs, especially textual and narrative studies and field studies. Socio-spatial analyses, urban-history studies and more recent environment-behaviour studies are typically interpretative.

Critical social science emphasises *relevance* – research ought to debunk myths and empower people to change society. Although critical researchers may also have strong ontological and epistemological standpoints, they are more concerned with how their research may lead directly to positive social change. Bent Flyvbjerg's notion of phronetic planning research is a form of critical social science or participatory action research (PAR) applied to planning (see Table 2.2.2). Critical social science is evidently democratic, while favouring qualitative and participatory designs in particular, so that people being researched are involved in the process itself. This is especially the case with feminist research, or research that has emancipatory purposes, such as to empower communities or protect community interests against harmful planning decisions. **Pragmatism** also emphasises relevance – research ought to solve problems in the real world and improve the human condition. It accepts multiple social realities, and is likely to employ any combination of designs or a mixed-method design selected according to what would work best to solve a particular research problem. Pragmatic research is typically evaluative or formative, while most planning research in recent decades can in some way be seen as pragmatic more so than any other paradigm (du Toit, 2010: 155–157). Postmodern research is rather radical – rejecting almost all forms of research, especially positivist and even interpretative social science. Research can merely express the subjective self, entertain and stimulate. Reality is seen as chaotic and fluid without any real pattern or master plan, while postmodern researchers often focus on deconstructing text through textual, narrative, discourse and conversation analyses.

The methodological approach

Methodological approaches revolve around the use of different types of data, particularly **quantitative** (numerical) and **qualitative** (textual and visual) data. Researchers are usually well aware of the differences between these two approaches. Consequently, researchers often choose a design on the basis of their preference for a particular approach, whereas the purpose of the research ought to carry more weight. Researchers should rather consider the scientific merit of their study, and, if requiring an unfamiliar approach, seek help or see it as a learning opportunity. Still, the two approaches are not necessarily exclusive of each other, while studies are either quantitative or qualitative only because one of the two predominates.

> Qualitative and quantitative approaches should not be viewed as polar opposites or dichotomies; instead, they represent different ends of a continuum (Newman & Benz, 1998). A study *tends* to be more qualitative than quantitative and vice versa. Mixed methods research resides in the middle of this continuum because it incorporates elements of both qualitative and quantitative approaches.
>
> *(Creswell, 2009: 3)*

Creswell sees the **mixed-method** approach as residing in the middle of the continuum. However, this does not mean that mixed-method research simply uses both quantitative and qualitative methods. A mixed-method study is one in which "a researcher mixes or combines quantitative and qualitative research techniques, methods, approaches, concepts, or language into a single study" (Johnson & Onwuegbuzie, 2004: 17, quoted in Yin, 2006: 41). More specifically, this "mixing" and "combining" takes place through either "within-method triangulation" or "between-method triangulation" (Gaber & Gaber, 2004: 228). A study is therefore not necessarily a mixed-method study if it contains both quantitative and qualitative data. In fact, many studies contain both, but tend to emphasise one of the two, while using one to corroborate or triangulate findings from the other. A mixed-method study is "more than simply collecting and

analyzing both kinds of data; it also involves the use of both approaches in tandem so that the overall strength of a study is greater than either qualitative or quantitative research" (Creswell, 2009: 4).

In a **participatory** approach the focus shifts from the type of data to actively involving people in the research process who would otherwise be passive subjects. This approach is about participation and action to bring about positive change and emancipation. Researchers use their skills to generate data and information that other stakeholders may use for decision making and action, while such data and information could be quantitative, qualitative or mixed – whichever serves the purpose.

The source of data

Sources of data can be primary, secondary or hybrid. **Primary** data are newly collected data, typically in raw format, which are then analysed to address a specific research question. **Secondary** data have already been collected and presented in a particular format, which is usually more cost-effective, but there are likely to be limits in terms of reanalysing the data to address a different research question. However, given the enormous advances over the last decades in accessing and manipulating digitally available information (the most typical example being the Internet), researchers ought to make much more use of secondary data sources. Certain databases, such as census databases, can be seen as primary or secondary in the sense that the data are in semi-raw format, but have already been collected and captured. A single project that uses both primary and secondary data has **hybrid** sources of data.

Having discussed six important considerations when designing research, we can now identify designs applicable to planning research and show how they are associated with each of these considerations.

A typology of designs for planning research

Table 2.2.1 lists ten prototypical designs: (1) surveys, (2) experiments, (3) modelling, simulation, mapping and visualisation, (4) textual and narrative studies, (5) field studies, (6) case studies, (7) intervention research, (8) evaluation research, (9) participatory action research (PAR) and (10) meta-research. Surveys, for example, are typically associated with basic research, theoretical aims, description, positivism and a quantitative approach with primary data. Similarly, evaluation research is associated with applied research, practical aims, evaluation, pragmatism and a mixed-method approach with hybrid sources of data. Each design also has a unique core logic that distinguishes it from other designs. The logic of surveys, for example, is to generalise about groups of people or similar objects more so than any other design; experiments attribute causality between variables; modelling and simulation predict relationships between variables, etc. A researcher can therefore ask, what is the overall logic of my study, and what will the most appropriate design be?

It should be noted that the design of an actual study may not conform to all the associations depicted in the typology. Not all surveys, for example, are positivist – case studies are used in applied research as well; some evaluations are purely quantitative rather than mixed, etc. Actual research design is usually more complicated and messier than the prototypical designs we read about in textbooks, while researchers face various other considerations, especially practical ones that are not depicted here. Still, because the typology shows how different designs *tend* to be associated with different considerations, it helps researchers to be mindful of methodological

Table 2.2.1 A typology of designs for planning research

Design considerations						*Research designs*
Research context & research aim	*Research purpose*	*Methodological paradigm*	*Methodological approach*	*Source of data*	*Core logic*	
Basic (towards applied) contexts Theoretical aims	Descriptive Explanatory	Positivist	Quantitative	Primary	Generalisation	**Surveys**
					Causal attribution	**Experiments**
				Secondary (numerical/spatial)	Prediction/illustration	**Modelling, simulation, mapping and visualisation**
	Interpretative Exploratory Descriptive	Interpretive social science (towards pragmatic)	Qualitative	Secondary (textual)	Interpretation (hermeneutical)	**Textual and narrative studies**
				Primary (towards hybrid)	Interpretation (ethnographical/ phenomenological)	**Field studies**
					Contextualisation	**Case studies**
Applied contexts Practical aims	Formative Evaluative	Pragmatic	Mixed-method (towards qualitative)	Hybrid	Intervention	**Intervention research**
					Evaluation	**Evaluation research**
	Emancipatory	Critical social science	Participatory	Primary	Participation/action	**PAR**
Basic contexts Meta-theoretical aims	Meta-analytical purposes	NA (Non-empirical)	NA (Non-empirical)	NA (Non-empirical)	Various core logics	**Meta-research**

Source: du Toit & Mouton (2013:132).

Table 2.2.2 An outline of designs for planning research (continued on next page)

Research designs	*Research design subtypes*	*Specialised subtypes*	*Areas of application*
Surveys	Cross-sectional surveys		"Environment-behaviour studies" (Moudon, 2003: 371–373); Site/settlement analysis and assessment (LaGro, 2008: 79)
	Longitudinal surveys	Cohort studies, panel studies, tracer studies	
Experiments	True experiments (aka laboratory experiments)	Pre-test – post-test control group design; Solomon four-group design; post-test-only control group design; within-subjects design; factorial designs	
	Quasi-experiments (aka field/natural experiments)	Nonrandomized control group pre-test – post-test design; simple time-series design; control group, time-series design; reversal time-series design; alternating treatment design; multiple baseline design	"Environment-behaviour studies" (Moudon, 2003: 371–373)
Modelling, simulation, mapping and visualisation	Modelling; simulation	Artificial neural network modelling (ANN) (Boussabaine & Kirkham, 2008); mathematical modelling (Wang & Vom Hofe, 2007); structured equation modelling (SEM); computer simulation; gaming; simulation booths/models; scenario analysis (Ratcliffe, 2008: 222–226)	Urban and regional planning (Wang & Vom Hofe, 2007); object-oriented programming and chaos modelling in planning (Cripeau, 2003: 152–153); "Built environment futures" research (Ratcliffe, 2008: 222–226); environmental simulation; participatory planning/design (Dandekar, 2005: 133)
	Mapping; visualisation	Social network analysis (SNA) (Pryke, 2008); socio-spatial analysis (aka space syntax) (Khattab, 2005: 141–158; Penn, 2008: 18–25)	SNA in project management research (Pryke, 2008: 171–172); environmental measurement/mapping; site/settlement analysis and assessment (LaGro, 2008: 23–40 & 139–168); "Space-morphology studies" (Moudon, 2003: 376–377)
Textual and narrative studies	Content/textual analysis	Qualitative/quantitative content analysis; legal hermeneutics; philosophical hermeneutics; literary criticism	Plan/policy analysis and assessment (Gaber & Gaber, 2007: 103–134)
	Discourse/ conversational analysis		Socio-spatial analysis of spatial policy (Richardson & Jensen, 2003); urban policy research (Jacobs, 2006)
	Historiography; biography	Philosophical/conceptual historical research	"Urban-history studies"; "Typology-morphology studies" (Moudon, 2003: 368–370 & 374–376); feminist research in built environment professions (Morton & Wilkinson, 2008: 45–46)

Field studies	Ethnography (aka participant observation)		"Environment-behaviour studies" (Moudon, 2003: 371–373); site/settlement analysis and assessment; plan/policy analysis and assessment; community participation (Dandekar, 2003: 30–31 & 42–43; Gaber & Gaber, 2007: 17–44; LaGro, 2008: 79)
	Phenomenology		"Environment-behaviour studies"; "Image studies" (Moudon, 2003: 368–373)
Case studies	Single/multiple case studies	Holistic/embedded single/multiple case studies	"Place studies" (Moudon, 2003: 373–374)
	Comparative case studies		Comparative urban political research (Denters & Mossberger, 2006); cross-cultural/national research in the built environment (Steinführer, 2005)
Intervention research	Site/settlement analysis and assessment	Design precedents (Groat & Wang, 2002; LaGro, 2008); plan/design/policy programming (Zeisel, 2006: 51–53)	Site/settlement analysis and assessment (Ellis, 2005; Glaumann & Malmqvist, 2005; Wlodarczyk, 2005; Wang & Vom Hofe, 2007; LaGro, 2008)
	Plan/policy analysis and assessment	Plan/design/policy review (Zeisel, 2006: 53–59)	Plan/policy analysis and assessment (Gaber & Gaber, 2007)
Evaluation research	Diagnostic/ clarificatory evaluation (aka ex ante evaluation)	Needs assessment studies; feasibility studies; market studies	Planning of sustainable settlements (Ellis, 2005); site/settlement analysis and assessment (Glaumann & Malmqvist, 2005; Wlodarczyk, 2005; Wang & Vom Hofe, 2007; LaGro, 2008)
	Implementation evaluation; programme monitoring	Pilot implementation studies; reputability studies	Plan/policy analysis and assessment (Margerum, 2002)
	Outcome/impact evaluation (aka ex post evaluation)	Experimental/quasi-experimental outcome studies; environmental/social impact assessment studies; cost-benefit/utility studies; planning balance sheet (PBS); goals-achievement matrix (GAM); post-occupancy evaluation (POE) (Zeisel, 2006: 59–64)	"Picturesque studies" (Moudon, 2003: 370); Planning of sustainable settlements (Ellis, 2005); Site/settlement analysis and assessment (LaGro, 2008: 84–85)

(*Continued*)

Table 2.2.2 (Continued)

Research designs	*Research design subtypes*	*Specialised subtypes*	*Areas of application*
PAR	Technical/scientific/ collaborative PAR		"Design research" (Groat & Wang, 2002: 99–132)
	Practical/mutual and/ or collaborative/ deliberate PAR		"Design research" (Groat & Wang, 2002: 99–132); planning of sustainable settlements (Ellis, 2005)
	Emancipating/ enhancing/ critical science PAR		Community-based planning/design (Al-Kodmany, 2001; McGrath *et al.*, 2005); feminist research in built environment professions (Morton & Wilkinson, 2008: 45); "Phronetic planning research" (Flyvbjerg, 2002); public participation (Cogan, 2003; Horelli, 2005)
Meta-research	Literature reviews; research synthesis	Meta-analysis	
	Conceptual analysis		
	Typology/ model/theory construction	Grounded theory; constant comparative method; mathematical modelling	"Typology-morphology studies" (Moudon, 2003: 374–376); urban and regional planning (Wang & Vom Hofe, 2007)
	Philosophical/ logical/ normative argumentation	Logical argumentation (Groat & Wang, 2002: 301–340)	

Source: du Toit (2010: 125–128).

coherence. Recall the definition of 'research design' as a logical plan to maximise the validity of findings – the more methodologically coherent the research is, the more valid the findings are likely to be, at least in the context of a particular methodological paradigm and approach.

After choosing a design, a researcher might have to make further choices between different subtypes. For example, what type of survey should be used – cross-sectional or longitudinal? If longitudinal, should a specialised type be used such as a cohort or panel study? Table 2.2.2 outlines the ten designs together with their subtypes, specialised subtypes and areas of application in planning research and practice. The areas of application listed here are based on a review of methodological sources in planning between 2000 and 2010 and are not meant to be exhaustive. Nevertheless, Table 2.2.2 provides a detailed map of various designs in planning research and the more noticeable areas of research associated with them. Most planning studies tend to feature case studies,[1] evaluation research and surveys. However, the largest proportion of articles in the *Journal of Planning Education and Research* published between 1996 and 2005 are actually based on meta-research (research about research), which includes literature reviews, research syntheses, conceptual analysis, the construction of typologies, models or theories, and philosophical or normative argumentation (du Toit, 2010: 161–170). Longitudinal surveys and true experiments are seldom used in planning research. The former aims to track social change over time, which is a very costly and committed form of research, while the latter examines causation under laboratory conditions.

Conclusion

This chapter discussed six important considerations when designing research and presented a typology of designs applicable to planning research, including their subtypes, specialised subtypes and areas of application in planning research and practice. One way of exploring the chapters later on in this book would be to evaluate them against this typology. The typology has a number of possible benefits: it provides (1) greater awareness of prototypical designs for planning research, (2) a more standardised methodological language by differentiating methodological concepts and terms and (3) an interpretive map to help researchers locate an appropriate design in relation to important considerations, such as the research context, aim, purpose, etc. Once an appropriate design has been chosen, researchers can give their study a much clearer methodological identity and discuss their methods of data collection, analysis and interpretation in more detail within the framework of the overall design of the study.

Note

1 Planning researchers sometimes use the term 'case study' when they are actually referring to the locality where they conducted a survey or field study, for example. Most planning studies happen to be in a specific setting, but that does not necessarily make it a case study. Case studies are about *unique* events or phenomena in which the logic is to contextualise such events or phenomena.

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2.3
PLANNING RESEARCH ETHICS

Huw Thomas and Francesco Lo Piccolo

Introduction

This chapter will discuss why researchers of all kinds – faculty, students, consultants – need to be ethically sensitive. The chapter is written against a background of what has been termed an 'ethical turn' in many disciplines (Loo, 2012: 10), and an increasing regulation (and bureaucratisation) of planning (and other) research conducted within universities. Although some argue that there are no ethical principles which are specific to any occupation,[1] in this chapter we argue that the circumstances of planning research, at least, raise distinctive ethical issues.

PhD students undertaking planning research in most countries of the global North, and more recently in other southern European countries,[2] are now required to gain formal approval that their research projects are ethically sound. In many countries research by undergraduates and master's students also requires such approval.[3] Central to the chapter's preoccupation is the relationship between regulating the behaviour and actually improving behaviour. Regulating is one thing; getting real improvement is another. Under what circumstances might we expect a code of ethics to ensure ethical behaviour by planning researchers?

The chapter begins by considering the ethical dimensions of research practice. These will differ according to the way research practice is understood. It then asks why regulation of researchers' conduct is now such a preoccupation of universities and researchers. Finally, it examines the nature of codes of ethics and when they are likely to be most effective.

Why be concerned about research ethics (and when should we be concerned)?

The research process can be divided into:

1 framing a research problem/question
2 designing an appropriate study, including fashioning research instruments
3 conducting the research, including the analysis of data in relation to the research question
4 dissemination of findings

Within the positivist tradition (see Chapter 2.2), these activities are supposedly discrete and sequential. Within other traditions this is not even always an ideal, but the activities still remain central to defining what is being undertaken as the practice of research.

A great deal of the discussion about research ethics, and often the concerns of university administration of research ethics, focuses on point 3, with occasional attention to point 2. This is perhaps understandable, because in these aspects of research decisions are often made which have a direct impact on others – such as people, other beings, and places. Choices are never entirely technical matters. At the very least, virtues such as honesty, integrity, and perhaps transparency are expected of decision takers. Most would accept that the ethical content of decision making, even when it is described as 'technical', is greater than this. For example, the standard requirement that whenever possible researchers ensure that participation (by humans) in their study is voluntary would fall under point 3. The typical justification for wanting to secure voluntary participation is that this respects the fundamental humanity and autonomy of each and every human being (Small, 2001). This is an ethical position, and one which we will have more to say about later in the chapter. Securing consent to participation may not always be achievable; whether this means the project should not continue in that form is itself an ethical judgement. That judgement will depend upon how important it is that participation is voluntary, and in what ways it is important.

Writing up research can be considered part of the analytical process. Writing clearly involves choices – of evidence, interpretation, and language – as researchers make out a case as to what they believe they have established. This is perhaps most obviously so in ethnographic research (Geertz, 1988). Sandercock and Attili's (2012) ethnographic research of racialised conflict over land taken from First Nation inhabitants of western Canada underlines the ethics of this aspect of research, as the 'writing up' was in the form of a film. They provide an interesting account of the ethical choices they made in editing the film, which is an especially public artefact and also one where contemporary publics are often 'savvy', and aware that choices and techniques are involved in producing what they are viewing. In their case they took a collaborative approach to the process, which was consistent with their ethico-political beliefs. In fact, all writing up of research intends to persuade the reader of that of which the researcher is already persuaded. But in writing up planning research, like any social research, the commentary (like the study itself) has within it a picture or model of humanity, of what people are and what motivates them, a picture that is inevitably normative.

The choices may be more apparent in writing ethnography, but argument and persuasion are central to the presentation of all academic and consultancy research. Hence, in contemporary academic writing, a considerable portion of citation is simply establishing the credibility of the author. This has been so for some time, particularly in positivistic physical science (Martin, 1992, 2008). This is a long way from the idea that references simply cite sources. One can argue that the *de facto* convention of academic writing has changed so that references are now properly used in this way; however, even if we accept this contention, the silence over the practice itself raises ethical issues.

Points 2 and 3 may attract most attention, but points 1 and 4 are also shot through with value judgements, and as such can be argued to be ethically significant. In relation to point 1, many have argued persuasively, albeit in slightly differing terms, that the framing of research questions is central to the political struggles in planning and environment policy over establishing the dominance of a particular way of seeing and understanding the world within which a particular, favoured policy direction can be argued to be 'inevitable' and 'natural'.[4] A great deal of planning

research is commissioned by, or undertaken in partnership with, planning agencies of various kinds. If such projects accept the conceptual framework within which the planning agency works, then it will be underpinning, and helping to reproduce, this way of seeing and understanding the world, and the political consequences which follow. In planning research on issues such as cultural heritage, environment and public health, social justice and equal opportunities, this may be especially evident. For those undertaking action research with communities, on the other hand, ethical stances cannot be avoided as they seek to collaborate, and empathise, while retaining a distinct identity and role as researchers (Attili, 2009).

Arguably, all research is undertaken in order to contribute to a shared understanding of an aspect of the world by some community or other – usually scholarly, but often policy-related, or simply a social grouping. This means that dissemination is important to the research undertaking. Some also argue that integral to the definition of true social research of any kind is the construction of reasons for action/change, which inevitably involves disseminating research findings and their implications (Flyvbjerg, 2012). Planning research, certainly, is typically action-oriented, and hence dissemination will be a key part of doing the research (see overall introduction). Sandercock and Attili (2012: 162–163) exemplify this: "Our research strategy is to put as much effort into community dissemination and follow-on planning as we put into the research". Such a stance involves ethical positions in relation to what kinds of intervention to make, in relation to what communities and institutions, and even how to react to threats, implied or otherwise, from those in positions of power who may be seeking to influence dissemination (Imrie and Thomas, 1995; Healey, 1991/2009; Flyvbjerg, 2012).

We have argued in this section that ethics/values are unavoidable within the *process* of research. Within some ontological and epistemological traditions, they are also bound up with the conceptual frameworks we use to understand the world. The metaphysical underpinning of experimental science, its ontology and epistemology, is only one way of seeking an understanding of the world. Within social science, positivism, which is an approach framed by the same metaphysics as experimental science, is fiercely contested (e.g., Flyvbjerg, 2001). Values are central to various (different) critiques of positivism within social science. Thus, it is criticised by some for ignoring, and having no resources to address, the value-context within which social scientific problems/issues are framed and pursued (Flyvbjerg, 2001). Others suggest that to make sense of individual and social activity, social science must understand the systems of meaning (and values) within which individuals and groups make sense of the world and generate reasons for acting (Winch, 1958). Conceived in this way, the academic fields of social science and the humanities might be characterised as activities which seek understanding rather than seek knowledge (Collini, 2012). One implication is that understanding them might sometimes involve feeling one's way into sets of values and ways of life which have ethically questionable dimensions.

Regarding research as intended to help us understand the world better, and hence differently, has additional sets of normative implications, particularly for a discipline like planning, because understanding the world a certain way suggests ways in which it can, and should, be changed. Most planning research (especially when intended to directly inform practice) does not make any reference to any sort of ethics or ethical theory. This does not imply that there is no (normative) ethical theory at the base of the research, but just that it is implicit, and sometimes at a non-cognitive/conscious level (Lo Piccolo and Thomas, 2008). It would be a significant advancement in our planning research practice to make these implicit normative ethical foundations explicit.

Seeing people a certain way is part and parcel of behaving towards them in given ways – the two are inseparable. This implication of research holds, whether one is taking oneself to be de-mystifying power-relations in a major planning project in Denmark (Flyvbjerg, 1998) or

exposing the failure of planners to grasp the concrete realities of the communities they were affecting with their policies, as Jacobs (1961) and Dennis (1970,1972) did in their different ways. In these cases, Geertz's (1988) argument that a process of persuasive interpretation of circumstances is central to ethnographic research rings true. But even self-consciously dispassionate studies, such as Forsyth's (1999) account of struggles over urban expansion in Sydney or Le Goix and Webster's (2008) theorising of gated communities, still invite us to understand the social world in a certain way, and that way will be shot through with values. This is impossible to capture in any code of ethics, for the latter's bullet points can get little beyond 'don't lie; don't fabricate' and the like; and that is not what is going on when research is being written up.

In the case of planning, the quality and quantity of knowledge (depending on sources of information, availability and treatment of data, level of access to policy decisions, established goals and priorities) of the planning researcher are given privileged status in some contexts and can influence and/or affect people's lives, their status, and even their citizenship rights. In many cases (and more often in recent times, due to the position of contemporary entrepreneurial universities), planning researchers are looking for institutional requests and commitments, with significant ethical implications. Thomas (2010) has discussed how planning research can be helpful to those who would promote and sustain hegemonic policy discourses and that legitimacy is acquired through claims to a particular kind of rationality and objectivity. In other words, planning research as it is developed in universities – as a product of institutional requests – may result in the university's helping to justify and sustain a particular set of governance arrangements. It will be able to accomplish this because of the university's standing as the guardian and constructor of (a supposedly neutral and objective) knowledge. Thomas was writing about the UK; yet, as Healey (2008) has argued, different countries (and sometimes regions within them) have different institutional contexts within which universities operate. These provide different opportunities for influencing policy, and different kinds of ethical challenges.

It is clear that ethics and values are intimately bound up with research activity, whether conducted within the planning field or in other disciplines. Yet it does not follow that research should be regulated using codes of research ethics and procedures for gaining ethical approval. After all, good behaviour is always a social norm, but not all areas of life are formally regulated. In relation to social research, and planning research more specifically, it is only in recent years that formal procedures have begun to constrain researchers. In the next section we discuss why this has happened.

Why regulate research?

Research is a social practice which finds its definition and rationale within a particular way of conducting and ordering social relations and institutions more generally – that is, a way of organizing social life. While curiosity, learning and teaching, and social roles (teacher, priest, elder, guru), which are at least in part based on some conception of possession of greater or lesser knowledge or understanding, may be widespread in human societies, research as the kind of activity conducted in contemporary universities is distinctive of a society in which the natural and social world is viewed primarily as an object capable of being studied, understood, and ultimately managed (and planned). Because research has become a particular kind of social practice, it is subject to social regulation, which has, historically, been both informal and formal, depending on the sociopolitical context of the practice of research.

In our view, the general regulation of social science research, and codes of ethics as part of this, has coincided in many countries with a number of related phenomena. Prominent among

these is the increased emphasis on the importance of research as an activity which defines a university and is also a major source of revenue, a feature that has always been prominent in some countries, but by no means all (Rüegg, 2004; Collini, 2012). Secondly, there has been an acceleration of research, with minimal teaching, as a career path – both for established faculty, who may simply relinquish other duties, and for newer faculty, who are recruited as researchers and intend following, if possible, a research career. The research-based PhD has become almost universally required as a qualification/apprenticeship for academic life. Running alongside these developments, social research institutions have continued and perhaps intensified their roles as authoritative producers of knowledge, particularly for policy development that professes to be based on evidence (Allen and Imrie, 2010; Thomas, 2010). So, universities and research institutes are doing more research and are claiming it is important, and more and more academics are thinking of themselves primarily, or at least in large measure, as researchers. It is in these circumstances that it can seem attractive and appropriate to devise and subscribe to a code of research ethics as part of a tacit professionalising of the researcher's role and practice. It is arguable that the planning field still has an insecure place in the academy, and for such a discipline a clear commitment to ethical self-regulation, including adherence to a code of ethics, can be an important part of the continuous assertion of academic legitimacy. Stengers (1987) discusses the process by which 'soft' sciences are becoming 'harder' in order to acquire broader recognition. The process of 'hardening' a discipline comes from the need for gaining broader social legitimation and reaching a higher status for its members. In order to do so, a discipline has to accept the 'rules of the game'. For example, there is pressure to follow the methods and practices of more 'structured' and – temporally – well-established sciences. The establishment of professional codes of ethics is a (modest) step in this search for academic legitimation.

What are codes? And how might they help regulate or improve behaviour?

In discussing professional codes of ethics for planning, Taylor (1992) rehearses a distinction which also appears regularly in discussions of research ethics (e.g., Small, 2001): is a code a set of ethical guidelines which could apply to any occupation, or at least any professional occupation, or does it identify challenges and issues which are particularly pertinent to particular kinds of activities? The appearance of virtues such as honesty, objectivity, and respecting confidentiality (e.g., Resnik, n.d.) in research ethics codes illustrates that to a large extent what is being asked of researchers is simply that they be of good character as they go about their work (Thomas, 2009). Yet it is certainly the case that different kinds of research tend to bring distinctive challenges and dilemmas. The case studies in Lo Piccolo and Thomas (2009) illustrated ethical challenges which had resonance for researchers in planning, but were likely to have little or no resonance for researchers in experimental science. For example, at the core of Porter's (2009) concerns is exploring the feasibility that a non-indigenous researcher researching the lives and views of indigenous peoples can free herself from the objectifying imperial gaze that has structured (and defined) indigenous/non-indigenous relations over centuries. She is rejecting the research position of the experimental researcher on ethical grounds.

It follows that codes of ethics which are sensitive to the circumstances under which particular occupations or activities are undertaken are likely to be more useful. In the case of research, appropriately different codes will be needed by researchers engaged in activities involving people, other sentient beings, other organisms, or objects, for example. Different codes may also apply to people engaged in activities which can potentially cause widespread harm. These are just some examples of differences which many would regard as warranting special mention in a

code of research ethics. Researchers who wish to avail themselves of guidance from a code need to unearth one that is appropriate for their kind of research, therefore. It should be noted that what counts as a significant difference between types of research is itself an ethical judgement. So, for a group of people to agree about even the need for, and broad lineaments of, a code, they must already share significant ethical perspectives.

This consideration has a bearing on another of Taylor's points. He argues that central to a code of ethics must be a vision of what the activity (e.g., planning research) should be, a vision of what MacIntyre (1985) might refer to as the characterisation of excellence in that activity.[5]

Such visions are contestable. This is not always obvious because often discussions of research ethics focus on the minutiae of day-to-day research activity. Interpersonal relations do matter, and researchers must be sensitive to the ethical implications of factors such as the power relations bound up in social life. The research activity itself can create distinctive kinds of social relations which will have their own power dynamic, and at times one that is questionable (e.g., Porter, 2009). In addition, those engaging in research, in any capacity, are inevitably embodied and socially located (in terms of gender or class, for example) as they engage in the research process. As Sayer (2005) has argued persuasively in relation to social class, these characteristics, and their associated hierarchies, can have a moral dimension because they have judgements of personal worth bound up with them. But, as already discussed, different research traditions will have very different visions of what constitutes excellence in research (see Chapter 2.1), and hence what kind of research practice a code of research ethics is seeking to foster.

Yet we must remember that if researchers are intent on doing wrong, no code of ethics will persuade them otherwise. Research on cheating by university students has something to teach us here. Reviewing a long period of field research in various settings and using a variety of methods, McCabe, Treviño, and Butterfield (2001) argue that having an ethical code which forbids cheating (e.g., plagiarism, etc.) alone is ineffective; but a code can be helpful within a school or university whose actions – at all levels from the corporate to the individual lecturer – make it clear that cheating is regarded as serious wrongdoing. In brief, the organizational culture is a vital component of shaping behaviour, and if the injunctions of a code are upheld, and in other ways seen to be relevant to day-to-day practice, then its detailed prescriptions may have some influence (see also Thomas, 2012). It is plausible to suggest that this is likely to be true of research ethics, especially as accounts of some celebrated scientific scandals point to competitive pressures within academia as important factors in causing people to do things they know are wrong (Broad and Wade, 1985). Getting the culture 'right' and embedding a code of ethics within it is unavoidably a collective activity;[6] central to this culture will be a notion of what constitutes better or worse, and possibly excellence in, research. Given the way that planning research is typically conducted – by small groups within a larger department or institute – it will be useful for the individual researcher to get consistent norms and values from all the networks that she operates within.

Let us suppose that the organizational culture within which a researcher is working is supportive of ethical behaviour, as it expresses it. In this context, how might a researcher identify circumstances in which it is appropriate to use a code and what might a code contain? These will be discussed in turn.

When does something fall under a code? Codes and ethical traditions

Codes of research ethics tend to contain a core set of concepts. Central to most are integrity and respect for persons. The current UK Economic and Social Research Council framework

for research ethics identifies what it calls 'six key principles' (ESRC, 2010: 3). These highlight the significance of:

- integrity, quality, and transparency;
- informed consent;
- confidentiality;
- voluntary participation;
- avoidance of harm to participants;
- independence/freedom from partiality and/or clear declaration of interest/partiality.

Small (2001) points out that the kinds of concepts just listed gain their meaning within an ethical tradition or theory which will itself have metaphysical underpinnings. Underlying the significance of informed consent and voluntariness, for example, is a liberal notion of respect for persons, which views the person as ontologically and morally more basic than, and prior to, any social entity. But liberal conceptions of what is meant by 'respect for a person' simply cannot be transplanted unchanged into, say, the kind of feminist perspective on life which emphasises the significance of our social being in constructing our individuality. As Small says, applying the notion of respect to social groups is not simply an extension of the Kantian notion of respect for individuals, but a different idea entirely. This kind of conceptual revision, and argument around it, is central to ethical life. It is an unavoidable part of the way in which we construct our social existence, and moral concepts have to be understood within these forms of life (MacIntyre, 1998: 1–4).

Small (2001) suggests that as a consequence, ethical codes are simply compromises between groups with fundamentally different ethical perspectives, a kind of lowest common denominator that all can live by. Not surprisingly, he goes on to argue that developing ethical behaviour among researchers should focus not on codes of ethics but on how to discuss ethical issues and reach agreement on ways forward, a thought to which we will return. If one follows MacIntyre's approach, even a lowest common denominator will be illusory – for the terms used will have been ripped from the context which gives them their full meaning. As a consequence, either they will be applied in ways which will seem arbitrary, even when agreeable to all, or, at other times, their application will be embroiled in irreconcilable conflict, such as research involving human embryos, or research which involves contact with largely undisturbed peoples, as concepts are interpreted within different ethical traditions.

As Christians (2000) points out, codes of research ethics developed in the context of positivist, 'value-free' science. This has shaped their form and content. One consequence is that the nature and purpose of research as a practice are usually not alluded to in the codes. It is assumed to be socially beneficial and value-free (as natural science is widely considered to be). The codes focus on the day-to-day practice of research itself, and within that, the researcher is viewed as detachable (including ethically detachable), at least in principle (and ethically) from that which is being researched.

This is particularly inappropriate for research such as planning research which involves, of necessity, an engagement with the value-saturated world of public policy (see overall introduction). For example, if planning is about a dialectical relationship between knowledge and action (Friedmann, 1973, 1987), then those who claim to produce planning knowledge will inevitably be implicated in the moral landscape of practice. As we know, most planning practices present ethical judgements and dilemmas. As Kaufman (1993: 113) highlights, "much of the behaviour of planners reflects both ethical choices and carries with it ethical consequences. Ethical

judgements are involved, sometimes explicitly but more often implicitly, in many planning activities including collecting and analyzing data, forecasting, cost-benefit analysis". So, if we consider and recognise the pervasive ethical dimensions involved in planning work (Kaufman, 1993), ethics is a relevant, even if not particularly discussed, component of planning research, which mainly derives from the continuous involvement of planning researchers in planning practices. Planning practice is inherently political, denying the rhetoric or stereotype of the planner as a value-free means-end technician who deals with "factual data but avoids the value questions of defining these objectives" (Klosterman, 1978). In those circumstances, good researching is partly defined by sensitivity to the politico-ethical implications of the research (Flyvbjerg, 2001).

So, planning researchers may sign up to a code of ethics and still disagree about whether the circumstances they find themselves in fall under the code at all, and – if they do – just how the code applies and guides them. Some time ago, one of the authors of this chapter conducted research into the way that issues of racial discrimination, racism, and social justice were understood within the daily practices of the British planning system (Krishnarayan and Thomas, 1993). It became apparent during this project that some participants who were committed to promoting race equality within planning saw their participation in the research as an opportunity to use the researchers as conduits for communication with others within and outside their organization. Without necessarily wanting to waive complete anonymity, they appeared to be seeking to use the researchers as 'backchannels'.

This kind of case raises a whole range of considerations. First, is it necessary that a researcher be sensitive to these kinds of aspirations and wishes on the part of participants? In the positivist tradition, where researchers claim to be able to 'stand outside' the 'subjects' of research, then the wishes and projects of participants are relevant only to the extent that they affect the quality of data gathered from those participants. Others would claim that the research project is itself an intervention in a power-infused social setting, and the researchers are ethically bound to recognise and react to this (e.g., Ladsong-Billings, 2000). A code of ethics which insisted on such recognition would challenge a still-significant tradition of planning research. Secondly, even if researchers agree that they should be sensitive to these kinds of aspirations on the part of the participants, a code of research ethics will not help them to act. General exhortations in a code to respect people, and even to promote social justice, are open to varying interpretations. In the case in point, researchers with differing understandings of what 'race equality' might mean – and hence how good or bad current circumstances are – will react differently to the (implicit) suggestion that they be 'used' by particular participants in a research study to promote the 'struggle' in a particular way (Thomas, 2000).

Conclusions

These considerations suggest that a code of research ethics can help focus researchers' attention when it is embedded within the research culture of the researchers' most significant reference group, and ideally beyond. The code must grow out of, and – when drawn upon and interpreted – contribute to, a continuing conversation within the research group about the nature and significance of its practice. Hence, central to planning research which has a sound ethical basis will be the development of a community of researchers which shares an outlook on what matters, and what the place of human life (including practices like research) is in relation to what matters. Within this community there will be shared terms of reference and vocabulary which allow principled, but constructive, discussion and disagreement about research ethics. In particular, they allow constructive discussion about why, when, and how research may be

appropriate. Within research communities, codes of ethics may have a role as rules of thumbs, or reminders of key dangers to researchers' integrity, but not as answers to day-to-day issues that arise in research.

Notes

1 See Ladd (1980), cited in Small (2001: 390–391).
2 It is worth noting how widespread this kind of concern has now become – for example, ethical approvals for research proposals are now required in some of the southern European university systems, such as those of Portugal and Spain. In both countries increasing attention is paid to ethical issues arising in social research, particularly with reference to those activities which involve the treatment of personal data or the engagement of children or adults unable to give informed consent.
3 In relation to PhD research. For the position of undergraduates and master's students we rely upon anecdotal data.
4 For example, Hajer (1995), Throgmorton (1996), Murdoch and Abram (2002).
5 Hendler (1990), too, notes the significance of ideals of excellence in relation to codes of ethics in planning.
6 McGinn *et al.* (2005) discuss the practicalities of developing an ethical culture within a research team.

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2.4

WHAT CAN WE LEARN FROM FRANCE?

Some reflections on the methodologies of cross-national research

Philip Booth

What can we learn from France? And if there is learning to be done, how might we best go about it? These were the questions that faced me when, nearly thirty years ago, I began to undertake comparative research in a country that is physically the nearest neighbour to the UK within the European Union, and yet seems in so many ways different from my own country. Not many of the assumptions that could be made about spatial planning in a British context seemed to work when applied to France. Knowing where to begin and what questions to ask and then to discover what might be the best explanations for differences was not an easy task. My quest was not helped at the outset by the lack of literature both on French spatial planning itself and on the theories and methodologies of comparison. What follows, therefore, is a reflection on a progress through the study of planning in another country in the light of literature which is now a great deal richer than when I started.

The chapter begins with a reflection on the nature of comparative research and some of the assumptions that are made, erroneously it will be argued, about the nature of the planning activity. It looks at reasons for undertaking comparative research and the understanding that has emerged of planning as a cultural construct, not an objective technological phenomenon. It then considers strategies for comparative research, using the work of Tilly (1984) and Brenner (2001) that categorises comparison according to underlying objectives. The final section considers the difficulties associated with language and the importance of history in understanding cultural variance.

The nature of comparative research

Learning from other countries and the desire to make comparisons have been fundamental to research activity in the field of spatial planning. In some senses all research in the field is about comparison, whether explicitly or implicitly, in that all study of particular cases or activities involves a framework that is drawn from examples with which we are already familiar. This is of course a gross oversimplification, and it is quite possible to argue, as Lijphart (1971) does for

the social sciences in general, that comparative research is only one element in a larger array of appropriate methodologies. But in the field of spatial planning, given that so much research effort is directed towards evaluating policy or assessing the performance of places, it remains the case that comparison is a major part of what we do. In this light, comparing places or policies within one country might not be so very different from comparing places and policies in different countries.

Indeed, the urge to compare across national borders is in many ways a highly laudable one. It demonstrates an explicit desire to learn from experience elsewhere. It is an antidote to insular thinking and local exceptionalism. It recognises that particular ways of doing things are not necessarily the best, or indeed the only, ways of dealing with the problems of spatial planning. That in turn means that research that compares spatial planning (in whatever way) in different countries must be of particular importance. And, on the face of it, comparative research across national borders should not be much more difficult than comparison within countries.

Such a view of comparative research is based on a series of assumptions which, in my view, are highly constraining. It implies first of all that the purpose of comparison must be to facilitate transfer, and that therefore comparative research must identify what is suitable for transfer and how the transfer might occur. It assumes, secondly, that the problems that confront planners are of the same order anywhere in the world, give or take some minor variations. It is built, thirdly, on the understanding that spatial planning is essentially a technical exercise, which once again is of broadly the same order wherever it is encountered. And finally, cross-national comparative research has tended to adopt in very broad terms a scientific methodology. That is to say, there has been an assumption that it is possible to identify a constant – a particular kind of planning problem, perhaps, or a certain type of development – against which the variables of different policies might be tested. Or again, it might be a question of taking a policy as the constant, as for example in the European Capitals of Culture programme (see Sykes 2011), with locality and governance, say, as the variables to be tested. All of these assumptions are problematic, however.

For practitioners the obvious purpose of comparative research is to improve practice by reference to experience elsewhere. However, research may have other ends which may lead only indirectly to the improvement of practice. Here, the example of other social sciences is helpful. Berting (1979) identified five reasons for undertaking comparative research in sociology, all of which might reasonably be applied to the field of spatial planning. The first of these is the development of theory. The second is the explanation and interpretation of social phenomena. The third concerns the description of social reality. The fourth and fifth are, respectively, understanding the effects of policy intervention and evaluating policy processes (see Table 2.4.1). Research in the field of spatial planning has tended to concentrate on the last two. The first three of Berting's reasons for research might at first glance have less to offer the field of spatial planning, but

Table 2.4.1 Five primary goals in sociological research

Five primary goals in sociological research
• Develop theory
• Explain specific social phenomena
• Describe social phenomena
• Understand the effects of policy intervention
• Evaluate policy processes

Berting (1979), pp 159-160.

in fact the particular insights that comparative research may offer for the development of theory, the explanation and interpretation of social phenomena and the description of social reality could be quite as valuable in informing reflective practice as the other two.

The other two assumptions implicit in ways of thinking about comparative planning are based on an understanding of spatial planning that sees it as essentially a technocratic exercise exercised by technically proficient experts, in the same way that mechanical engineering or medical science are understood. Such a view has a range of important consequences for both practice and the conduct of research. It allows the application of a scientific method of the kind sketched out earlier, on the grounds that there are indeed identifiable constants. It assumes that the instruments of planning – the plans, the mechanisms and procedures for controlling urbanisation, the policies – are of essentially the same order wherever they are encountered and are intended to have the same kind of effect. It assumes that planners are technicians whose methods are comparable wherever they are exercised and who are working towards the same kinds of ends. And indeed, as Vigar *et al.* have noted, "most comparative studies of planning systems focus on the tools of the system (plans and regulatory powers) and on competencies (which level does what)" (Vigar *et al.* 2000, p. 7, Davies et. al 1989).

There are reasons for thinking that such a view of planning is at best a very partial truth. By starting with the instruments and competencies of planning systems, it becomes very difficult to account for difference, or indeed sometimes to recognise that there *are* differences. A failure to account for difference makes meaningful comparison virtually impossible.

An alternative view of planning sees it as an end product of social, political and administrative forces that are place-specific. This is to say that planning is a cultural phenomenon, not solely a technical exercise. This has significant consequences for both practice and research. It means, for example, that plans are not necessarily intended to achieve the same results in different parts of the world, and that the very objects of planning vary according to the particular circumstances of different places. This view situates planning in what might be called a culture of decision making, in which the institutions of the state and the law form a crucial aspect of national culture that affects profoundly the way that planning is practised (see Booth 1993). The importance of this understanding is that it enables us to explain differences between planning systems that would be impossible to grasp if spatial planning were understood as purely a technical exercise.

The understanding that planning systems and practices are embedded in national cultures has been taken further, notably by Keller (1996), Friedmann (2005) and Sanyal (2005). They have proposed that planning itself is a cultural phenomenon, which varies from country to country. As Sandercock has concluded, this planning culture is not simply "a subset of the broader political, institutional, and ideological systems at work in any country" but "redefines politics, producing new sources of power and legitimacy, changing the force field, sometimes for better, sometimes not, and rarely in predictable ways" (Sandercock 2005, p. 330). For Sandercock, then, planning culture is not just the end result of more general cultural forces at work in different places. It may actually be a force that itself shapes a national culture.

Those studies that have attempted international comparisons have in every case found themselves forced to face this problem of national culture and the difficulty that it poses for finding explanations for difference and the effectiveness of policy and procedures. One of the earliest comparisons in the field of spatial planning was the Oxford-Leiden study, which sought to compare the performance of planning systems in England and the Netherlands in their capacity to plan for residential development. In it, great care was taken to find comparable examples of development in order to assess the response of spatial planning in the two countries, founded on very different

principles. Teams were established in each place and the results were subjected to sustained scrutiny. In the end, however, the authors of the study were forced to conclude, with admirable honesty, that:

> at times the task of explaining our findings was found to be problematic. This was due to the difficulty of constructing an adequate framework for comparison in the early stages of the research, before empirical work on plan making and control had been completed. For, despite the obvious differences in the legal and administrative characteristics of the Dutch and English planning systems, there was a tendency to assume initially that there was an overriding similarity in the types of plan produced and in the relationship between plans and operational decisions.
>
> *(Thomas et al. 1983, p. 261)*

The Oxford-Leiden study authors concluded that it *was* possible to make meaningful comparisons and that they had indeed avoided some of what they took to be the most obvious pitfalls in comparative research. One such pitfall was the problem of the internationalisation of language and the loss of nuances of meaning that might result. A second pitfall they identified was a tension between imposing from above a rigid conceptual framework that might not accommodate the particularities of cases, and an ad hoc bottom-up study of cases which offered no coherent basis for comparison.

The Oxford-Leiden study was based on a series of general propositions which formed the framework within which teams in each country would work. The focus on the implementation of projects, rather than taking plans and their production as a starting point, was to be the means of resolving the problem that plans and the relationship between plans and operational decisions were conceived differently in each country and were intended to achieve different results. But the study still made assumptions about fundamental similarities – of the nature of planning, of the type of development – that were not necessarily self-evident. This point becomes even clearer in the study by Macrory and Lafontaine (1982) that compared public inquiries in Britain and France, as the concept of public inquiry (used to translate the French *enquête publique*) is not understood in the same way in the two countries. It becomes all too easy to conclude that things are different in other countries because they are different.

The Oxford-Leiden and the public inquiry studies were bilateral. The problem becomes more acute with the attempts that have been made over the years to conduct multilateral comparisons. Studies such as that conducted into planning control in five European countries (Davies *et al.* 1989) show a good deal of sensitivity to local administrative and legal culture. In the end, however, Davies *et al.* found it difficult to make any overarching comparison between the countries investigated. The *EU Compendium of Spatial Planning and Policies* (Commission of the European Communities 1997) attempted no more than a catalogue of the planning systems of the European Union, but once again ran the very considerable risk of presenting as comparable what could not reasonably be compared.

Recent studies in the field of urban policy have begun to plumb this dilemma in a more reflective way. Harloe's (1995) account of social housing and Fainstein's *The city builders* (2001) were based on the premise that the development of global capitalism had had a profound and uniform effect on the production of urban development and that it was therefore possible to tease out the effect of local policy. Yet even Fainstein could comment with apparent surprise in *The city builders* that the developers she investigated did not "merely react to an objective situation but operate[d] within a subjective environment" (2001, p. 25). Local conditions in New York and London were more highly differentiated than she had expected. Nelson (2001)

came to much the same conclusion in her comparison of partnership in urban regeneration in London and Paris. Her starting point, too, was that globalisation had affected the nature of partnership in ways that were fundamentally similar. But she came to think in the light of the evidence that inter-organizational relationships and the nature of the state were at the heart of the differences she established in the two cities.

If spatial planning is culturally embedded and gives rise to its own culture, the prospects for comparison look distinctly problematic and the likelihood of effective transfer of policies or procedures at best doubtful. Indeed it could be argued that comparison is a pointless, and perhaps even dangerous, exercise that is best avoided. There are three reasons why such a pessimistic conclusion is not warranted. The first is that, difficult or dangerous though it may be, the urge to compare, and to compare between countries as well as within them, seems to be well-nigh irresistible. Studies that compare spatial planning in different countries have grown in number in the course of the past twenty-five years, and the search for ways of conducting such research remains an important priority. A second reason is that much the same might be said of the desire to transfer practice from country to country. Regardless of whether it is appropriate, transfer of policies, procedures and instruments has taken place and continues to do so. The British Empire exported its vision of spatial planning to its colonies, in many of which, long after independence, planning practice is still based on British prototypes. It is clearly not enough, therefore, to say that comparison and transfer are dangerous and must be avoided. Rather the challenges sharpen the search for appropriate research methodologies that will in some way or other assume the cultural embeddedness of spatial planning that commentators have increasingly recognised.

There is a third reason for thinking that a wholly pessimistic view of comparative research is unjustified. In the field of law, for example, Markinis (1997) has argued that a convergence between two very different systems of law, the English common law tradition and that of the Napoleonic civil code, is not only possible but has actually been happening. In his view, a profound understanding of the very different cultural origins of the two systems was necessary, but comparative study dispelled the idea that convergence of the two systems was impossible. Convergence, rather than transfer, has also been a theme of European policy, in spatial planning as in other fields. Waterhout, Mourato and Böhme (2009) concluded that some Europeanisation of planning was taking place and explored the ways in which it was happening. They were forced to recognise, nevertheless, that local context is very important and that the extent to which Europeanisation was taking place was variable and the evidence fragmentary. But the work by both Markinis and Waterhout suggests that comparative research and transfer across borders, undertaken in a culturally sensitive way, are both possible and productive.

Strategies for comparative research

Strategies for comparative research have, therefore, to be set against the understanding that spatial planning is not just a set of culturally neutral techniques and procedures. As we have seen, commentators insist that spatial planning is the product of particular cultures and in turn creates its own culture combining attitudes to space and place with the means of intervention and control. Important though such an understanding is, it is not in itself sufficient to identify appropriate strategies for conducting comparative research. Reference to the wider field of research on urban policy is helpful here. As with spatial planning, comparative research in urban policy has had to contend with the idea that policy is not neutral and that different cultures identify problems and their solutions in different ways.

We have already noted Berting's (1979) five reasons for undertaking comparative research in sociology. Having a clear objective for undertaking such research is an essential prerequisite for identifying appropriate methodologies. But we need to look further afield for underlying theories of comparative research. The argument has been taken further by Tilly (1984), and his ideas have been applied more recently to the field of urban policy by Brenner (2001) in a review article of Abu-Lughod's book *New York, Chicago, Los Angeles: America's Global Cities* (1999). Tilly proposed that comparative research fell into one of four separate categories. These were: the individualising comparison, in which understanding the particularity of cases was paramount; the universalising comparison, in which the argument was directed at showing that all cases followed the same rule; the encompassing comparison, where the attempt is made to show that difference between cases is a function of their relationship to a whole system; and the variation-finding comparison, in which the focus is on exploring systematic differences in the intensity and type of variation (see Table 2.4.2; see also Booth 2011). These categories were not exclusive. In world city theory, Brenner argued that "the most prominent contributions . . . have been grounded on encompassing comparisons" (2001, p. 137) but that even where researchers have taken individual cases and stressed their individuality, there may be an implicit encompassing comparison "insofar as such contributions interpret local outcomes with reference to a city's evolving structural position in the world economy" (2001, p. 139). On the other hand, Brenner categorises Fainstein's (2001) work, among others, as universalising in its emphasis on the tendency of specific local outcomes to converge. That was also effectively Nelson's (2001) initial assumption.

Abu-Lughod's work was, according to Brenner, based on a variation-finding strategy. Its particular strength lay in the extent to which she recognised the time dimension in world city formation and considered that history was an important explanation of variation between them. Her work was, Brenner argued, innovative, "a highly important 'first cut' towards a new style of world city comparison that is causally messier, more sociologically complex, and more contextually embedded than most existing studies of world city formation, particularly those that

Table 2.4.2 Four strategies for comparative research

Four strategies for comparative research
• *Individualizing comparison* "in which the point is to contrast specific instances of a given phenomenon as a means of grasping the peculiarities of each case"
• *Universalizing comparison* "aims to establish that every instance of a phenomenon follows essentially the same rule"
• *Variation-finding comparison* "is supposed to establish a principle of variation in the character or intensity of a phenomenon by examining systematic differences among instances"
• *Encompassing comparison* "places different instances at various locations within the same system, as the way to explaining their characteristics as a function of their varying relationships to the system as a whole"

Tilly (1984) pp. 82-83 cited by Brenner (2001) pp. 136-137.

rely exclusively or primarily on an encompassing strategy of comparison and purely economic indicators" (2001, p. 144). The point is clear: research into cities has to be able to deal with the complexity of urban places and their rootedness in time and culture.

Understanding the objectives for comparative research in the terms set out by Berting, or the strategies that might be inherent in such research, as explored by Tilly and Brenner, is clearly very important. But it does not help in determining methodologies that can meet those objectives and deal with the multiplicity of potential factors that explain difference and can lead to meaningful conclusions. What, in other words, can we really learn from France?

The approach adopted by studies during the 1980s emphasised the need for parallel teams of researchers drawn from the countries to be compared and the importance of a clear comparative framework (see, e.g., Masser 1986). The implication was that it was possible to identify a constant against which variables could be measured. The problem, already noted, is that the apparent constant proves to be nothing of the kind. A category such as 'residential development' works, it could be argued, only when seen from some considerable distance. Malpass (2008), for example, has argued in relation to social housing that the closer one gets to the subject of investigation the more the differences become evident. And the way that residential development is conceptualised and produced turns out to be highly dependent on local conditions. Indeed, the category is itself in part a product of the planning culture in which it exists and the interaction between the 'constant' and the 'variable' requires a rather different approach. That apart, the other risk that such an approach runs is that, however robust the methodological framework, the teams in the countries involved may not fully understand the assumptions that the others make about either the problem under investigation or, more generally, the way things work outside their own country. This lack of shared assumptions and the problems associated with articulating them is compounded by the problem of language, to which we must return.

One solution to this dilemma is to abandon direct comparison and instead to undertake a unilateral study of a particular problem or mode of planning in another country. This has the dual advantage of removing the risk of presuming similarities where none exist and allowing study of a problem from within a country's own cultural framework:

> When an observer is in a tower from which a fine view may be obtained, he does not see the tower itself, nor the blind spots of some of his angles of vision. To correct for this difference in perspective there is no alternative but to attempt to adopt the alternative cultural perspective, to slip into the mindset and thought pattern of one's opposite number, to learn to look at the other country as one of its natives would.
>
> *(Lisle 1985, p. 26)*

A one-way study permits the kind of immersion in a local culture that Lisle advocated and that might be obscured by a direct comparison. It requires an examination of the problem as it is understood and structured within the country itself, and not in the context of an imposed framework for evaluation intended in some way to assimilate the differences of two or more countries. It may result in identifying themes that are truly susceptible to comparison with other places and other systems (Booth 1996).

One-way studies still raise two difficult problems. The first is that, however deeply immersed a researcher may be in the local culture of the problem under investigation, she or he will nevertheless be approaching the other country armed with understandings, assumptions and even prejudices that derive from study and practice within the home country. These are bound to colour the perceptions of, and attitudes to, what is observed. It follows, too, that almost inevitably one-way studies have an implicit comparative strand which may be necessary in order to be

able to make sense of what is observed. This is no more than a specific instance of the recognition in the social sciences that the idea of the wholly neutral observer does not accord with the reality of empirical research. Recognising that observation will inevitably be coloured has to be allowed for in the analysis that is undertaken (see the overall introduction, and other chapters in this part).

The second problem has to do with the way in which culture is understood. It is possible to represent culture as an overarching structure which encompasses those who exist within it and informs the way that they behave and the decisions that they take. The trouble about such a view is that it implies that culture is static and wholly deterministic. In a review of the work of the nineteenth-century jurist and colonial administrator Henry Maine, Mamdani (2012) argues that Maine's apparently advanced view of the importance of the tribe nevertheless presupposed that tribal allegiance entailed belonging to a preordained and immutable scheme of order and justice, in contrast to his understanding that the common-law environment of non-indigenous people was in a state of evolution. Agnew, Mercer and Sopher note that:

> culture is created by thought and actions of both historical and living populations. Culture can change because it refers to material and symbolic contexts or limiting conditions for individual behaviour; it does not comprise an *entity* that governs what every human being thinks and does.
>
> *(Agnew, Mercer and Sopher 1984, p. 1)*

We are born into a culture and give it our (usually tacit) assent, but by the very process of participating in that culture we are instrumental in modifying it. Culture is not static.

This evolution in culture is exemplified by my own work in relation to France. My initial studies were undertaken at a time when President Mitterrand had just introduced a decentralisation of powers to local government, heralded by some as a profound shift in national and local administration and derided by others because the old forces, fashioned by long-standing tradition, seemed easily able to reassert themselves. Yet with the hindsight of those thirty years, it is possible to argue that the political and administrative culture of France has indeed changed greatly, and at least partly as a consequence of Mitterrand's reforms. For all that old republican values are regularly invoked, France of 2012 is no longer administratively the country that it was in 1985 (see Booth 1993, 2003, 2005, 2009).

The third problem is that culture is manifestly composed of a myriad of different but interconnected facets, from eating (or not eating) beef to the significance of poetry for national identity and the nature of political accountability. What, then, needs to be examined within a national culture in order to make sense of problems of spatial planning? Perhaps the key to this dilemma comes from understanding that spatial planning involves a process of decision making, which may be individual but is more usually collective. Such decision making takes place within structures that are closely linked to the general administration of a country and depend upon its constitution. And in turn it is informed by rules which are designed to give effect to understandings of justice, equity and appropriate procedure. It means understanding spatial planning in relation to the way in which local and central governments are constituted, the accountability of decision makers within a hierarchy and before the law. It requires an understanding of the nature of the legal framework within which decisions are taken. Above all, it entails a scrutiny of the assumptions that lie behind the decisions taken.

If it is reasonably clear which aspects of culture are crucial to understanding how spatial planning operates, researching them is still problematic. Fainstein (2001) remarked that her work for the book *The city builders* was nearer to investigative journalism than to "standard

social research", and the approach necessary to explore decision-making cultures in order to understand the nature of spatial planning in a given country does indeed require a journalistic sensitivity. It will require patient analysis of official documentation together with commentaries from inside the country, put together with interviews with identified actors. Official statements and formal commentaries can usefully be supplemented by informal sources, such as local journalism or other media, which may help to contextualise formal data. None of this goes very much further than might be necessary in any inquiry into the nature of spatial planning, but because of the particular difficulties associated with cross-national research, the piecing together of disparate sources of material will assume considerably greater importance.

It might be assumed that if direct comparison is a part of the research, then statistical data provide a surer basis for comparison than written or oral record. But as Hantrais, Mangen and O'Brien (1985) warned, such an assumption is false: apparent similarities conceal considerable differences in what is actually being measured (see overall introduction). Fainstein (2001) made the same point in relation to her comparison between London and New York. In part of the work that I undertook on development control in France, I compared statistics on the processing of planning applications (Booth 1989). But were the data in fact measuring the same things? Formal processing in France meant, very largely, validating the legality of the proposal, and any informal discussion about the appropriateness of a project mostly occurred before an application was lodged and was often lengthy. In Britain, on the other hand, the processing of a planning application often entailed lengthy discussion about the merits of the project, which might extend the formal processing period, thus rendering comparison at best difficult.

Language and history

Underlying this kind of forensic investigation are two questions that are crucial to the successful realization of comparative research. The first is that of language. Commentators have frequently stressed the importance of using the language of the host country, and not allowing English to become the dominant form of communication by virtue of its being a common denominator (see, e.g., Williams 1984; Kunzmann 2004). Kunzmann's objection to the hegemony of English was primarily that it reduced the richness of European culture with its diversity of modes of thought and action, and that this in itself was a good reason for insisting on using languages other than English where English is not a first language. But there is a more specific reason for being concerned with language in comparative research. The idea that translation is fraught with difficulty and that apparently similar terms in two languages carry quite different cultural connotations has had wide currency (Coppola's 2003 film *Lost in translation* was built upon this premise) but is easily forgotten in the conduct of research. Sometimes the problem is the beguiling similarities of words which actually convey quite different cultural messages: what the French call *faux amis* (false friends). Sometimes it is the way in which different languages categorise activities or concepts in a single term, which are not categorised in the same way elsewhere. 'Development control' cannot be easily translated into French except through a qualifying phrase, and even then, the cultural overtones of the term will be lost. Booth, Nelson and Paris (2007) found much the same in translating 'planning' into French and were forced to use a compound expression to explain what is encapsulated in English in a single word. Heidenheimer (1986) noted that the concept of policy, as distinct from politics, which plays a central role in British thinking about public administration, has been largely absent until recently in continental Europe. More generally, Müller has argued that translation needs to be problematised:

> The problematization of translation requires us to grapple with the polyvalency of any translation instead of uncritically instituting the sanitizing hegemony of the target language . . . we should be attuned to the political effects of translation.
>
> *(Müller 2007, 211)*

The message is not that translation is too difficult to be attempted but rather that a profound understanding of the way language is used becomes an inescapable part of the comparative research process.

The second underlying question is the importance of history to the understanding of national cultures and the planning cultures that they give rise to. Except within the field of planning history, there has been little interest in spatial planning research to consider the impact of past events on present performance. If, however, the embeddedness of planning processes and policies within national culture is accepted, because culture can be understood only as something which evolves over time, then the historical antecedents of present performance become very important. Brenner (2001) notes approvingly of Abu-Lughod's work that it corrects "the methodological 'presentism' that has blinded world city researchers to the longue durée historical lineages of contemporary urban transformations" (p. 131). The difficulty, however, just as with the concept of culture itself, is knowing where and when to start.

The argument that history is important to the understanding of places and planning processes implies that earlier events influence later events. Here, the problem is not merely a question of identifying a starting point, but understanding how that influence is exerted. Elsewhere, I have explored the use of path dependency as a tool for analysing the character and constraints of present practice in planning and public administration as a consequence of earlier decisions and practices (Booth 2011). Path dependency proposes that it is possible to identify a 'contingent event' which gives rise to a sequence of subsequent events whose characteristics derive from it and become self-reinforcing or, alternatively, react against it (see Mahoney 2000). In the French example, the French Revolution can be taken as the contingent event. One of its results was a pattern of local administration in the form of communes, designed to ensure that the writ of central government ran even in the remotest corners of the country. This pattern has proved surprisingly resilient to change, and subsequent decision making tended to reinforce this particular form of territorial subdivision.

Path dependency is not without its problems as a methodology. All too easily it can be devalued to a vague proposition that past events may influence present ones, when in its original form as applied in economics and politics the nature of causality and relationship was explicit. In its original formulation, path dependency theory proposed that events were path-dependent, because there were increasing returns in remaining within a path. But Gains, John and Stoker (2005) argue that it is at least as likely that, in any sequence of events, there may be diminishing returns and that the desire of organizations to perpetuate themselves is at least as strong a motive for remaining within a path. Moreover, identifying the contingent event and the path that derives from it is anything but straightforward. Contingent events may themselves be the products of other paths, while some change may be taken as falling within a path, depending on how the width of the path is defined. Leaving aside the complexity of the methodology, however, path dependency has had the virtue of emphasising causality and the importance of sometimes distant events. In comparative study of spatial planning, it offers a means of acknowledging the role of history as explanatory of observable differences.

Conclusion

The richness of recent work of comparison in the field of spatial planning gives the lie to the idea that comparative research has been wholly mechanistic and insensitive to the fundamental cultural differences that inform practices and processes. And yet the idea that planning is a neutral, technical exercise persists implicitly in much of the work done, and the accent on the instruments of planning still runs the risk of obscuring the nature and effect of real differences between the way planning operates in different countries. Brenner (2001) argues that what is needed is variation-seeking rather than universalising comparison. Such variation-finding strategies are a much messier process and present "many daunting theoretical and methodological challenges" (p. 143).

What, then, can we learn from France? An agenda that places transfer as the direct or indirect objective of comparative research is, we have already argued, likely to be problematic precisely because practice and policy are not culturally neutral and the conditions that make a policy or a practice work in one place are unlikely to obtain in another country. Nevertheless the push to transfer suggests that two lines of research might be fruitful. One would be to establish the conditions that had given rise to a particular solution to a given problem in a specified country. In such a perspective, it would be important to recognise that *all* aspects of the case were potentially variables and interdependent: the construction of the problem; the means of tackling it; the institutional context within which the problem and solution existed. It might then be possible to identify the most important of these variables to the outcome. The second line of research would be to explore the impact of transferring a policy or practice to another country in terms, once again, of the difference in planning culture.

A second potential area of learning comes from thematic comparison. Some problems that are faced by spatial planning systems stem from fundamental concerns about predicting future outcomes with a reasonable degree of certainty or understanding how and in what ways preferred outcomes might change in the face of the unforeseen event. These kinds of problems are, it can be argued, fundamental to the practice of spatial planning in any country, although the construction that may be put on them is culturally specific. Thematic comparison of this kind underpinned the study of certainty in discretion in Britain and France (Booth 1996).

Perhaps the most important outcome, however, is the challenge that comparative research offers to the assumptions that we make about planning. Studying planning in France – or indeed anywhere else beyond our own shores – serves to sharpen both understanding and practice, if done with the kind of sensitivity to the cultural embeddedness of planning that this chapter advocates. Comparative research is indeed difficult, but for this reason alone has great benefits.

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2.5
TOWARDS SOCIAL HOLISM
Social innovation, holistic research methodology and pragmatic collective action in spatial planning

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Introduction

Why would spatial planning care about holism? And what about social innovation? Or both combined? This chapter explains how, from a social science perspective, holism is to be recommended as a methodology that catches the diversity of social relations, while at the same time showing their common features across different communities or sectors in society. If social innovation then is about improving social relations through collective action, its role in spatial planning is logical, for spatial planning is about collective action with the purpose of transformative change. And this change can be effective only if it takes societal complexity into account; whence the recommended use of holism to analyse this complexity, and as we will see, its natural connection with pragmatism.

Holism, as we show in this chapter, as an offspring of the pragmatist era, responds to most of the features of planning research inquiry recognised in the introductory chapter of this book: action-oriented, an explicit normative focus, a recognition that systematically produced knowledge has value in shaping and evaluating interventions in the practical world, a recognition of the political-institutional contexts within which knowledge is produced. By recognising the complexity of relational patterns in society, holism explicitly contests logical positivist approaches to the study of human behaviour.

Social innovation can be defined broadly as innovation in social relations, institutions and delivery systems to satisfy human needs that hitherto have been insufficiently met within existing allocation systems. An appropriate research method to analyse social innovation with a comparative perspective is that of 'holism' (Moulaert 2002). Developed as a method of research in the 1920s, holism has over the last few decades re-emerged in many scientific debates as an instrument of comparative analysis. From a methodological point of view, it gives particular consideration to the relationships between 'parts' and 'wholes' across different institutional contexts. Moreover it has natural links with pragmatism as a social philosophy and a scientific approach (Ramstad 1986) in which, as in social innovation studies, collective action is a main focus.

There exist a variety of interesting theoretical debates across different disciplines about the meaning and substance of 'collective action'. However, in this chapter we use the loose definition put forward by Tilly (1978) as "people acting together in pursuit of common interests" (p. 7). No further analysis of the socio-psychological and emotional dynamics feeding or embedding collective action (Emirbayer and Goldberg 2005) is made. We focus on the use of comparative analysis as part of the social learning process involved in many social actions and movements. The first part of the chapter describes the relationships between holistic analysis and collective action. The second part discusses holist methodology as used in a theoretically structured comparative case study analysis using the 'quality of social services' as an example of an analytical theme. Different theories can be used to select themes eligible for analysis in holism and to identify the relations (pattern models) between them. Subsequently, the importance of holistic theory in social innovation analysis is discussed using a multi-sited case study framework. We explain how holistic theory can be used to set up a sound framework of empirical research on social innovation as collective action, as well as a strategy to overcome social exclusion within different yet comparable socio-institutional settings. Both qualitative and quantitative data play an important role in such analysis. To illustrate this, we use the example from an earlier research project on 'Social INnovation GOvernance and COMmunity-building' (SINGOCOM). The project made a holistic-comparative analysis of sixteen socially innovative initiatives as case studies in nine European cities. We propose 'social holism' as an ethically founded approach that connects holism more explicitly to pragmatism. We support using comparative analysis to develop knowledge that contributes to socially progressive aims, with the specific purpose of enhancing collective action and public policy.

Collective action and scientific analysis

There are certain questions to be addressed when looking at the significance of holistic methodology for social innovation research. These questions primarily concern the connections between collective action and scientific analysis.

Collective action is defined as action undertaken by an ensemble of actors with a particular objective to change a situation of shared concern, work towards more cohesive social relations, improve social conditions or devise policy initiatives that allow improving the condition of groups or communities in a society. The desire for improvement leading many collective action initiatives owes a lot to collective sentiments (Emirbayer and Goldberg 2005). Yet collective action emerges as a result of purposeful mediations or negotiations between the different participating actors. According to the pragmatist approach to policy and change agendas, participation strategies should be based on (collective) practical and situationally specific judgement. Dewey (1993, p. 206) argues that such judgement involves

> a combination of analytical, moral, and emotive modes of thought not conducted as abstract principles but articulated in the flow of life. And the flow of life is not lived in the splendid isolation of the autonomous individual but in the social contexts in which what it means to live in a 'polity' are in continuous formation.
>
> *(as cited in Healey 2009, p. 279)*

The comparative case study research we have undertaken in recent years has given support to a number of prerequisites for collective action. It demonstrates that collective action requires

leadership (Moulaert *et al.* 2013). It also includes other aspects, such as the involvement of complementary agencies, modes of cooperative and associative behaviour, and institutional codes to gather and mobilise people and to share knowledge in order to identify existential conditions and opportunities for change.

Scientific analysis is important for the design of collective action. It can help avoid impulsive agency and serve as a tool for setting objectives, solving problems, identifying solutions and looking at potential consequences of solutions. It also requires methods that reveal needs and preferences, and can be used in a process of norm-setting guiding collective action. By means of such analysis we can also identify modes to satisfy those needs. This does not necessarily imply that each and every collective action requires analysis. Some collective actions can be quite immediately responsive (or spontaneous) to needs without much reflection, due to the lack of time for analysis, which is often the case when needs are quite pressing. Examples of such urgencies are: natural catastrophes, epidemics, immediate welfare needs, food shortages, etc. Gut feelings and collective intuition empathising with urgency situations and the surrounding conditions of people facing these may sometimes offer better guidelines for direct action than recipes drawn from logical thinking.

Analysis can also serve problem solving. When different types of actors are involved in research – which should be the rule in social innovation research – they bring in their visions and ambitions to actively explore change potential through co-designing solutions and strategies. But even before thinking of solutions, simple exchanges between participants and the search for a common language can already have a positive impact on the path to problem solving. Collaborative designing can be done through a shared practice of drawing, mapping, narrating, developing, implementing, etc. (Toker 2012). Collaborative designing often requires the preliminary agreement between actors on shared terms for desired spatial quality (Goethals and Schreurs 2011). Different types of analysis can be combined to make the desired and shared ideas more tangible. Thus transdisciplinary research, combining skills and knowledge from scientific disciplines and fields of practice, can help to negotiate solutions and strategies with partners and to discern how some actions, when introduced at different stages in a problem solving process, are more effective than others. Transdisciplinary perspectives in social innovation research, by putting into practice an ethics of solidarity and collective pursuit of human development, reflect the deep concern to innovate in social relations with the purpose of building a better world (Novy, Swiatek and Moulaert 2012; Cassinari and Moulaert, Chapter 5.3, this volume).

In this context, experience, contextualisation, comparison and part/whole relationships in transdisciplinary holistic analysis are of vital significance (Moulaert *et al.* 2011). The part/whole relationships form the core of holism. The dynamic interaction of parts ensures that the holistic system does not remain closed or static but is more adaptive and evolving. Mapping the lessons drawn from experience, contextualisation and comparison into dynamic part/whole relationships refers to the need to learn from the history, to learn from other places and to exchange knowledge with each other (Moulaert and Van Dyck 2013). This mapping provides a 'process-oriented' link with social learning as put forward by pragmatism (Healey 2009, p. 281). There is another link with pragmatism, in the form of feedback relationships between theory building and analysis on the one hand and collective action, policy and planning on the other hand. One of the main principles of pragmatism, as a philosophy of science and reflective intellectual agency, refers to the 'robustness' of a theory. Pragmatists argue that theories are robust if they reflect those aspects of reality that are important to a diversity of collective action agendas. In holism terms, this would mean that theories substantiated by evidence are capable of placing into the flow of collective action practice new significant observations and lessons. These

lessons are based on relevant practices in collective action, either as meaningful exceptionals or as confirmation of particular elements from such theories.

Holism as theoretically structured comparative analysis

Now that we have explored the link between collective action and scientific analysis, it still needs to be explained what holism actually is, how it should be used as a methodology and why it is suitable for social innovation analysis and practice. In the practice of experience-based research (i.e., the analysis of experiences of particular types of interventions and processes in different places), the central focus is on the comparison of different cases, concentrating on similarities and differences across cases and the contexts in which they evolve. The research aim is to elucidate how similarities can relate to variety while still guaranteeing comparability. This requires identifying a number of concepts that will enable a comparative analysis to be made. In the vocabulary of holism, these concepts are usually introduced as 'themes' that are common to a relatively large number of situations. A typical question in holistic analysis, for example, could be how the theme of *quality of social services* is analysed across different neighbourhoods, localities or (in the holism speak) 'subsystems'. (See also 'residential development' in Booth, Chapter 2.4, this volume). Further, how could this analysis lead to better grounded proposals for socially innovative collective action and social policy? The holistic methodology applied in the SINGOCOM project, which will be explained in the next part, involved the selection of a first analytical 'theme' (e.g., people with welfare needs) for a particular (territorial) 'subsystem' (e.g., an urban neighbourhood). The theme was then analysed for a number of selected subsystems, checking for its relevance to figure out similarities and differences in all subsystems, by referring to the dynamics of social exclusion but also socially innovative strategies to overcome exclusionary conditions. This first theme was subsequently brought into relationship with a second theme, which ultimately leads to the construction of a 'pattern model', as we explain ahead.

The role of theory in holistic analysis

Theory has an important role in identifying specific themes and the potential relationships between them. Within the perspective of social innovation analysis, the relations between the different themes and how they materialise within case studies should be analysed by using a methodological framework that recognises the inherent interactions between Agency, Structure, Institutions and Discourse – ASID (Moulaert and Jessop 2006, 2012). This framework recognises the important issue of the specificity of structural dynamics and individual or collective behaviour. Also, it focuses analytical attention on the relationships between the two, which implies looking at their institutional mediation. In such mediation, cultural dynamics – with discourse at the centre – play a major role. These dynamics are about why and how people in certain situations act according to specific codes, routines and norms, while in others they may behave in a spontaneous way, in an individual or collective capacity, in a creative or even a routine manner.

Defining holistic theory

Holistic theory provides linkages between specific themes across specific subsystems and explains the presence (or absence) of these relationships by use of partial theories fitting a meta-theoretical framework. In more conventional scientific terms, we could say that we are in

a systems perspective. But at the same time, we accept the role of the particular, the specific and the local as key elements of our explanatory process, certainly as important as the generic rules or patterns (as they say in holist analysis) which would stem from a systemic analysis. In holistic knowledge production, therefore, the exceptional or the particular matters as much as attention to the structural or the systemic. Holistic theory in this sense is more like a dialectical synthesis between theorising according to its conventional meaning – as the synthesis of available knowledge in abstract terms – and the empirical verification as well as improvement of explanatory frameworks connecting different research themes to each other.

Diesing (1971) classifies the concepts in holistic theory in terms of *systems*, *subsystems* and *analytical themes*. Social services were cited earlier as an example of an analytical theme. The general provision of social services can, for example, be measured by means of the categories of services (such as care for children, young adults, elderly), types of services available to different social and age groups, and the quality of those services. These variables can then be measured for a given neighbourhood (*subsystem*). The quality of social services (as the first theme) can thus be established for each neighbourhood. The approach used is comparative in time and space. Figures 2.5.1(a) and 2.5.1(b) can be related to the preliminary assumptions that for a neighbourhood subsystem A, the score of the quality of social services is higher than the score of the quality of social services in another neighbourhood B or C.

The first theme can be subsequently correlated or connected to another theme which is relevant for the first theme's understanding or contextualisation. For example, if the quality of social services depends on public spending by the local authorities, then public spending by the local authorities could become the second theme. In a simple correlation model, it can be argued that the quality of social services across different neighbourhoods (or subsystems) will significantly depend on the level of spending by the local authorities for the types of services offered and the variety of social groups covered (see Part 4, this volume). But to enrich the comparative perspective, the relationship can be made more complex by looking at other themes, such as the age, relative incomes, mobility and family support situation of the different households in these neighbourhoods. Hence, significant themes are identified step-by-step and connected to each other. As the cases are compared, more and more similarities and differences emerge between different subsystems. "Over time, a typology will be developed that summarizes the systematic differences encountered" (Ramstad 1986, p. 1072). Once a theme is identified and empirically established, the researcher can move on to more themes and try to create links between different neighbourhood subsystems through a set of identified themes (Diesing 1971). These links reveal the interconnectedness within the system, as shown in Figure 2.5.1(c). The themes and relationships (e.g., quality of social services and the level of public spending by local authorities) also render some provisional patterns that can be verified through a selection of qualitative or quantitative methods (surveys, statistics, case studies, etc.) suitable for 'contextual validation' (Diesing 1971, p. 147). These procedures can be repeated to *validate* selected themes across the neighbourhood subsystems. It is noteworthy that themes should not be identified in a haphazard manner. Their identification should be based on the (available) theoretical and contextual knowledge brought together in the meta-theoretical framework. The group of validated themes helps to develop an interconnected network or *pattern model*. The pattern model can be refined or modified by adding more thematic correlations, examined for each subsystem and strengthened through exchanges between empirical work and theoretical formulations. Thus, in the urban system that is being addressed, the comparative analysis moves across neighbourhoods, the shared analytical themes and the patterns connecting them. The typology of neighbourhoods and their social services can significantly

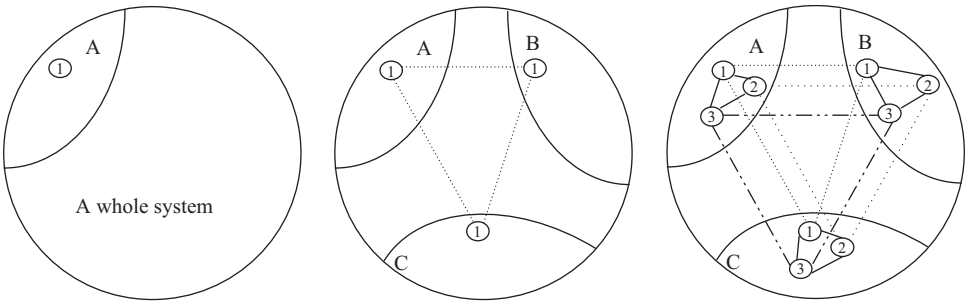

Figure 2.5.1 Holistic analysis.
Source: Adapted from Ramstad (1986, pp. 1071–172, Figures 1 and 2).

change if variants and circumstances in individual cases display behaviours different to the generalised patterns.

The SINGOCOM case-study analysis

So far we have explained the holistic methodology: how themes are selected, connected to patterns and examined across subsystems within a broader system. In the SINGOCOM research (Moulaert *et al.* 2011), subsystems were taken to be neighbourhoods within their urban environment. In its selection of themes, SINGOCOM was inspired by a diversity of collective action initiatives, mainly driven by an ethical position pursuing human progress. In these collective actions, different forms of social exclusion which impede human development were connected to options for social innovation which could counter them or turn them into opportunities for further development. These connections were established by studying a range of processes and (rational) strategies: mobilisation strategies, social economy initiatives, new governance forms, etc. For the comparative analysis of different cases, an analytical 'model' (ALternative MOdel of Local INnovation – ALMOLIN) was developed from a post-disciplinary perspective using elements from various social science literatures.

In building ALMOLIN as a pattern model connecting different themes, the role of existing theories on social innovation originating from a diversity of disciplines was significant. These included theories on horizontal and more democratic management structures from business science, on the social nature of economic and technological innovation, on the socially innovative character of corporate social responsibility, on the interaction between business administration and social-cum-environmental progress, on promoting social innovation through fine arts, on the role of social economy in community development (Moulaert *et al.* 2005) and on social innovation in spatial planning and governance (González and Healey 2005). Combined according to the ontology of community development based on the pursuit of social cohesion within a community through a diversity of social practices and innovation in social relations, these theories provided the pillars of a meta-theoretical framework for analysing human development within localised communities that would also frame the empirical investigation (Moulaert *et al.* 2010). The sixteen case studies that were investigated in depth in the course of the SINGOCOM research were the result of an interactive selection process from a larger databank

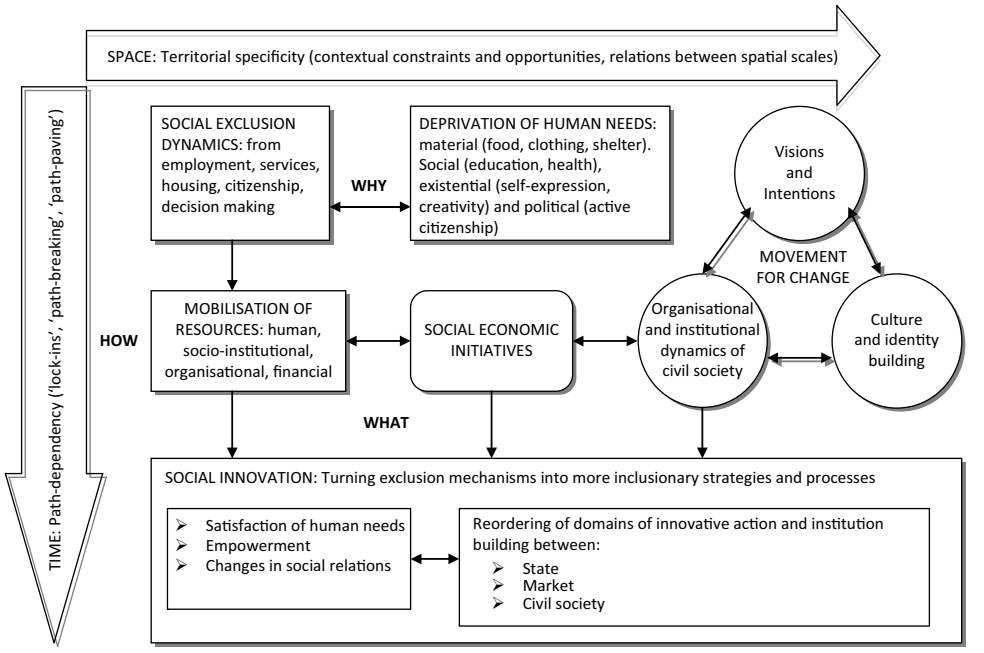

Figure 2.5.2 ALMOLIN (Alternative Model of Local Innovation).
Source: Adopted from Moulaert *et al.* (2011, p. 52).

of socially innovative initiatives, drawn together by the network of local research teams at the beginning of the project. These cases represented a wide spectrum of socially innovative experiences in community and neighbourhood development. Their holistic analysis encompassed interesting cross-country comparisons, highlighting how the different historical and institutional contexts and cultures influenced the nature and impact of social innovation. The basic features of their socially innovative impact, historical roots and spatial reach as framed by the ALMOLIN analytical approach are charted in Figure 2.5.2.

ALMOLIN as a meta-theoretical framework shows the interplay between social exclusion and social innovation dynamics capable of countering it. These dynamics may include reactions to deprivation and exclusion, mobilisation and organizing around a shared vision of change – often in the form of social movements – and reproduction of a culture of change based on the pursuit of a new identity, thereby cutting away from the depths of humiliation and alienation. Overcoming situations of exclusion requires mobilisation of resources within, or against, the existing organizational and institutional settings. Figure 2.5.2 does not manifest the role of civil society or grand political actions. These are indirectly included through the path dependency of agencies and institutions (see also Chapter 2.4, this volume) and the institutionally interconnected nature of spatial scales (neighbourhoods, local communities, municipalities, cities, regions, etc.). The boxes in the figure are named in generic terms but, when applied to case-study analysis, take on concrete contents. Hence, ALMOLIN models 'holism' as a scientifically established research method to address shortcomings in contemporary urban and regional development analysis.

The strategy for collecting the empirical information for the SINGOCOM study was entrusted to the local research teams, as each of them possessed the unique local knowledge for the respective case study and its context. National, regional or local statistics were gathered, policy documents were analysed, interviews conducted with local experts and, in some cases, participatory research was carried out (e.g., the Leoncavallo case in Milan and to some extent the City Mine(d) case in Brussels). In the case of Alentour in Roubaix, a survey by questionnaire was conducted among the residents of the neighbourhood, which proved a rich source of tangible information. What ensured consistency and comparability across the different cases, and the sometimes different nature and depth of quantitative and qualitative information, was the holistic analytical, meta-theoretical framework.

Nijman (2007, p. 1) maintains that authentic comparative urban research reveals "what is true of all cities and what is true of one city at a given point in time". The analysis in SINGOCOM moved between these two poles. As for any multi-sited research, maintaining comparability between different case studies while keeping room for the specificity of each was a challenge. It was clear from the beginning that social innovation, despite the shared definition given at the beginning of the project, was going to 'mean' different things for different people in different places. While, for example, collaboration between private and public institutions was considered as 'socially innovative' in southern Italy, it was seen as common practice and often as a threat to social innovation in the UK. But the researchers maintained their holistic 'methodological' consistency across case studies by referring back to the common concepts and theories of social innovation at the neighbourhood level.

While ensuring comparability, the analytical framework of the ALMOLIN model also allowed the researchers to identify and assess – across the different case studies – those features and dynamics of alternative initiatives that were most conducive to the introduction of durable social innovations for specific places, by responding to basic social needs in innovative ways, by empowering excluded or marginalised social groups, or by changing the power relationships between different actors and/or scales of governance, in the direction of a more democratic, inclusive and equitable society. SINGOCOM in this respect offers an ethically driven approach. In other words, it was an exemplar of a type of holism framed by a pragmatic perspective which we designate as social holism.

In conclusion

To sum up, the relationship between pragmatism and holism in social innovation research is historical and remains highly relevant today. Both emerged at about the same time in the US during the first quarter of the twentieth century (Ramstad 1986; Healey 2009). With pragmatism as a philosophical and scientific approach to be associated with collective action, holism provides the method to study specific cases, exemplars and situations in a comparative way to support collective action and inform policymaking. Both have evolved significantly over the last century or so, but pragmatism has especially had a strong influence on discussions in the philosophy of science and in collective action. Holism in contrast mainly subsisted as an obscure label for the study of the 'whole and its parts', which is regrettable as both pragmatism and holism show two complementary sides of the epistemological approach used in social innovation research. Integrating the two in a better way would offer real opportunities for an ontologically coherent social innovation research methodology.

Pragmatism provides a way of defining the attitudes and behaviours of the scientists and the collective actors among them. It strongly refers to an ethical positioning that can lead to

the improvement of the condition of human beings, as well as a more humane development of society as a whole. In a variety of ways, it addresses the ethical and methodological connections between analysis and collective action. It stresses the need for understanding the social context in which collective action and public policy occur. It uncovers the limitations of 'logical positivism' and shows strong affinity with institutional analyses of social reality and agency. It underlines the need for collective and transdisciplinary learning across 'communities of inquiry'[2] as the individual capacity of human learning is limited and the unity of learning and acting essential. As Healey puts it, "The core of this 'unique method' was the habit of questioning and exploring, testing answers and discoveries in relationship to empirical evidence of one kind or another" (2009, p. 280). The connection with holism is implicitly present all the time. As Ramstad explains, the connection between pragmatism and holism became explicit in the works of (old) institutional economists such as John Commons, who clearly adopted a pragmatist epistemology in his economic analysis. Commons considered the subject matter of economics as "collective action in control of individual action according to the evolving working rules of the various customs and concerns" (Commons 1961 [1934], p. 655, cited by Ramstad 1986, p. 1076).

The link between holism and pragmatism is quite natural. The ethics of pragmatism can be a starting position to lead a holist empirical research project and to give it a place in collective action and behaviour. It is an ethics that is solid in the sense that every collective action that is undertaken should contribute to the progress of humanity and to the improvement of the well-being of as many social groups in society as possible.

Connecting this ethical positioning to holism, we can say that we are applying what could be called 'social holism'. Referring to the example of the quality of social services at the neighbourhood level, pragmatism can direct us to analyse the quality of social services because it recognises that, as researchers, we care about the quality of service provision (whether public or private) and decent welfare services for all groups in the neighbourhood. But it also stresses the role of collective action and public policy in establishing such conditions. Holism as a methodology will instruct us to identify the different themes, patterns and relations that help to understand why the social services are needed and what the factors are which affect their provision (or not). Additionally, it can ascertain and analyse relationships between the actors and agents involved in collective action and public policy, but also between these, their goals, and objectives. Holism helps to materialise the reflexive interrogations that are essential to pragmatism, while pragmatism makes sure that holistic scientific practice remains self-reflexive (Moulaert *et al.* 2013). Thus the two entries into a reflexive methodology for social innovation research continue to revitalise each other.

Notes

1 Part of this chapter is based on Moulaert and Mehmood (2013).
2 See Healey (2009) on the Deweyian concept of 'communities of inquiry'.

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2.6

REFUTATION AND THE KNOWLEDGE BASE OF URBAN PLANNING

Chris Webster

1. Introduction

Karl Popper, one of the great intellectual products of the Austro-Hungarian Empire, was deeply disturbed by some of the other intellectual ideas emerging in Europe in the early twentieth century. Among them were Sigmund Freud's psychoanalysis and Karl Marx' material determinism. Popper's problem was not political or ideological but practical and methodological: such was the all-embracing nature of these general social theories that he was not at all sure anyone could ever disprove either of them. For this reason he concluded that they were *pseudo-theories* that couldn't be relied upon to build a body of valid, reliable and useful scientific propositions. Refutation, he suggested (following others before him), was the superior principle to guide knowledge accumulation.

In this chapter, I reflect on the state of the knowledge base in urban planning and suggest that it is in need of methodological overhaul. Using illustrations taken from recent personal experience as a planning thinker, adviser, teacher, practitioner and researcher, I call for more rigour, continuity and coordination in planning research, which is currently characterised by an irrelevance to practitioners; inability to engage with research from the more scientific disciplines queuing up to work with planners on sustainability, health and economic development issues; too little sustained knowledge accumulation; lack of generalisable findings; too little well-formed theory; and possibly (though it could not be proved) too much *pseudo theory*.

2. Knowledge deficits in planning

Knowledge for practice

The distinction between *theory for* and *theory of* planning made by Andreas Faludi (1973) and recently used by Mike Biddulph (2012) in defence of the Anglo-American urban design niche is a useful one for starting this discussion. When any subject goes into a university, it experiences the same tension. Nursing and physiotherapy have experienced it in the UK since switching to a university-based education in the 1980s. So also has surveying and construction management, since the opening of surveying schools in British 'polytechnic' universities in the 1960s.

Planning and architecture first became university subjects in the early twentieth century in England and have had a longer time to separate academic from practical scholarship. The British journal *Planning Theory and Practice* was an enlightened project in this respect and has no doubt helped patch the divide in places. The *Journal of the American Planning Association* and *Journal of Planning Education and Research* do a similar job in the US, but a recent paper and accompanying published debate (Goldstein and Maier 2010) suggest that these journals, which were recently rated as the most important in a survey of American planning academics but have relatively low impact factors, may mainly cater for *readers* rather than for *writers*, with much of the research in planning published in more highly cited specialist and interdisciplinary urban journals (Webster 2011). Even in learned journals, the practice-research divide seems inevitable.

Among the drivers of knowledge creation in planning schools, unanswered researchable questions from practitioners are not very prominent. I recently participated in an EPRC (UK Engineering and Physical Sciences Research Council) project that at great expense flew twenty or so Chinese senior planning practitioners, together with researchers from four prominent UK university planning research units, first to London and then to Shanghai to develop a fundable research programme. Several viable projects were specified but, as far as I know, none made it to the funding council. The programme seemed to abort not through lack of academic ideas but for lack of interest among the practitioners. There were literally no compelling research questions that they wanted answered. The anecdote highlights a more generally applicable problem. Planning apparently is a type of activity where it is difficult to pose practically relevant scientific research questions. This must partly be to do with the nature of the activity and the (wicked) problems it addresses; but as I elaborate ahead, it is also something to do with the nature of the knowledge base developed in academia and underlying professional training. In China, that knowledge base is predominantly design-focused. In the UK and the US, it has become predominantly social science–based. Neither is ideal on its own for evidence-based planning practice and practitioner-relevant theory.

Knowledge for cross-disciplinary studies

The knowledge base of planning is found wanting in another respect: links with that in other disciplines. On two occasions recently, I have been embarrassed on account of this.

The first was during a UK Treasury review of the national land use planning system, in which Treasury officials asked the question "Does planning inhibit economic growth?" At a meeting of prominent planning scholars hosted by former prime minister Gordon Brown, while he was chancellor of the exchequer, it was quite clear that most of the planners found great difficulty in articulating their understanding of the purpose and practice of planning in a way that allowed the chancellor's question to be answered factually.

The second was at a meeting between public health academics from a prominent UK medical school and a group of urban planners and designers interested in engaging with the public health agenda. The epidemiologists wanted answers to the very reasonable questions "How do you judge the effectiveness of your urban designs and other planning interventions?" and "How do you design a healthy city?" Not only were many of the planners unable to align their own knowledge to these focused questions, but some were openly antagonistic to the idea of being able to measure cause-effects in any field of enquiry. It was the urban designers' antipathy towards science that broke the dialogue.

Public health academics and practitioners have rediscovered urban planning as "the ultimate public health intervention", as one professor of public health recently put it to me. For planning, this takes us back to our modern roots in the nineteenth century. If we are to re-engage, we have

to reset planning scholarship within the scientific paradigm. Similar comments may be made about engaging with environmental scientists and building scientists to build energy-efficient and environmentally prudent cities, and with economists, financiers and property scholars and practitioners in building economically viable cities.

Well-founded theory

Urban planning, in my view, is best thought of as the coordination of private and collective plans for the use of land (see Webster and Lai 2003 and Webster 2007 for an elaborated argument). Although this is a broad definition, it is narrow compared to the range of theoretical and working definitions of planning found in the planning academy and illustrated in this book. It is not surprising therefore that planning academia has a tendency to sprawl into a generalist and unfocused subject area. One result has been the inability to develop and test well-founded theory for the subject. To do so would require more agreement on the subject of theory, on the questions that need answers and on appropriate methodologies.

Continuing to trawl recent experiences for evidence, consider the following sad example. I was called by a would-be developer to intervene in his negotiations with the local planning officer, who was insisting that he modify an unusually well-designed planned extension to his semi-detached countryside home. The planning 'expert's' argument was that the development would overshadow the garden of the adjoining semi-detached house and lower its value. The owner-developer reasonably counterargued that the adjoining owner was happy with the design, believing it to add quality and style to the pair of properties and that in any case, the allegedly shaded area was not on the side of the property that the neighbours used for outdoor living. The planner's response to this was that even though the current neighbour might be happy with the design, a subsequent owner might not be and it was the planner's responsibility to maintain the quality of the built environment for future as well as present beneficiaries.

I hope that the absurdity of this is immediately apparent to readers. The fundamental error of professional judgement comes from a fundamental error of understanding. The planner failed to understand several axiomatic ideas. First, on behalf of the local state, he was invoking planning regulations to (a) reduce the current welfare of the owner-developer, (b) reduce the current welfare of the neighbour and (c) reduce by some marginal amount the volume of trade in the local building industry. Second, the alleged social gain achieved by these all-round private losses was the welfare of a subsequent private buyer of the neighbour's house. The planner completely failed to appreciate that the effect of the proposed house extension would be priced into any buyer's bid for the property, which may be higher or lower than the property without the development, depending on whether it added to or took away from the original specification of the house. Of course, the planner may have been guided by a more nuanced application of the same theoretical idea: that the alleged negative effect of the design would *not* be priced into the bid of a future buyer because of noisy or asymmetric information. But this would not have been a reasonable proposition given the facts and, in any case, the planner concerned displayed no sign of understanding elementary land economics. Had he had such understanding, he might have noted that he was both (a) raising the transaction costs of the minor development project by repeatedly objecting to a win-win design and (b) lowering the value of the transaction to all parties.

Given the dreary emphasis in UK planning on controlling the minutia of the residential development market over the decades, one would expect that somewhere central to the planning curriculum would be a well-founded theory of land and property values, starting with Aristotle and visiting Ricardo, von Thunen, von Mises, von Hayek, Coase, Alonso and others

(see Harvey and Jowsey 2004 or any other text on urban land economics for an introduction to land value theory). Somewhere in this, all students of planning should surely be tested on the idea that externalities, under certain conditions, can be expected to be internalised into the property market. If they were to look at even simple development control decisions from the lens of value theory, planners would be able to make really expert decisions based on well-founded logic and supporting evidence, rather than parroted precedents, ill-founded heuristics and flawed reasoning.

Cumulative knowledge

Lack of well-founded theory means many poor decisions leading to a weak profession. It also makes it difficult for knowledge to build cumulatively. Instead of orderly and progressive paradigm development and shifts, you get fashions of thought, unguided by the utility or efficacy of knowledge or by the demands of logic, proof, refutation or evidence. You also get reinvention of wheels. That itself may not be a problem if later wheels are rounder than earlier ones, but some are clearly squarer due to discontinuities in thought. The top Chinese planning journals (led by Tongji University's *Urban Planning Forum*) are full of an innovative mix of old and new ideas in search of theory useful to practice and in search of peculiarly Chinese urban theory. There is some reinvention and some innovation, but one thing many writers share in common is bewilderment about postmodern and later western urban theory. You still find charts and tables and equations in Chinese planning journals, along with jargon-free discussion uncluttered by high-level social theory – in search of models, theories and ideas that might help answer practical questions, such as: what is the optimal mix of uses in different parts of the city; how big should a new town with a subregional finance economic base be; on which side of Xi'an should a satellite city be built; and what is the impact on GDP of growing a city by radial expansion compared to shifting the CBD to the city fringe? Practising planners in China, as I have noted, are generally too busy to structure such questions. Chinese academic planners, however, are a good source of truly useful research questions, although, ironically, most are too busy with second jobs as consultants to embark on serious programmes to answer the questions they pose. They look to the West and its century of modern urban planning scholarship for answers but do not find many. It is an indictment on those of us in western planning schools that our Chinese counterparts have to cite so many old research papers in pursuit of useful theory.

3. Generalisation

I have taken to conducting PhD workshops in planning schools around the world, where I invite the brave to expose their research designs to critical peer appraisal. These have proven popular for a number of reasons, including the sense of enlightenment that breaks out when students realize that research design is a matter of common sense, not bookish philosophy. One of the first issues usually to surface in discussion is that of *generalisation*.

In one session, I went head-to-head with a postdoctoral researcher who had conducted his PhD study on the use and meaning of small urban parks. I asked how many parks he had studied and he said, "One". I asked what the findings had been and the answer was "stories of park users". I asked what particular insights from this might be generalisable and he said, "None". It was a case study and the intention was not to generalise. I asked who might be interested in the stories then and he said those who use the park. At this point I suggested that this was not social science but art. The proof is in the output – namely, 'stories', or literature.

What started, no doubt, as a valuable philosophical and methodological debate has become something of a suicidal fixation in social science. It was an entirely good idea to borrow from the humanities more systematic methods of textual analysis, such as literary criticism and hermeneutics. But at some point, ends as well as means were borrowed and beauty and elegance in thinking, conceptualising, writing and speaking became as important as, or more important than, clear understanding. As with a piece of literature, embellishment and obfuscation became more important than simplification and enlightenment. You can tell an urban scholar who has slipped, wittingly or unwittingly, from social science to art: he reads his talk from a script. I have seen enough clever scholars doing so to be convinced that the reason they read verbatim is not because they have failed to master the language of their chosen (usually French) paradigm. They do so, I think, because what they are engaged in is art and the lecture, for them, has become performance. I found convincing existential evidence of this at a recent talk from a particularly erudite visiting scholar at my school. At the end of the talk I searched in vain for anything useful that I had learned. But in spite of this I came away feeling strangely inspired. She had failed to explain anything but had lifted my spirits – like spending an hour in an art gallery. Critical social and cultural theorists are not alone in this diversion from science. My own conversion from neoclassical urban economics to so-called new institutional economics and other heterodox theories that rediscover the more unified political economy of the Scottish Enlightenment and earlier came at an international gathering of theoretical welfare economists. The mathematico-deductive models that I had finally mastered proved to be no less fictional than the over-wordy stories of cultural theorists. The best of them were awesomely elegant: a numerical form of art.

To generalise responsibly you need empirical science. The first step in empirical science is categorisation. Literature also needs categories and literary stories can be described by category (*types*, *formulaic plots*, *styles* and so on) and can also be used to generalise (as in *fables*, *parables*, *myths*, *allegories* and so on). But to produce generalisable answers to questions about cities and city planning you need to follow scientific principles: well-founded typologies and theoretical models to describe patterns displayed by the *types* and to describe, explain and predict relationships between them. You also need categories that you can measure. And you need to make claims of knowledge cautiously.

4. Refutation in design and science

There are different approaches to creating a body of generalisable knowledge. Precedent case studies are a good start. Medical researchers and practitioners make use of online repositories of case histories, which they use to observe patterns, identify instances of drug interaction effects, drug side effects, unusual outcomes from multiple pathologies and so on. Urban designers, like architects, like to use precedents as a source of ideas in solving a design problem. The process can be thought of as analogous to the philosophical method of refutation.

A designer explores alternative precedents in search of inspiration – patterns of solution that might apply in whole or in part to the current design problem. While no two design problems are identical, there may be generalised solutions – abstractions hiding the details of an infinite number of permutations of detailed elements but nevertheless recognisable as a discrete category of 'solution space' (giving rise to distinct design genres, for example). The better the designer, the more fluidly can she move between discrete and continuous solution space (mixing genres, for example).

A scientist might hypothesise an initial state, end state or mechanism of change. A designer is principally concerned with hypothesising a mechanism of change (restructuring the built

environment). He will also make assumptions about initial and end states: the design will be intended to address certain existing or anticipated problems in a way that produces a more desirable end-state. The hypothesis (design or plan), as a mechanism of change, is 'tested' against the desired end-state (the brief) or perhaps against the difference between initial and end-states. Rejecting or modifying a design is equivalent to rejecting the hypothesis that the design creates the desired end-state. A good designer will actively attempt to reject her working designs, looking for flaws at successive levels of detail in order to find a better fit between initial state, mechanism of change and end-state. In this way, good design works through refutation. Large city architectural studios might employ tens or even hundreds of designers, each attempting to refute (and improve) different parts of a working design.

The same can be said of urban planning more generally, be it urban design at a building, street or block scale or more complex neighbourhood, corridor, city or regional plans. But as we move higher in scale and complexity, so the refutation process gets more problematic. It is relatively easy for the designer of a domestic bathroom to select between three alternative designs on the basis of a few performance parameters such as privacy, movement, aesthetics, range of functions, ventilation, light and drainage. It is made all the more easy by unitary property rights: the design has to please only one client (although the client may have to resolve the interests of multiple users – such as family members – each with different demands). Scaling up inevitably involves less complete sampling of solutions space and more dimensions against which to test hypothetical solutions.

The nature of the design process changes qualitatively when you move from single to multiple property clients – that is, when planning the *public realm*. This roughly equates to the boundary between architecture and planning as a professional activity. At this point the burden of proof in testing plans becomes higher because the designer/planner/policymaker has to justify the solution to multiple stakeholders. While an architect designing even a large project for a single client under a unitary property right can argue the case for one design over another around a boardroom table or over a Starbucks, a public domain plan that aims to coordinate the private plans of many individual property right holders has to be justified with more carefully composed and evidence-based arguments. 'Refuting' working plans in such circumstances will require more sophisticated skills, including assessing options in terms of future benefits and costs. The client, representing the interests of multiple stakeholders, may require more than intuitive reasoning based on precedents and design heuristics: she may require energy models, discounted cash-flow models and models of pedestrian footfall, land-use transportation and retail expenditure. A plan for multiple clients will have to proceed with a more complex mode of 'refutation'. The planning process will become more *politics backed by science* and less of an art (but always a mixture of both). Particular stakeholders will want evidence that their preferences have been accommodated, and where they have not, they will want careful justification of the reasons. Planners and policymakers will need defensible propositions and theories to 'fix' a particular distribution of rights and resources in a plan according to the politics of the collective decision authority.

So the mayor of a newly designed Chinese eco-city once asked me, "How do I know if my master plan maximises land values?" A civil servant at the UK Treasury once asked me, "What's the minimum population size to support a tram system?" A gated community developer in South Africa once asked me, "What's the optimal size of a private neighbourhood?" A senior planner in England's Department for Communities and Local Government once asked me on a train journey, "How should we calibrate the new Community Infrastructure Levy?" and relatedly, "What is the maximum that could be taken from land profit to fund social infrastructure?"

The *Laffer curve* in economics postulates the existence of an optimal tax rate for any particular tax base, with estimates of between 32 per cent and 35 per cent in recent empirical calibrations for the US. Move beyond the curve's peak and the tax base diminishes as higher taxpayers leave the country, move their businesses offshore, find legal loopholes or cheat. The volume of overall tax receipts goes down as the tax rate goes above this level and no one gains. What is the equivalent rule for land value taxation? For planners in the UK, negotiating exactions (also known as developers' contributions, compensation payments, betterment levy, etc.) in cash and kind has been routine for many years, and it strikes me that had we researched this behaviour systematically, planners might have something roughly equivalent to the Laffer law to guide them – and of course to test and improve through refutation. The Turkish government recently enacted a pragmatic step-function land value tax curve: a five-year 40 per cent tax on land betterment. After five years of continuous ownership the tax reduces to zero. This partly accounts for the flow of investment funds into Istanbul and hot spots on the country's Riviera. Had the 40 per cent tax not been time-limited, the tourist industry would not be as buoyant and many Turkish towns would not have started to grow in wealth and public facilities. An early British experiment that took virtually all development profit brought the post-war land market to a grinding halt, as the Laffer curve predicts.

And so we move from design to science. How can we know the answers to such fundamental principles of urban planning and management? Only by careful study and progressive refinement of theories on the basis of evidence. And the safest method, for well-documented and widely accepted (but not undisputed) reasons, is refutation (Popper 1934/2002).

I once saw two black swans swimming on Lake Taupo, New Zealand. For me that is sufficient evidence to refute the hypothesis that all swans are white. Had it been the first reported sighting of black swans, it might not have been sufficient. I would have sold the photo for a high price and the world's ornithologists would have flocked to Taupo to verify and explain the sighting. Had they found that these were two mutant creatures, a chance product of Taupo's otherworldly geothermal landscape perhaps, then they would not have *verified* the hypothesis that all swans are white; they would have merely have failed to refute it. But along with all the other sightings, my photo *does* refute it. So ornithology and philosophy can move on. (Karl Popper illustrated his notion of refutation by examining the claim that 'all swans are white', which many in Europe at the time assumed was the case.)

Popper's argument is that we can only refute knowledge claims. We cannot prove them to be enduringly true. This is not an approach that has been widely adopted in the social science underpinning urban planning. Under the influence of the worst kind of social science (see penultimate section ahead), knowledge about the complex adaptive processes that create, sustain and change cities has faltered. Untested or inadequately tested claims are made all the time, so much so that it makes more sense to talk in terms of *planning doctrine* rather than *planning knowledge*.

We hardly know what we know, and what we do know, we find great problem in applying to the normative and creative processes of planning and design.

5. Examples of knowledge building by refutation: in pursuit of design parameters for healthy, wealthy and green cities

Some years ago I published a paper specifying the policy design parameters for a sustainable city (Webster 1998). It was something of a tongue-in-cheek exercise in general equilibrium modelling. Its one redeeming feature, perhaps, was to make the point that to shape a city we need to

have some understanding of the trade-offs between the quantity of private and public goods and of the way they co-produce wealth and welfare.

A far more useful class of model in trying to parameterise an optimally specified city is social network analysis applied to two-dimensional urban space, or to a topological model of that space. sDNA (spatial Design Network Analysis) is one such approach: a simple tool we have created at Cardiff University to make use of the complex information stored in a city's road grid (www.cardiff.ac.uk/sdna). Remarkably but, if you think about it, not surprisingly, a city grid that has evolved over many years, decades or centuries holds a lot of hidden information about the way individuals interact with each other. A city, after all, exists because individuals need to transact with each other; a grid shows us many things about how they order themselves in pursuit of transaction opportunities.

Bill Hillier invited me to give a talk at the seventh International Space Syntax Symposium in Stockholm, where at risk of seeming rude, I expressed cynicism about the claim that measures of *general accessibility* [which is what space syntax (SSx) is] (see also Chapter 5.7, this volume, where Törnqvist makes use of space syntax) could outperform measures of *special accessibility* (defined ahead) in predicting the spatial pattern of activities in a city (Webster 2010). So my team at Cardiff set about trying to refute the notion: first, by developing a variant of SSx that can handle large networks fast and that overcomes some of the technical problems of SSx (sDNA was the result); second, by initiating a research programme to test the power of SSx and sDNA network metrics in explaining important patterns of urban performance measures central to the concerns of practising planners and designers.

Healthy cities

In a recent paper, the Cardiff team set out to refute the hypothesis that *space matters* when it comes to obesity and mental health. More specifically, we wanted to refute the rather fanciful idea that where you live in a city and the physical design of your neighbourhood affects your *body mass index* and mental health (measured by a standard psychological instrument). The study is reported in Sarkar, Gallacher and Webster (2013) and so there is no need to repeat the details. The basic gist, however, is as follows. Caerphilly, a small settlement system of about 150,000 people in industrial South Wales, is one of the most intensely studied epidemiology and public health laboratories in the world, having been researched closely for over three decades by pioneering epidemiologists Cochrain and Elwood and others at Cardiff University's Medical School. We decided to add SSx and sDNA measures to well-founded epidemiological models of individual health. This would test the notion that the *general* accessibility conferred by urban configuration and design adds independent explanation to models of health variation.

Over a hundred accessibility metrics were computed for each of over one thousand members of the Caerphilly Prospective Study, including, for example, measures that capture a location's accessibility to health centres and to green space; measures of population density at a location; and the degree of use-mix within walking distance (all these being *special accessibility* metrics). Two *general accessibility* metrics were computed, each at multiple radii: *closeness* and *betweenness* (following tried and tested SSx methods; Hillier 1999). *Closeness* measures the degree of connectivity of a location to all other locations within a search radius. Computing this at walking distance radius indicates a location's advantage for interacting with all other available locations by walking. Computing the same index for the whole city or some part of it above walking distance radius measures the advantage a location confers in respect to interacting with all other locations by car (or if the search area is adjusted to transit points, by public transport).

Betweenness, on the other hand, computes an interaction matrix of shortest paths between all pairs of locations in a city (links on a network) and indexes a location by the number of those shortest paths passing through that location.

Our test involved attempting to refute the hypothesis that the general accessibility measures of *closeness* and *betweenness* improved an otherwise well-founded medical model explaining variation of (a) body mass index and (b) mental health among elderly men in the city of Caerphilly. The null hypothesis was that there is no relationship between urban configuration and individual health. To our surprise, several of the special accessibility indices and both *closeness* and *betweenness* were significant in 'explaining' variation in these two health measures, holding all other factors (age, health history, smoking and drinking patterns, socio-economics and so on) constant. We thus had to reject the null hypothesis that urban configuration doesn't matter and, in so doing, identified new working hypotheses about specifically how it does matter – hypotheses about designing healthy cities for the elderly. These hypotheses provide the basis for principles that might be expected to feed into planning solutions and the planner's own *solution hypotheses.*

For example, we found that distance to green space was negatively related to obesity, *ceteris paribus*. This turns a popular urban planning doctrine on its head. It appears that elderly men in Caerphilly tend to include a walk to a green area in their regular time budget such that those who live further away walk more and thus tend to be less obese. Or perhaps they purposely choose to walk to further away green spaces in order to achieve a target exercise diet. Similarly, men living on steeper slopes (measured by the standard deviation of digital terrain model height within a certain radius) had lower body mass index. Our results suggest that communities planned for mobile elderly people should be built on slopes and at a challenging distance from recreational green space.

A layperson might expect this kind of evidence and the research methods and theory behind it to be part of the bedrock of urban planning knowledge and expertise. If it were, perhaps the academic-practitioner divide would not be so great and perhaps practising planners would wield more influence in shaping cities.

Wealthy cities

In another Cardiff study (Yang, Orford and Webster, forthcoming), we tested the idea that measures of general accessibility taken purely from the geometric and topological information contained in a city's road grid can add explanation to a well-founded hedonic model of house price (a model that predicts house price on the basis of component on-site and off-site attributes and isolates their respective contribution to value). If this hypothesis is upheld by evidence, we can use road grid geometry to help designate housing market areas, identify functional neighbourhoods, find locations more likely to respond to different kinds of regeneration investment and so on. The paper contains the details.

In summary, for sample neighbourhoods in the city of Cardiff, South Wales, we regressed house transaction price taken from the national Land Registry against a standard set of hedonic variables, including age of house, number of rooms, type of building, distance from CBD, distance from a major park and so on. To these we added *closeness* and *betweenness* measures for each house. Our null hypotheses were that these measures contribute no additional explanation of variation in house prices, other hedonic variables being held constant.

Again, with some surprise, we rejected the nulls and found evidence supporting the idea that urban design influences house prices above and beyond traditional morphological measures,

such as distance to CBD. In fact, the test exposed an intriguing feature of the relationship between grid-connectivity and house price. *Closeness* was positively correlated to price, *ceteris paribus*, and *betweenness* was negatively correlated with price. Other things being equal, a house located on a link in the grid that is geometrically (not empirically) on many shortest paths through the network empirically has a negative price premium. A house on a link that geometrically has a high index of connectivity to every other link in the network has a positive price premium. What we have discovered, we hypothesise, is that negative and positive agglomeration externalities can be distinguished from network morphology alone. This corroborates the finding from the health study that negative and positive health externalities can be picked up from urban morphological models.

The hedonic house price modelling literature is extensive and provides a stock of findings that should help planners evaluate plans. Like the growing health-built environment literature, it is neither pursued consistently enough by planning researchers nor used enough as working knowledge. The latter problem is no doubt partly due to the former. Our findings from the Cardiff housing market study generated a new set of hypotheses. Other researchers need to try to refute them in favour of better alternative hypotheses.

Green cities

The black swan story shows that knowledge can develop by refutation without statistical modelling. To show that this is the case in planning, consider the case of Cairo's green space.

In a third Cardiff paper (Kadafy, Webster and Lee, forthcoming), we set out to test a proposition borrowed from the economic theory of property rights. The theory states that clarification of property rights over a scarce resource will not only protect the resource from depletion but also reverse the depletion process, increasing supply. The classic case is ocean fishing: the invention of technological and institutional innovations for ocean fish farming has been shown empirically to both reverse declining stocks and increase the variety of species.

Applying this to green space in the extremely arid and populous city of Cairo, we hypothesised that (a) such is the scarcity of greenery that institutions are likely to have evolved to enclose green space public goods (defined as green space that is jointly consumed) in order to preserve it from depletion; and (b) neighbourhoods with more enclosed green space will also have a greater total amount of green space (the assumption being that enclosure tends to increase supply). We tested these by (a) measuring the amount of enclosed green space recorded in municipal government records and (b) directly measuring green space in Cairo ourselves from a satellite image, classifying it as enclosed/non-enclosed, and looking at the pattern across seven types of neighbourhoods with distinct morphological, property rights and socio-economic profiles.

The first test can be thought of as analogous to the black swan test. With no knowledge of the economics of urban parks in Cairo, the team went into the field and found that 67 per cent of all publicly owned parks in Cairo are gated and charged for at the point of entry. This is sufficient evidence to refute the proposition that a city's public park system has to be open access and therefore inevitably subject to dissipative overuse. We have found at least one example of a city that has apparently chosen to enclose its parks for the sake of preserving a scarce environmental resource, and we take this as support for (a) our application of theory to green infrastructure in arid cities and (b) our hypothesis that scarcity drives property rights allocation over (enclosure of) urban public goods. We have not *proved* these hypotheses, and further tests are needed to establish more rigorously the motivation behind the enclosures and the evolutionary path of the enclosure institutions. Subsequent research might set out to refute our explanation – for

example, by conducting a multi-city study across the Middle East or a study of cities varying in several dimensions thought to be important to urban space enclosure (Cséfalvay and Webster 2011), one of them being aridity.

Given the difficulty in obtaining good quantitative data in urban research, refutation by case study has an important role in advancing cumulative knowledge in urban planning (Flyvbjerg 2006). The problem with much planning research is that case studies are too commonly used to tell stories about complex particulars or to 'prove' positive assertions, not to generate generalisable hypotheses or to test useful ideas developed from well-founded theory.

6. Methodological individualism

One of the greatest barriers to practice-focused theory development in urban planning is the dominance among academics of social science paradigms that reject the individual as the primary unit of analysis and the object of theory. The strength of antipathy towards so-called *methodological individualism* probably comes from two sources: it is the method of economics (a deeply unpopular discipline among some branches of social science) and it is (wrongly) associated with liberalism (old and neo-).

The reason why theory should be based on models of individual behaviour can be simply stated: none of us sit in our offices or homes thinking, "What structural forces in society are driving me to make decisions today?" On the contrary, we act like, and believe ourselves to be, autonomous decision makers and during the course of any one day make multiple autonomous decisions that affect the allocation of our and others' resources, albeit under various kinds of constraints and environmental and inherited influences.

To understand the complex behaviour that gives order to cities, we therefore need behavioural models of constrained decision-making agents: individuals, households, firms and governments. Much planning theory and research today operate with models of society that are poorly linked to models of the individual. In an attempt to render social structure models useful, convoluted philosophical gymnastics are required to link *structure* to *agency* (*structuration*, *actor network theory*, etc.), and the result is scholarly language that is impenetrable to even the smartest planning professional and theories that the averagely intelligent non-academic can easily see are not always intrinsically insightful.

The purpose of many of them is to prop up systems of knowledge built on something other than the obvious starting point for understanding social order: individual behaviour. Life would be much simpler if social theorists simply acknowledged the obvious and built theories of collective behaviour based on theories of micro-behaviour (recently deceased Nobel laureate Eleanor Ostrom provides a powerful example of how this can be done in a way that adds social insight to economics and adds value to social enquiry; see Ostrom 1990, for example). Where should we turn to find useful theoretical structure based on constrained individual behaviour? There are plenty of sources: psychology; some strands of anthropology and sociology; economic geography and geographical economics; some strands of political science; and economics.

Economics is an increasingly rich source, but not the mathematical micro-economics of the twentieth century. That particular intellectual project started off with useful insights, such as the marginal theory of value, but bet on the wrong horse, making the fatal mistake of viewing its otherwise useful model of the individual as the base component of a deterministic model that viewed the economy as a machine. To achieve this, neoclassical economists effectively ditched the idea of individualistic models by building a system of theories around a model of 'the *representative* individual'.

If such models are disaggregated sufficiently, then great insights can be gained. But this doesn't overcome the other handicap of neoclassical economics: perfect information and the flip side, zero transactions costs. Twentieth-century neoclassical economics has predictably run out of steam as a result of these two (and other) misplaced foundations and modelled itself into irrelevancy.

This is not the case with the field collectively termed heterodox economics, which draws on the most useful ideas from five or six centuries of classical political economy, plus new ideas from the fringes of twentieth-century economics, political science, sociology, history, anthropology, psychology, philosophy, physics and computer science. The so-called new institutional economics (Webster 2005) tends to keep the individual in the centre of theory but rejects the more indefensible modelling structures of neoclassical economics. Computational economics brings to life the idea of *emergence*, which must necessarily be there in a science that starts with the individual constrained-autonomous agent (structures and patterns emerge from individual behaviour). It does this by replacing the mathematico-deductive approach of neoclassical equilibrium models with bottom-up evolutionary models in which the outcome of many individual socialising and transacting agents leads unpredictably to global structure: markets, neighbourhoods, cities and systems of cities emerge as a result of constrained individual buying, selling and socialising behaviour.

It is the *predictable* part of emergent behaviour that should form the focus and bedrock of urban planning scholarship, theory and methodology. In particular, planning scholars should be experts at understanding the impact on multiple urban performance dimensions of various kinds of interventions, roughly of three types: regulation, direct investment and fiscal.

7. Conclusion

Paradigms evolve and fashions cycle. Hem levels of ladies' skirts and dresses go up and down, we are told, with economic long waves and consumer confidence. But the art and science of fashioning garments move more monotonically – in the direction of better value for money, refinement in the details of design, production and marketing technology and so on. Without the disciplines of science, formal logic and philosophy, knowledge development can become faddish and lacking in direction and momentum. Fashions and cycles in knowledge are not bad in themselves since they can contribute to the forward march of insight as ideas get rediscovered, revisited, reviewed in new contexts and revised. There is currently a revived interest in systems theory among those concerned with building, managing and governing cities, driven by the holism of ecological and sustainability paradigms. But this time round, urban systems theory is arguably better founded, better constructed and more useful. Cybernetics has given way to complexity as a broad theoretical context for knowledge about how cities work as a whole. Evolutionary spatial economics improves upon neoclassical spatial economics.

We are at a period in the history of urban planning that is equivalent to critical points such as the late nineteenth century and post-war reconstruction. Planning is seen as a hugely important social function in delivering healthy, wealthy and environmentally, socially and financially sustainable habitats: equally so, but for different reasons, in the post-industrial West and newly developed, developing and underdeveloped countries. Western planning theory and practice and the methodology that underlies them need to adapt to survive. If they do not, much of academic planning will find itself on an irrelevant fringe. Planning needs to rediscover its engineering and design roots and intertwine these with the very best of social science, meaning social science that offers the most convincing and simplest explanations and the most powerful predictions. It

needs to move to a central ground of evidence-based spatial and institutional design. It should differ from architectural design scholarship by (a) a concern with higher spatial scales; (b) an emphasis on well-formed social-science theory that can guide practical and design-relevant research into the wider social-spatial-economic context of land development projects at all scales; and (c) a concern with institutional design. The planning scholar's special art and science are to understand how spatial configuration and design on the one hand and institutional design on the other work together to effect change in cities and to affect their social, environmental and economic performance. If planning scholarship fails to adapt to meet this need, other professions and academic traditions will step in to fill the gap. I predict that landscape architecture is on the ascendency as a profession and academic tradition because it has evolved a niche that is particularly well placed to meet the new social demand for urban place making and master-planning. Construction management, property finance and surveying, similarly, are well placed as practitioner and academic fields to take over the job of coordinating private development plans within a city. In general, these disciplines often seem to understand the nature and purpose of private development plans better than planners and are therefore arguably in a better place to develop the science and art of 'plans of plans'.

With a little adaptation, however, the planning academy has, in principle, the greater advantage in the competition for city shaping. With a much more focused methodological and scientific base, it could have it all: spatial design, urban dynamics theory and research methodology for scientific research. It should be able to talk the financial language of developers, the design language of architects and the scientific language of social, economic, political, environmental and medical scientists. In one sense, urban planning still remains and will always be something of the ultimate Renaissance activity. It could and should be the commanding urban discipline but urgently needs its own scientific renaissance.

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2.7

INQUIRY AND DESIGN FOR SPATIAL PLANNING

Three approaches to planning research in late modern cities

Pier Carlo Palermo and Davide Ponzini

1. Three research paradigms in the spatial planning field

In the field of spatial planning research one can find a large variety of traditions and, lately, a mushrooming of approaches (see du Toit, Chapter 2.1, this volume), which interpret the crucial nexus between knowledge and action in different ways (see Friedmann's seminal work, 1987). In this chapter, distinct features of three research paradigms, which are to some extent complementary – namely, empirical-analytical (or positivist), interactive and project-oriented – will be discussed and compared with particular reference to this nexus. The positivist approach to planning is presented by highlighting how research is intended as a preliminary means to provide decision making with scientific knowledge. The interactive paradigm is considered with reference to contemporary urban planning, recognizing an intrinsic political dimension of planning, which influences cognitive processes as well. A third perspective consists of critical approaches that in recent decades have emerged at the crossroads between urban policymaking and spatial design. Drawing on the relationships between these paradigms, planning research is considered as a particular interpretation of policy inquiry – namely, as an interactive arena for producing usable knowledge not only through traditional urban analysis but also through explorative projects. This position introduces new challenges for planning theory and research.

According to the first tradition, the understanding of urban and regional phenomena and of the impact of planning decisions and actions in space can be explored through multiple empirical-analytical techniques (Perloff 1957; Chapin 1965; Krueckeberg and Silvers 1974; Bracken 1981). Specialized studies in the planning field include heterogeneous references from human to natural sciences and to built environment sciences. Such studies may adopt traditional quantitative analyses or less formalized and qualitative methods (Quade and Miser 1985), which lead to apparently reliable descriptions and explanations of urban phenomena and forecasts of their impact in a given time and space frame.

This paradigm assumes as a deontological prerequisite that the observer's viewpoint is independent from the phenomena to be investigated. Choosing a particular research perspective can require explanations, which in most cases remain as tacit assumptions, as if a dominant observer's

point of view, or what in epistemology is called a "view from nowhere", was possible (Nagel 1986). This is an ideological bias that has been criticized from many points of view, including non-dogmatic beacons of scientific rationality (Popper 1963, 1972; see also overall introduction). Nonetheless this perspective influenced rational and synoptic planning conceptions of the twentieth century. The result of research was supposed to be a non-falsified (or at any rate plausible) explanation of empirical data – that is, explanations that could not be refuted by available scientific observations or experiments (see also Chapter 2.6, this volume). These representations could then be used in the planning process in different ways: background knowledge for decision making, operative estimates of both social and physical phenomena and impact evaluation of decisions in given conditions. Research methods in this paradigm are devoted to strengthening technical knowledge, first regarding the interpretation of phenomena and secondly as inputs to decision making. This approach is the core of the rational decision-making model as developed in the planning field (Faludi 1973a), but it was used also in political economy analyses (Fainstein and Fainstein 1979; Harvey 1985) and radical planning approaches which presumed rigorous description, explanation and critique of "the lay of the land" (Grabow and Heskin 1973; Friedmann 1987; Sandercock 1998). These approaches were at the height of their success in the 1960s and 1970s, quickly becoming more and more questionable (Palermo 1992; see also overall introduction).

In the second paradigm, planning has the essential role of building shared interpretative and normative visions in fragmented and potentially conflictual contexts (Friedmann 1973; Innes 1995; Healey 1997). Here the main goal of planning research is not the objective representation of phenomena. The targets are the stakeholders' core values, norms and preferences, their perception of problems and the possibility of building a shared vision through interactive and communicative processes. In this perspective the notions of "interactive" and "usable knowledge" are crucial (Lindblom and Cohen 1979; Lindblom 1990). "If you wish to know, learn how to [inter] act": this pragmatic principle takes over the traditional notion of epistemic knowledge (von Foerster 1981). Here, the core element in planning research is an interaction system that evolves on the basis of interests, visions and actions of multiple actors in an arena which is partially structured by shared values and norms (Palermo 1992; Lanzara 1993; Crosta 1995, 1998). Harmonizing divergent interests and perspectives becomes a crucial challenge. The observer here cannot be independent from the planning field where his or her perception of the problems, the solutions and their implementation takes form.

A positivistic interpretation of the nexus between knowledge and action is not appropriate for this paradigm. In fact, it draws upon a pluralistic view of planning processes and a strategic and communicative notion of rationality (Habermas 1981). The principle validating planning knowledge is not scientific truth (or at least non-falsification), but its coherence and effectiveness in the context. Therefore, planning rationality belongs to the sphere of practical reason, requiring phronesis or prudential wisdom – that is, the ability to make the most appropriate decision in given conditions (Palermo 1992; Flyvbjerg 1992, 2004). This perspective emphasizes the social responsibility of planners. However, we must admit that some experiences in this paradigm have partially dodged the responsibility of wise choices in the last thirty years, mainly targeting the dominant social interests. The positions of "collaborative planning" and of "public dispute resolution" emphasized a conciliatory and therapeutic role of the planner as a mediator (Susskind and Cruikshank 1987; Healey 1997; Forester 1999, 2009). Consequently, a significant part of interactive planning distanced itself from a critical view of planning processes where severe conflicts cannot be simply resolved through cooperation. In this sense, the innovative potential of interactive approaches risks being weakened.

There is a third paradigm of planning research which is a significant variant of the first two and which derives from the assumption that the core mission of planning is to generate good projects that are appropriate to various scales and themes. Such a focus on the role of projects requires a post-positivist interpretation of planning research (according to critical developments of epistemological research; see Bloor 1976; Brown 1977). Designing, in this paradigm, means modifying local conditions according to a critical knowledge of the planning context and its potentials for change (Gregotti 1966, 1986, 2004). As opposed to the empirical-analytical paradigm, this means that the observer's point of view matters. It is always selective and oriented by research questions that are surfacing from a critical dialogue with both the local society and the physical environment. It is not required to generate synoptic empirical analyses, which can result in incomplete surveys of little use. The topics to be investigated in planning research derive instead from a critical view on actual urban problems. This leads to a particular conception of planning inquiry: the local exploration of transformative hypotheses and preliminary projects as an effective way of producing new planning knowledge (De Carlo 1964, 1992; Schön 1983). Designing does not refer to the final stage of planning, but to project-oriented explorations. These can be considered as an innovative means for incrementally understanding the planning context, in terms both of actual phenomena and of their potential for transformation. Furthermore, these project-oriented explorations become a useful means for stakeholders and actors to understand the evolution of the planning and implementation process. The open question we will discuss in this chapter concerns if and how the third paradigm can be strengthened by and integrated with the best results of the previous two paradigms.

2. Emerging views and methods in planning research

A comparative framework of three distinct paradigms of planning research – empirical analytical research, interactive knowledge and project-oriented inquiry – helps to introduce the course of our discussion. The first belongs to the positivist tradition, and it provides important elements for understanding and measuring urban and regional phenomena, according to a modernist planning perspective. The recent evolution of new technologies discloses new operational opportunities, but the idea that rigorous empirical findings alone can generate appropriate planning choices has declined (Popper 1963, 1976). The influence of this paradigm seems limited, both in theoretical and methodological terms. Since the 1960s and 1970s these approaches started to lose ground with reference to economic and social inquiry (see, e.g., the crisis of urban studies in elite American schools: Wildavsky 1979; Rodwin 1981; see overall introduction). The same trend surfaced between the 1980s and 1990s in built environment studies in Europe and beyond (Palermo 1992). More interpretative, strategic and design-oriented views were nested in this positivist research tradition, though modifying its original perspective.

Since the 1980s, the notion of interactive knowledge emerged as a new paradigm, neither positivist nor technocratic, but pluralist, pragmatic, strategic and oriented to consensus building. Wildavsky noted that understanding the political context of planning practice needs more than studying statistics and maps. It requires interaction with most influential stakeholders, their interests, strategies and projects, using adequate (mainly qualitative) research methods (Wildavsky 1973, 1979). Moreover interactive knowledge seems crucial for understanding spatial features and transformations of complex socio-economic systems. Implementation research deepened these orientations in the planning field (since the seminal work of Barrett and Fudge 1981).

A project-oriented planning inquiry matured in the last twenty years, sometimes contrasting the aforementioned paradigms. The core idea is that principles and methods of urban governance

are not enough, nor are mere decision-making procedures, collaborative planning or public dispute resolution practices (Palermo and Ponzini 2010). One cannot reason about place making without referring to substantive questions of physical space and its potential transformation (Carmona *et al.* 2003; Healey 2010). Concrete spatial transformation projects are indispensable for grounding an interactive approach (Oosterlynck *et al.* 2011). In this sense, regional surveys and policy network analysis cannot stand alone without some reference to concrete situations – that is, physical and morphological explorations. Such surveys and analyses should be driven by the inquiry of potential transformation through strategic projects. This argument has been strongly developed by prominent Italian scholars (De Carlo 1964; Gregotti 1986; Secchi 1989). In this perspective, project-oriented explorations become an essential complement to interactive knowledge development.

In our view, the last two paradigms are the most useful conceptual grounding for contemporary planning research. This position will be illustrated by referring to well-known authors and experiments. Each of the following paragraphs is dedicated to one paradigm, following the same format. First, a set of international references will be given, focusing on the key epistemic and methodological problems. These questions will then be discussed in the light of emblematic examples, drawn from Italian planning experiences. Although these are not internationally well known, there have been several innovative contributions. Finally, evaluations and implications for planning research and practice will be discussed for each paradigm. The final paragraph will suggest future developments in planning research.

3. The decline of a positivist paradigm in spatial planning research

"Survey before planning": this motto of Enlightenment culture has influenced planning theory at different times and in different geographical contexts. Probably the last prominent impulse in this direction was in the US in the mid-20th century, first for warfare needs and then during the season of the Great Society. The Chicago School, founded by Tugwell and Person and revived by Perloff in the early 1950s, can be considered as one of the most authoritative experiments. Surveying existing conditions in a comprehensive way was considered to be the preliminary basis for the planning process in order to avoid prejudices and inconsistent suppositions (Friedmann 1987). It was assumed that decision-making uncertainties and critical issues could be solved through empirical analysis. Since the 1960s, this approach declined in the US, also due to the weakening of the reformist attempt of the Great Society and the public programmes trying to improve living conditions in American cities. One can find partial revivals of this conception of planning as scientific decision making in northern Europe (Faludi 1973a, 1973b), while Italy and other Mediterranean countries had already experienced the limits of this paradigm. Regrettably, the rigorous but failed attempts of grounding planning decisions in synoptic and scientific knowledge that took place in Italy during the 1950s and 1960s are still largely unknown internationally (Palermo 2006; Palermo and Ponzini 2010).

Giovanni Astengo is the Italian planner who, more than any other, developed this programme, inspired by European rationalist planning and by acknowledged French traditions in geography and history (Astengo 1966). He put great effort into analysing and publicly debating planning choices, since he believed that the truth and solidity of knowledge could convince stakeholders and citizens of unavoidable decisions. In the mid-1950s he tested these principles in the comprehensive plan for the town of Assisi, in Umbria. This city had at the time an ancient and notable city centre, but a still rural and marginal economy. He studied the salient aspects of local activities in detail: surveying local agriculture and farming, and social and housing conditions,

assuming civic improvement as a mission for planning. Then he coupled these innovative surveys with a morphological and typological analysis of the built environment, in order to preserve the heritage of the town. Despite the technologies of that time, the final outcome was an accurate representation of the local economy, society and built environment of Assisi. On this basis, Astengo could combine priority projects on strategic sites, urban structure planning and land-use regulation (Astengo 1958). However, the planning process took about fifteen years, frustrating all expectations.

About ten years later, Astengo was the author of a new experiment in the city of Bergamo: a twenty-year development plan (Astengo 1970). He defined four large-scale strategic scenarios, subsequently analysing and quantifying the costs and benefits of each alternative. He led a systematic inquiry regarding the local economy, society and the built environment, trying to establish detailed forecasts in a twenty-year time-span regarding demographic, economic trends and potential settlement dynamics. Furthermore, he attempted to forecast the real estate values in given areas. The planning process was based on a rational model aimed at maximizing collective benefits. The plan for Bergamo designed in detailed terms the final outcome for the city to pursue over time. Planning regulation covered not only the main features of the traditional structure and land-use planning but also the technical, legal and operative implementation of each parcel of the city. In this sense, Astengo's experiment in Bergamo was a sort of anticipation of decision making, attempting to integrate different analytical methods for describing, forecasting and regulating urban transformation, in an overambitious experiment.

These attempts did not really succeed. The main reasons for this were that most of this demanding urban and regional research was superfluous or ineffective for planning actual urban development. One can, however, derive a set of preliminary conclusions from here. Research for planning should select its topics according to relevant social interests and viewpoints. The attempts at accumulating comprehensive information in phases that are preliminary to the planning process are generally inconclusive, and they tend to generate costly databases without specific goals and clear meanings. Certainly in the last fifty years information technology has improved dramatically, reducing the costs of surveys. Nonetheless, this development does not overcome the radical crisis of meaning and purpose of cognitive processes that are not guided by specific research interests and questions.

In a frame of post-positivist philosophy, emphasizing the nexus between empirical research and the prerequisites of knowledge (Brown 1977), "objective" representations can be considered as contingent conventions among different actors, that sometimes are imposed by the most influential stakeholders. Consequently planners should be cautious with quantitative analysis, because quantifying urban phenomena does not always ensure more scientifically valid decision making. Planners who want to critically reappraise inherited views should question, first of all, their implicit cognitive frames of reference.

The accuracy of representations depends on focus and reasons of observation. Detailed and long-term forecasting can often be technically unfeasible or of little use. These research methods are often needed to arrive at some idea of the magnitude of the main urban and regional phenomena. Selecting the most appropriate form of representation for each phenomenon (even if they are only qualitative) is more rigorous than assuming that whatsoever quantitative forecast is available is better than none at all. It is the planners' responsibility to select the final representation, and therefore these choices should be as transparent as possible and based on argumentation which is openly available.

These reasonable considerations are today shared in many academic circles. The ambitions of the scientific and rational planning paradigm have generally disappeared. Believing quantitative

measures are able to guide evaluation and decision making can in any case be an illusion since most influential stakeholders may not be willing to mediate their positions. One cannot expect to determine long-term and detailed choices on the sole basis of shared empirical knowledge.

4. Necessity and risks of interactive knowledge production

The assumption that planning knowledge is produced through interaction among relevant actors is confirmed by numerous planning experiences. However, only a partial shift from urban and regional analysis to public policy analysis occurred in planning research in the 1970s and 1980s (Wildavsky 1979). The attention to implementation and to the generation of "usable knowledge" (Lindblom and Cohen 1979) contributed to abandoning traditional synoptic models of rationality and moving towards bounded rationality and incrementalist models. The more radical description of planning processes in terms of the "garbage can model" contributed to subverting the idea that there is a linear link between problems and solutions and showed that goals adapt to means and opportunities pushing already established solutions to find adequate problems (Cohen, March and Olsen 1972; March 1988). One can see several links between these positions and the revival of pragmatic inquiry, as the collective process of a mutual adjustment of interests, visions and cognitive frames among different actors (Lindblom 1990). These positions were not welcomed by most traditional planning schools, as this was interpreted as a rough paradigmatic turn which denied the true mission and the scientific nature of the planning discipline.

One must recognize that interactive conceptions of planning have often underestimated the importance of the physical transformation of the urban environment (Punter and Carmona 1997), in some cases leading to a merely procedural conception of the planning process. Among the few significant attempts to overcome these limits, Bernardo Secchi tried to connect two fundamental research traditions in his experiments between the 1980s and 1990s: on the one hand technical representations of the built environment which are usable for land-use regulation and urban design, and, on the other, network analysis concerning stakeholders and decision makers involved in the planning process (Secchi 1989). In Secchi's view, planning work cannot avoid a physical and morphological analysis of the urban structure, but at the same time it should investigate the main stakeholders and actors of the process. One development project cannot be evaluated only for its physical design characteristics; it must be evaluated also for the social distribution of the costs and benefits it induces. In this perspective designing the plan means not only shaping the final form of the city but also influencing the power structure and options for different social actors (Secchi 1991). The influential principles of post-positivist epistemology were integrated here with an interactive conception of planning knowledge. In this sense, planning inquiry becomes a collective design-oriented practice that requires social interaction and the setting of solvable problems (Lanzara 1985; Palermo 1992).

However, several experiments combining comprehensive land-use planning with societal listening and dialogue in the 1990s, such as the plans for Siena, Bergamo, Pesaro and Brescia (Di Biagi and Gabellini 1990; Secchi and Viganò 1998), were only partially successful. The shortcomings of these innovative experiences are due to multiple factors: insufficient consensus building, despite the interactive approach assumed; a normative and still rigid conception of the planning codes and norms; and enduring limits in the implementation process (Palermo 2006). Despite their limitations, these experiments showed that innovative research lines of inquiry can play a crucial role through problem setting, urban investigation and crafting possible solutions for planning problems. They also showed that the integration of interactive knowledge with more traditional planning and design is not an easy task.

In the international debate, there remains a divide between those working in the rational-procedural traditions of planning, or in the interactive knowledge approach, and those practising physical design (Palermo and Ponzini 2012). The risk of replicating this divide is evident in the recent revival of the academic study of strategic spatial planning (Salet and Faludi 2000; Healey 2004). The recent works of Secchi are an interesting exception: for example, the Gran Paris consultation and the long-term strategic plans produced for Antwerp and Brussels (VVAA 2009; Secchi and Viganò 2009, 2011; Secchi 2010). In these cases, Secchi proposes a different role for planners. Rather than having direct regulative responsibility, planners should concentrate on understanding and interacting with local society, inquiring into and visioning the emerging social and physical forms of contemporary cities, keeping environmental, morpho-typological, mobility and social equality issues at centre stage. However, the risk is that these visions only reset existing problems if they do not drive actual development processes. One can notice that, in recent years, similar criticisms were raised in more general terms with reference to the meaning and efficacy of strategic spatial planning (Allmendinger and Haughton 2009).

5. Inquiry and design in the planning process

The separation of process-oriented planning cultures from project-oriented approaches is, in our opinion, a great flaw in our disciplinary field. Due to mutual prejudices and some actual difficulties in developing fruitful conceptual relationships between urban design and planning, this nexus is heavily understudied today (Palermo and Ponzini 2010). Donald Schön, in his studies of the practices of different professionals, is one of the few intellectuals who developed original analogies between planning and architectural design (Schön 1983; Schön and Rein 1994). According to this perspective, a project-oriented approach seems required for learning from practice. The core competence of practitioners does not consist of a predefined know-how, whether substantive or procedural. Detecting an emerging problem in original, relevant and tractable forms, producing usable knowledge and fostering social communication, interaction and social learning are important abilities in the planning field. But this background can more significantly contribute to collective problem solving on the basis of tentative projects which can be shared with the involved actors. One cannot expect that substantive or procedural knowledge is completed before starting the planning process. Actions and interactions will improve the cognitive background since they generally induce further contextual understanding of strategic problems and of the relevance of spatial visions. This notion clearly derives from a pragmatic philosophical tradition, but it is also central in influential architectural studies (De Carlo 1992). In this sense urban design explorations can be a precious tool for improving planning knowledge, since several goals and guidelines can become more transparent and are easier to evaluate if concrete spatial development forms are investigated.

This position was anticipated and has been experimented with by important Italian architects and planners since the 1960s. Ludovico Quaroni showed that the logic of spatial planning inquiry does not correspond to a mere creative leap, an assumption that is widespread in planning schools. It is an abductive and recursive process, where a project-oriented vision is required in order to select the empirical investigations that will modify and strengthen it (Quaroni 1967). The formulation of one planning vision is based on the metaphorical translation of past ideas and experiences into one specific interactive context. Reflexivity-in-action helps planners and the public to envision a set of crucial issues. In this framework, selected empirical and analytical competences become meaningful and relevant for planning (Quaroni 1981; Schön 1983).

Giancarlo De Carlo experimented with a similar approach in remarkable architectural and urban-scale projects. In the well-known case of Urbino, where De Carlo acted as a consultant to the municipality (De Carlo 1966), traditional quantitative analysis played a marginal role. The main preoccupation of the research done for the comprehensive land-use plan was to measure the magnitude of selected urban phenomena, not to forecast the precise amount to be assumed as certainty. The actual need for planning was on the one hand creating a morphological and environmental framework for the transformation of the city, and, on the other, envisioning the potential for change in selected areas through explorative design (which could provide heuristic schemes helping one to understand urban problems and to build consensus regarding the key choices). Paying attention to the built environment did not imply any limitation in active listening and learning from the local population and city users. However, De Carlo combined technical disciplinary mastery of architectural, urban design and planning with genuine commitment to public participation. In his architectural and urban-scale projects, he cared about the coherence with the local context, sustainability requisites (at a time when this theme was not as widely acknowledged as it is today) and the opportunity of positive living experiences for the inhabitants (De Carlo 1964, 1992). His work shows that planning becomes elusive if it does not face the physical dimensions: designing physical transformations for the city implies a high social responsibility and becomes an opportunity for generating shared change.

This paradigm emphasizes the relationships between decision making and the social interests leading the cognitive processes that are related to planning. Pragmatic planning criteria tend to mix or substitute for an evaluation and forecasting based merely on quantitative data. The strategic and communicative dimensions of the process are important influences, but they become more relevant if referred to the emerging projects of given social actors, as these are technically described and designed, and publicly debated. In other words, building an explorative project is a specific means for potential collective agreement, according to communicative rationality prerequisites (Lanzara 1985).

The idea that explorative projects are crucial devices for planning research challenges linear conceptions of planning methods, which established a sequence of cognitive and evaluative steps. On the contrary, planning processes tend to imply recursive actions, where learning from explorative design can assume a crucial role in revising objectives and solutions (Ponzini and Palermo 2010). Consequently the old dilemma between inductive or deductive logic in planning research seems solved. In the third approach, the logic is abductive (Quaroni realized it in his work): anticipating and drafting relevant planning and design solutions first, and then critically testing their contextual coherence and spatial implications, thanks to empirical and interactive knowledge, and finally redrafting them accordingly. The technical work of designing is crucial for drafting concrete projects and for using them as exploratory devices in this spatial planning inquiry. This orientation is coherent with a pluralistic, pragmatic, strategic and interactive perspective throughout the processes of planning and implementation (Palermo 1992).

International research and methodological explorations which have some common traits with this paradigm have received only limited attention in mainstream planning debates, most likely because they are positioned at the crossroads between planning and design disciplines (Palermo and Ponzini 2012). There has, however, been pioneering work outside the Italian context. Examples include the analysis of the design dimension of planning (Punter and Carmona 1997), the relevance of morphological features in the implementation of regulations and procedures (Ben-Joseph 2005), the importance of urban design and development projects in shaping large-scale visions (Van den Broek 2011), and the relationship between planning tools and the design of actual urban development projects (Tiesdell and Adams 2011). Italian researchers, who had

extensive international experience, already highlighted the importance of designing physical projects as a research method for exploring crucial planning issues (see Viganò 2010). Further research along these frontiers should not only highlight the links between the interactive and project-oriented paradigms, but also provide new evidence and stimulus for future planning debate and research practice.

6. Conclusions: inquiry and design in planning research

It is clear that in practice the three paradigms are not historically subsequent nor they are alternatives. The first represented the linear tradition of "knowledge before planning". The second highlighted the political dimension of planning but tended to separate procedural knowledge from substantive and physical planning problems. This deficiency was addressed by project-oriented approaches which, in some cases, developed a pragmatic understanding of planning and implementation processes. In the current phase of crisis of the planning discipline, new perspectives can derive from a mutual legitimization of the aforementioned principles. Cultivating their synergetic relationships seems now more important than technically developing each of these approaches alone. In our view a new frontier for planning research should focus on interpretative and interactive knowledge development through a design-oriented inquiry. Renowned architects and planners have led significant research along these perspectives. Unfortunately these experiments are unlikely to develop well in cultural traditions which separate architectural from planning education and practice.

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PART 3

Working within a qualitative tradition

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3.1
REDISCOVERING QUALITATIVE RESEARCH

Pieter Van den Broeck

Planning theory and practice have seen a long evolution of research agendas and methods, related to various and sometimes conflicting knowledge traditions. These research agendas mobilise a wide spectrum of epistemologies, theories, research strategies and research methods, which need to be identified to understand the nature of a specific research project. In this context, 'qualitative research' – when defined as 'research using non-quantitative research methods/techniques' (e.g., participant observation, semi-structured interviews, focus groups, field observation or participatory mapping) – is a rather poor characterisation of a research project. Although each of the following nine chapters in Part 3 indeed do mobilise these specific non-quantitative methods and sometimes explicitly discuss them, they – more importantly – are also specific combinations of an epistemological position, theories, research strategies and research methods.

Is it then at all possible to identify meaningful commonalities and a concomitant definition of 'qualitative research' in the chapters included in Part 3? We think it is, but only if we go beyond 'qualitative research' as referring to qualitative *methods*. First, it appears that – in the range from positivist to social constructionist epistemologies – 'qualitative' refers mostly to the social-constructionist side of that spectrum, which also more or less fits the majority of the chapters in Part 3. The nine chapters indeed mobilise social constructionist methodologies, including related theories and specific research methods. The authors see knowledge as socially constructed, uncover multiple forms of knowledge and combine the analysis of actors, knowledge systems, values, cultures, institutions, etc. Most of the chapters report research in which the phenomena that are analysed and their contexts are closely related and try to understand these phenomena in their sociocultural contexts. The methods used accordingly help us to grasp people's perspectives, stories, experiences and valuations, as well as the ways these are socio-institutionally structured. These methods are also designed to uncover deeper meanings in social processes (see, e.g., chapters by Silverman, Pinel, Håkansson and Dühr). Second, reflexivity and a concern for ethical questions are prominent in 'qualitative research'. Given a focus on actors' strategies and societal dynamics, qualitative methodologies are well suited to account for social dimensions and egalitarian goals in plan making. Due to the normative position of planning, some strands in planning theory, practice and research have given greater consideration to equity issues and advocacy in planning. The chapters in Part 3 thus raise questions about the capacity of research to empower individuals and groups, the tension between protection of informants

('informed consent') and the need for 'research intelligence', and the like (see, e.g., Silverman, Davis and Hatuka, and Håkansson). Third, many chapters refer to pragmatism, grounded theory and action research to inform their gradual and cyclical development of theory, methodology, empirical work, and analysis and interpretation, identified by some as 'abduction' or 'emergent research design'. Planning's rootedness in practice, an action-orientation and the aims of social change make this more self-evident than in other research disciplines. Qualitative planning research is thus strongly related to practice. Although it doesn't necessarily give direct guidance to practice or practitioners, it can lead to co-production of shared problem statements, build methods of practice from methods of research, or change courses of action in real-life situations (see, e.g., Ng, Pinel, Håkansson and Quintana). The chapters in Part 5 elaborate further on this. Fourth, the *topics* of qualitative planning research are not only related to a social-constructionist epistemological position. They also focus on actors' strategies in their societal dynamics and the interaction of research and practice. Thus, the chapters in this part find stimulation in the qualitative tradition in the exploration of collaborative practice, the production of meaning and values, the cultural meaning of physical space and urban morphology, mapping, socio-economic mechanisms, the profession of planning, potentials for future change, power mechanisms and social exclusion, etc. Finally, several chapters (e.g., Silverman, Pinel, Dühr, Buunk and van der Weide, Davis and Hatuka) stress that 'qualitative research' demands the same or even more rigour than is often associated with quantitative methodologies. This applies to research strategies as well as specific research methods. A solid analytical framework, sound methodological design, attention to bias, subjectivity and interaction effects, careful selection of cases, techniques to stimulate self-reflection, iterative and ongoing data-analysis, techniques for recording, organizing, and analysing data, etc. can all help to assure the validity of qualitative research, whether evaluated according to more positivist or more interpretative criteria.

Beyond the commonalities of 'qualitative research' identified earlier and as already mentioned, specific research projects can be properly characterised only as specific combinations of an epistemological position, theories, research strategy and research methods. Besides some common aspects, the chapters of Part 3 thus give an idea of the variety of qualitative research. This is reinforced by the different contexts the authors come from: Asia, Europe, Latin America, the Middle East and the US.

Robert Silverman first explains a number of general principles for analysing qualitative data. He highlights how qualitative analysis is an ongoing activity in the research process and how qualitative data analysis is systematic. It involves the use of tried and tested techniques for recording, organizing, and analysing data, including problem framing, normalising and managing anxiety, coding data, memoing, diagramming and flexible thinking. The main part of Silverman's chapter, however, discusses the application of core qualitative methods to planning practice. The methods identified in the chapter do not make up an exhaustive list, but provide a foundation for the acquisition of additional skills in qualitative analysis. Topics covered in the chapter include: field notes and field observations, semi-structured interviewing and focus groups. Each topic is discussed in the context of planning practice and supported by examples from the author's own research – for example, on community development corporations and homeowners' associations in Detroit. Finally, participatory action research is identified as a growing field.

In the completely different context of Hong Kong, Mee Kam Ng starts from a core discussion in planning theory on collaborative planning, to seek out the truth about the more bottom-up as well as government-initiated community engagement activities in post-1997 Hong Kong. She develops a flexible research framework as well as an appropriate strategy, research questions and suitable methodologies. This is even more important in the Asian context since many of the

theories developed in the urban field are based on western contexts that could be fundamentally different from Asian ones. Ng then explains how she identified four major cases as representative of the urban development and planning issues under study. A three-pronged approach was developed to proceed with the research: desktop research to position the case studies in broader socio-economic and political changes, interviews with different key stakeholders, and efforts to participate in various engagement activities related to the case studies. Ng finally stresses the importance of generating locally grounded knowledge, pointing to avenues for practical and transformative actions.

Sandra Lee Pinel and Maria Håkansson both focus on ethnographic inquiry as the close observation of the people and events being studied and on accounting for how the actual context affects those observations. Ethnographies now describe culture as how people mediate change through symbols, social institutions and their own agents. Participatory research involves the 'subjects' of the research or planning intervention in defining research questions and collecting data, and may even focus on how the community is empowered towards transformative action. It requires a will and ability of researchers to critically reflect reality, to see other aspects of it from an open and flexible attitude. Pinel first briefly reviews three planning problems that call for the use of ethnography: finding and documenting the values and concerns of stakeholders; evaluating the feasibility and appropriateness of alternative courses of action; and facilitating collaborative spatial planning through understanding various cultural landscapes. Pinel's chapter then describes participant observation, semi-structured interviews and participatory mapping as three of the most established ethnographic methods from cultural anthropology and human geography. The author's own work as a planner and researcher on western US Indian tribal governments is used as an illustration.

Håkansson considers the way meaning is shaped, individually and in interaction with others. The basic ground in this kind of research entails asking what something means rather than revealing the truth. The research process and the outcome thus include interpretative understanding, creating meaning and aiming to gain a more in-depth understanding of the individuals' experiences. As such, there is an interaction between data gathering and the development of theories. Ideally, data gathering, data processing, analysis and theory building take place simultaneously. Therefore we also need a repertoire of suitable methods to involve people as subjects in ethnographic studies. In this sense, the approach is pedagogic – through the interaction with and involvement of the practitioners. The methods used need to help us to grasp people's perspectives, stories, experiences and valuations, and understand the phenomenon in its socio-cultural context. Håkansson identifies and discusses interviews, focus groups and observations as suitable methods. Also, text analysis as discourse analysis can be useful, but is not discussed in her chapter.

In Stefanie Dühr's chapter, a qualitative research design to investigate the design and content of policy maps and text in different European countries is presented. The analytical framework for spatial planning maps is based on theoretical perspectives on cartography and spatial planning, which understand maps as social constructions. Such interpretative approaches require a discussion of the methodological challenges of empirical analysis, including how to control for subjectivity in the reading of maps and texts. Applying a 'deconstructivist' approach to map analysis or map reading requires qualitative research methods that allow a deeper reflection on the planning context and the resulting plan maps and an understanding of the potential of maps to shape discourse, to empower some parts of the public or the territory and to disadvantage others. With the help of cartographic literature, Dühr develops criteria for analysing both the graphic and linguistic structure of cartographic representations in strategic spatial plans.

The aim of Gabriela Quintana Vigiola's research is to explore the relationship between the urban morphology of a place and its inhabitants and how a sense of place is constructed within urban psychosocial practices. Quintana focuses on the interpenetration of the process of a religious procession in Venezuela and its specific morphology. To understand the meaning within the space and culture, a qualitative case study approach and ethnographic methods presented themselves as the most appropriate option. Within this approach, Quintana highlights the importance of piloting, organizing different research stages and continuous data analysis. Furthermore, Quintana establishes close links to the community that she works with. From a socio-constructionist epistemology she mobilises qualitative methods as participant observation, interviews and informal conversations, audiovisual and photographical survey, and bibliographic review. In addition, a series of urban analyses, such as public space system, urban fabric and its building blocks, land uses and paths, among others, are linked to the places people recognise as meaningful.

W.W. Buunk and L.M.C. van der Weide show how discourse analysis can be used as a research method to find underlying values that play a role in the practice of planning processes and decision making. Discourse analysis can unravel the meaning of specific words, like 'justice', 'pride' or 'urban density', which can be recognised as values, when it becomes clear in their social context how they express deep felt beliefs, general preferences, motives, incentives, desires or more practical judgments in social and political processes. Discourse analysis thus lends insight into the frames and storylines by which actors create their view of the world, and of spatial development issues. The challenge is to have the confidence to interpret the outcome of discursive analysis, using academic knowledge and skills, as well as practical expertise. Buunk and van der Weide demonstrate the search for values in two different research strategies followed in two projects in the Netherlands: one is strictly empirical, using document analysis and loosely structured interviews with key actors, and in the other the theoretical framework was developed alongside the empirical analysis.

Diane Davis and Tali Hatuka aim to bring creative visioning back into the planning lexicon. They argue that future visioning can be a 'method' deployed by planners and designers to generate knowledge about the city, as well as to assess the limits and possibilities of effective planning action. Visioning exercises can produce a critical understanding of real-world institutional and political-economic constraints, while at the same time nurturing the hope that the future can be different. Furthermore, they can reveal the misperceptions, intransigence and biases of citizens and other stakeholders, which also must be recognised as key elements in the planning process. Davis and Hatuka base their knowledge on data generated in the course of an experimental project called the 'Just Jerusalem Competition', which used visioning to generate non-conventional planning strategies for that city. Using discourse analysis, they map and assess the data about possible urban futures, categorise them along a continuum from pragmatic to utopian ideas, and identify ideas that transcend the pragmatic-utopian divide as potentially visionary.

Finally, Mahyar Arefi provides an account of an exploratory research into the contradictions of contemporary Dubai, starting from a background of Dubai's complex development history. From its inception as a fishing village to its rise as an emerging global city, Dubai has changed drastically in a short time. In addition to its Arab roots, Dubai has joined the global economic network, and has assumed leadership as a main trading and export centre. The chapter focuses on Dubai's old and new commercial geographies (souqs and shopping malls) which occupy a considerable portion of Dubai's land use and manifest the tension between globalisation and tradition. Based on an operationalisation of "types and scales of elusiveness", observation and interviews, the chapter explores how souqs survived the explosion of shopping malls and how

intricate interrelationships emerged both on physical and socio-economic scales, thus showing pathways to new research questions to be answered.

The variety of theories, research strategies, topics and research methods in the chapters in Part 3 shows how planning research is developing a growing tradition of 'qualitative' research, beyond qualitative techniques. Within a predominantly social-constructionist epistemology, planning research provides insight into how planning practices, tactics and strategies are part and parcel of social dynamics and the interplay of agency with socio-economics, knowledge systems, cultural expression, values and imagination, and discourses, etc. The position and meaning of past and present planning strategies – for example, in terms of equity and social inclusion or exclusion – become more and more clear. Although the selected chapters cannot cover all the research strategies or methods – we are, for example, aware of gaps regarding socio-ecological dynamics, planning and design, or institutionalist analysis – we are confident that these chapters offer stepping stones for further exploration of the planning research field.

3.2
ANALYSING QUALITATIVE DATA

Robert Mark Silverman

Introduction

Qualitative research methods are often overlooked in planning education. This is particularly true in professional degree programmes in the United States. Consequently, many students and professional planners learn qualitative research skills through trial and error, with little guidance from educators and professional organizations. This chapter provides one mechanism to address this deficiency in planning education by identifying core aspects of qualitative methods that students and professional planners should be aware of. The qualitative methods identified in this chapter are accessible and adaptable, and can be applied in conjunction with other research techniques traditionally applied to planning practice.

The emphasis on brick and mortar projects and other forms of physical development in the planning profession is one reason that qualitative research has been absent from professional degree programmes in the United States. The imbalance between quantitative and qualitative research has become less pronounced in recent years due to heightened interest in the social dimensions of planning. This interest had grown as planners have given greater consideration to equity issues and advocacy in planning (Davidoff, 1965; Krumholz & Forester, 1990). Subsequently, there is a growing need to collect data that reflects the perspectives of multiple constituencies affected by planning decisions. Qualitative methods are well suited to account for social dimensions and egalitarian goals in plan making. Epistemologically, qualitative methods are designed to uncover deeper meanings in social processes (Brewer, 2000; Saldana, 2011). Because of its focus on the discovery of social meaning, qualitative research is essential for contemporary planning practice.

This chapter discusses the application of core qualitative methods to planning practice. The methods identified in this chapter do not make up an exhaustive list, but provide a foundation for the acquisition of additional skills in qualitative analysis. Topics covered in the chapter include: field notes and field observations, semi-structured interviewing, and focus groups. Each topic is discussed in the context of planning practice. Less attention is paid to gaining access to field research settings in this chapter, because the nature of planning research tends to entail fewer barriers to entry in a research site. This is especially true when planners are engaged in applied research related to their professional duties.

In some cases, planning students find it difficult to gain access to some forms of qualitative data. This is often the case when they attempt to interview public officials or gain access to non-public settings in local government or other organizations. In such cases, it is important for students to establish rapport with gatekeepers in agencies and organizations they wish to study. Strategies for gaining access to research sites are discussed extensively in qualitative texts by Lofland *et al.* (2005) and Berg and Lune (2012). Those texts and others can be referenced for additional information.

Each topic covered in this chapter ties into the broader framework of qualitative and mixed-methods research that students and planners draw from. For instance, the skills used in these core areas are applied to students' and planners' interactions with the public in the context of community meetings, charrettes, and other venues designed to enhance public participation and input in the planning process. Qualitative methods are central to the data collection process that informs the development, implementation, and evaluation of public policy. This is particularly true when participatory action research and formative evaluation techniques are used.

One of the advantages of qualitative research is that it makes the results from data analysis more accessible to a broad spectrum of individuals and groups in society. As a result, some argue that it is a democratic and empowering approach to data collection and analysis. Qualitative research also captures nuances of public life and urban development processes that other research methods do not. This adds texture and authenticity to research and policy recommendations which facilitate efforts to create sustainable plans focused on creating amenities that people value in their communities.

Qualitative analysis is also advantageous because it applies a relatively universal set of analytic techniques to the various types of data collected during the research process. These techniques are accessible to individuals with different levels of research experience, adaptable to a spectrum of research settings, and can be replicated across studies.

In Section 2 of this chapter, techniques for analysing qualitative data are discussed. Section 3 then explains in more detail a number of specific methods of qualitative research.

Analysing qualitative data

Qualitative analysis is anchored in data based on observations of physical settings and how they are experienced by people. Qualitative analysis can also be based on existing documents, public records, and archival materials. Data include observable elements of a physical environment, artefacts people leave in those environments that document their activities, observations of what people do in those environments, and records of what people say about them. These data are collected in qualitative research using a number of tools. Researchers take field notes and record information collected in various interview settings. They collect written documents from organizations and research participants. Increasingly, researchers also use photographic, video, and other data collected from the Internet (Ball & Smith, 1992; Best & Krueger, 2004; Banks, 2007; Gaber & Gaber, 2007).

Irrespective of the data used in a qualitative study and a researcher's preferred tools for analysing it, data analysis is governed by two closely related principles. First, qualitative analysis is an ongoing activity in the research process. It is an iterative process that involves the examination and re-examination of data. This approach to data analysis allows for research to be exploratory and adaptable to contingencies that emerge during the process of discovery. It entails ongoing data analysis from the initial steps in data collection through the completion of a research project. These characteristics make qualitative research well suited for the work of professional

planners, since it often entails the modification and adjustment of plans in response to feedback from various constituencies and changing environmental factors during the planning process.

In addition to treating analysis as an ongoing activity, qualitative research is guided by a second principle. Qualitative data analysis is systematic. It involves the use of tried and tested techniques for recording, organizing, and analysing data. These techniques include:

- problem framing;
- normalizing and managing anxiety;
- coding data;
- memoing;
- diagramming;
- flexible thinking.

Problem framing

Like all other aspects of qualitative analysis, problem framing is an iterative process. It involves the identification of a general set of propositions that are used to organize analysis. These propositions are drawn from: existing concepts used to describe or explain a problem being examined, indigenous terms or jargon used by people encountered in a research setting to describe aspects of a problem, and new concepts that emerge during the research process. The scope of propositions used to organize qualitative research will change during the research process, since initial assumptions may prove to be insufficient to accommodate all of the facets and contingencies of a research problem as more is learned during data collection.

Normalizing and managing anxiety

The developmental nature of problem framing and qualitative research in general makes it essential for qualitative researchers to embrace flexibility and uncertainty in the research process. By nature, qualitative research is open-minded and open-ended. This approach to research essentially opens a floodgate of information about a topic and attempts to organize it in a purposive manner. The sheer volume of data and the relatively open-ended nature of qualitative research can be a source of anxiety for those new to it. In order to cope with anxiety, researchers should embrace this methodology and view it as a journey aimed at discovering new knowledge. In essence, they should focus on turning anxiety into an adventure.

The unofficial mantra of the United States Marines is to *improvise, adapt, and overcome*. In many respects, this mantra applies to the manner in which qualitative researchers address anxiety in the research process. In addition to internalizing a dose of tenacity, researchers can reduce anxiety by adhering to some pedestrian practices. First, they should diligently analyse data. Data should be analysed early in the research process and often. Continuous data analysis should be coupled with the regular adjustment of research design in response to emergent findings. Second, researchers should be consistent and systematic in the use of data analysis techniques. A log of methods and techniques should be maintained during the research process, and decisions about adjustments to research design should be done in consultation with co-investigators or trusted colleagues.

Coding data

A core activity in data analysis is coding. It involves sorting data into categories for further analysis. There are two primary types of coding done in qualitative analysis. The first is called *open coding*. It involves the reading of field notes, transcripts, and other documents line-by-line and assigning codes to discrete excerpts in the data. The second type of coding done in qualitative analysis is called *focused coding*. It involves comparing results from open coding, synthesizing information, and constructing broad, overarching categories for data. Coding occurs throughout the research process. Thus, it is often referred to as the *constant comparative method* since a researcher constantly re-examines her or his coding scheme and refines it. Table 3.2.1 presents an example of open and focused codes applied to interview transcript data from a study of community development corporations I conducted in Detroit, MI (Silverman, 2005).

Table 3.2.1 Example of coding from an interview with the CEO of a community development corporation in Detroit, MI

Open Codes	*Interview Excerpts*	*Focused Codes*
	Question: How do residents get involved in the community development process?	
-new to area -visibility -partnership	*Answer:* Let's say we're going into a new neighborhood and people don't know about us. As we secure the property that we've acquired and put our signs out, we also actively work within that block to get to know the neighbors. To encourage neighbors to watch out for our shared interests. To get them to watch out for each other, as well as to watch our property.	-forging collaboration
-participation -share information -charity -credit counseling	At holiday times we also do fundraising or events that encourage the neighbors to participate by giving out gift baskets. We might ask them to submit names of needy families. At Thanksgiving or Christmas time we would give baskets out and have residents accompany us. For example, if we're rehabilitating a house and they know of people who want to buy a house but can't afford to, we get their names from them. We've done garage sales, fundraisers, raffles and a number of things to assist people in getting their down payment together. We provide counseling if they have credit issues. We identify different lenders that have programs that might assist them, and wc pass that infomiadon on to people in the neighborhood.	-grassroots recruitment -formal programs implementation

(Continued)

Table 3.2.1 (Continued)

Open Codes	*Interview Excerpts*	*Focused Codes*
-lending programs -neighborhood concerns -complaint process -visibility	We also try to identify resident, many of them are long term residents and older, who are unhappy about illegal traffic and other activity. Wc advise them how to report violations or if City services are not being taken care of. We also encourage them to report to the appropriate City department, certain things that need to be taken care of, like garbage pick-up or whatever. Or, if people are dumping illegally, they need to report that kind of thing. We have a staff person who works with community organizing, but we bolster that if we have a particular area that we're going into. We bolster that with board participation, so that we are able to then have a presence. People associate a face with our company, and they provide us with a lot of good information.	-empowerment -generating goodwill
-security -leverage	We had, for example, a house that we were working on, where people were trespassing. Jumping the fence and cutting through the property. Neighbors told us about it. That information allowed us to go and get a higher fence approval by the City. So instead of a four foot fence we were able to put up a six foot fence to eliminate that kind of thing and to improve the surrounding neighborhood. It also helped eliminate vandalism too.	-program enhancement

Although the example in Table 3.2.1 comes from an interview transcript, open and focused coding techniques can also be used with other qualitative data. Table 3.2.2 presents an example of open and focused coding applied to field note data from research I conducted with a co-investigator on the creation of a homeowners association in suburban Detroit, MI (Silverman & Patterson, 2004).

Coding is a relatively simple and intuitive process. It entails writing codes in the margins of field notes, transcripts, images, and other qualitative data documents. Traditionally, codes have been written onto hardcopies of data documents. With the advent of word processing programmes, software for qualitative analysis, and other new technology, coding can also be done electronically. Once data is coded, researchers sort it and develop filing systems. In the past, this was done by generating multiple hard copies of coded data and manually filing them into folders organized by theme and topic. Today, much of this work is done using electronic files and folders in conjunction with word processing programmes or specialized software for qualitative analysis.

As noted, coding qualitative data is an iterative process. Part of the process of organizing data for subsequent analysis involves the development of a chronological record of data collection

Table 3.2.2 Example of coding from field notes on the creation of a homeowners' association in suburban Detroit, MI

Open Codes	*Field Note Excerpts*	*Focused Codes*
-invitation -meet and greet -barbecue	The developer of the subdivision invited all of the residents to a barbecue. Each resident received an invitation on the developer's letterhead. The invitation was left on each homeowner's front door. It said that everyone in the neighborhood was invited to come to the model home at the entrance to the subdivision on a Sunday afternoon. According to the invitation, the purpose of the barbecue hosted by the developers was "Meet Your New Neighbors" and "Hot Dogs, Hamburgers, and Beverages" would be served.	
-families -developer and staff -summer, picnic -casual	We arrived at the barbecue at about 12:45pm and stayed for approximately 1 hour. During the time that we were at the barbecue, about six other families attended. They included adults and children. The developer and three of the sales people and construction supervisor who worked for him attended. It was a warm summer day and the barbecue was held on the lawn in front of the model home. It was a casual setting where people dressed in shorts and t-shirts.	-use value -neighborhood & community building
-relaxed -informal -small talk -food and drink	For the most part people were relaxed and informal. We discussed the neighborhood and plans for landscaping and other household issues. The food was as described in the invitation. Hot dogs, hamburgers, potato chips, and light refreshment including soft drinks, beer and wine.	
-CC&Rs -HOA -surprised -party over	However, the developer also handed out a packet to everyone who attended. It was a surprise. The packet included draft Covenants, Conditions, and Restrictions (CC&Rs) for a proposed homeowners association for the subdivision. When the developer gave us the packet, he asked that we read it and return a signed copy to him the following week so he could file it with the township. We were surprised by this, since there was no mention of a homeowners association when we bought out house. Getting this put a damper on the party. We left shortly afterward.	-exchange value -privatization -planning & development tools
-neighbor angry -business not family event -tricked -drinking -"liar" -left, party-over	Later that evening we spoke to a neighbor on our driveway. They were at the barbecue too, and left about a half-hour after us. They were mad about what the developer did because they felt that the barbecue was supposed to be a family event, but they later realized it was set up for business purposes. They were also mad because the people who worked for the developer were drinking alcohol, and because the developer's assistant called one of them a "liar" when he said he was told there was not going to be a homeowners association at the time they purchased their home. They were particularly upset because the developer's assistant seemed intoxicated at the time and questioned their honesty in from of their children. After this exchange, they said they handed the CC&Rs back to the developer's assistant and left the barbecue.	-conflicting use & exchange values -unprofessional -bait and switch

and analysis. This involves the storage of data thematically and chronologically. The recording of all field notes, transcripts, rounds of coding, and filing systems should be organized by date. This facilitates the analysis of data and a record of its conceptual development.

Many qualitative researchers also use word processing software to code and analyse data. Moreover, there are a growing number of researchers using specialized software and other new technology to enhance qualitative analysis. *Atlas.ti* (www.atlasti.com) and *NVivo* (www.qsrinternational.com) are two of the most prominent commercial software programmes used in qualitative research. There are also a growing number of qualitative software tools available online that allow researchers to upload data, conduct interviews and focus groups remotely, and analyse data collaboratively. Examples of these resources include *dedoose* (www.dedoose.com) and *VisionsLive* (www.visionslive.com). In addition to commercial products, there is growth in the availability of open-source software for qualitative analysis. For example, a free qualitative software package called *EZ-Text* is available from the Center for Disease Control (www.cdc.gov/hiv/topics/surveillance/resources/software/ez-text/index.htm).

Memoing

In addition to data collection and coding, researchers write internal memos about their research experiences. Memos make up an internal record of a researcher's ideas about coding categories and their interconnectedness, emerging theories and theoretical concepts, fieldwork experiences, and methodological decisions. Memos are typically embedded in field notes and transcripts. Techniques for memoing are elaborated upon in the next section of this chapter, which discusses field notes and field observations.

Diagramming

In addition to developing coding schemes and memoing, researchers create diagrams that visually represent relationships identified in a study. Figure 3.2.1 provides an example of diagramming of focused codes generated from a study of community development corporations I conducted in Detroit, MI.

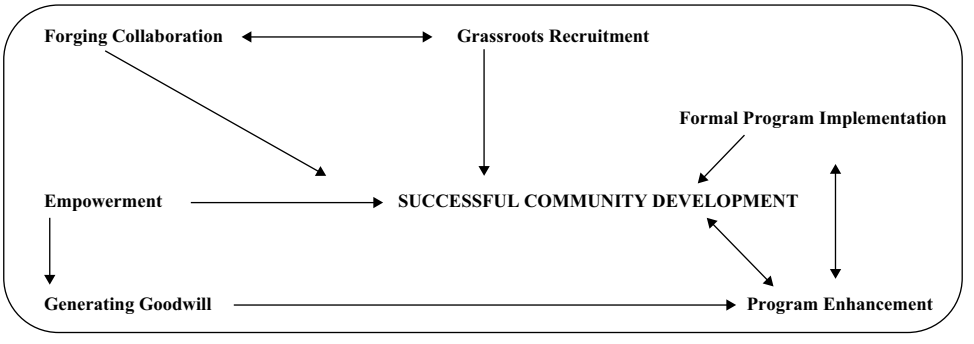

Figure 3.2.1 Example of diagramming codes from interviews with the CEOs of community development corporations in Detroit, MI.

Flexible thinking

The final technique used to record, organize, and analyse data is flexible thinking. This entails a dynamic approach to data analysis. In part, flexible thinking requires qualitative researchers to continuously re-examine their data. Researchers should use multiple coding schemes for the same data and recode data in light of emergent themes. Codes and diagrams should be organized in multiple ways to bring out nuances and facets of data. Researchers should also avoid becoming overly engaged in micro-analysis, and periodically step back from data and focus on the overall structure of issues being examined. Another pitfall to avoid is the tendency to prematurely become locked into a theoretical framework for analysis. Researchers, particularly those operating from a grounded theory framework, should embrace the discovery of new knowledge early in a study, and let their journey in qualitative research lead them to conclusions that are embedded in the data collected during research, rather than preconceived grand theories. Moreover, qualitative researchers should be cautious about confusing the application of new technology with analytic thinking. Software can assist in storing and organizing data for analysis, but actual analysis involves critical thinking skills that the researcher brings to a study. Finally, flexible thinking is facilitated by sharing preliminary findings with co-investigators, research participants, and stakeholders. Feedback from others can identify new areas for inquiry and undetected facets of analysis.

Some core qualitative methods

Field notes and field observations

Taking field notes and making observations are among the most fundamental data collection techniques used in qualitative research. Emerson, Fretz, and Shaw (2011) provide an extensive overview of field note techniques used in qualitative research. These techniques are sometimes used independent of other qualitative methods, but they often can be combined with other data collection techniques, like semi-structured interviewing and focus group research. Although there are many benefits to using field notes and field observations to augment other qualitative methods, they are sometimes substantial enough to constitute stand-alone research. For example, a co-investigator and I relied exclusively on field notes and field observations to complete a study of homeowners' associations and neighbourhood planning in Detroit, MI (Silverman & Patterson, 2004). I was also a member of a research team that used field notes to analyse the role of action research in urban planning practice (Silverman, Taylor, & Crawford, 2008).

Field notes constitute a written record of field observations. They represent a chronological record of mundane facts and significant events that are observed in a research setting. Field notes begin with a description of mundane facts. These facts provide a contextual description of observable elements of a field setting, such as: the time and date observations were made, the layout of a physical setting, characteristics of people in the setting, sketches of buildings and streetscapes, and other aspects of the research site that provide context. Once mundane facts are accounted for, qualitative researchers describe significant events in their field notes. These events include social processes, key interactions, and the researcher's analytic insights about observations relevant to a problem under examination.

In many respects, the label *field notes* is a misnomer, since field notes are constructed during two separate and distinct stages of the research process. During the first stage, abridged notes are

taken in the field while observations are occurring. During the second stage, full field notes are developed after the researcher leaves a field setting.

The field note process begins when a researcher enters a research site. Upon entering the field, the researcher becomes an active observer and attempts to identify many things from multiple perspectives. Before writing begins, the researcher should take mental notes and translate them into short cues or mnemonic devices that will trigger her or his memory later in the research process. These triggers are recorded in abbreviated notes, which are often referred to as *jottings* in qualitative research. When writing in a field setting, a researcher should focus on jotting down cues or mnemonic devices in chronological order as they are identified. Jottings identify mundane facts and significant events. These abbreviated field notes form an outline for more detailed field notes that are constructed after the researcher leaves a research site.

Taking field notes is an intensive activity. During the initial stages of fieldwork, a researcher will take jottings on an extensive amount of information. Because of the intensity of data collection during this phase of a study, a researcher should plan to take field notes for relatively brief intervals during the early stages of a research project. After spending thirty minutes to one hour in the field, a researcher should leave the research site, develop full field notes, and conduct preliminary analysis. This analysis will assist the researcher in identifying aspects of the research setting to collect additional data about in subsequent site visits. Decisions about what to collect data on are influenced by the initial research questions and themes that emerge during the research process.

As field research becomes more focused, the duration of time spent in a research setting will incrementally increase. After multiple visits to a research site, the volume of new information gathered will begin to decline and observations will become somewhat repetitive. At this stage, a point of data saturation has been reached and fieldwork is nearing completion. The exact point when data collection ends varies from study to study. Often the decision to end data collection is a function of reaching a point of data saturation, as well as pragmatic considerations related to resource and time constraints associated with a project (such as the end of an academic semester, contract stipulations, and other externally imposed deadlines).

After leaving the field, the process of writing full field notes begins. This process entails two steps. First, jottings and other abbreviated field notes are referenced to construct detailed descriptions of observations made in a field setting. Once a detailed set of field notes is constructed, the researcher will add analytic and methodological notes. This second step is referred to as memoing. In this step a researcher will insert brief analytic notes in parentheses throughout a detailed set of descriptive field notes. In some cases, memos will be embedded in the text of field notes to clarify or add context. In other cases, longer memos will be added after a significant event is described. These longer memos focus on preliminary analysis or are used to facilitate open and focused coding during analysis. Longer memos also appear at the end of a set of field notes in order to identify methodological and design issues that surface during field research.

It is important to recognize that developing field notes entails a filtering process. Through this process events are recorded into a written record. Through the act of recording data into written field notes the researcher decides what information to include in the analysis and what information to exclude. In essence, the researcher is the primary data collection instrument and data processing device in qualitative analysis. Consequently, the researcher must remain attuned to her or his biases and account for them during the memoing process. In qualitative analysis, this is referred to as reflexivity.

A researcher's potential bias is one factor to be aware of during field work. Qualitative researchers should also remain attuned to logistical considerations when collecting data. For instance, a researcher should plan on leaving the field after a reasonable period of time has elapsed and begin the process of compiling full field notes as soon as possible. This is done to ensure that details about events are retained accurately. A researcher should also commit adequate time to writing up detailed full field notes. Attention to detail is essential, since analysis is an ongoing process and some notes may not be fully analysed until much later in a research project. A researcher should also type field notes using a word processing programme to facilitate coding and other analytic activities. Finally, a researcher should write up full field notes in the chronological order that events occurred. This technique prevents the researcher from skipping over events that seem unimportant initially which later become central to data analysis.

Field notes are used in a number of research settings and social science disciplines, but they have particular value when applied to planning research. In addition to traditional field notes that are used to record observations, planners apply this data collection technique to a variety of activities in their daily work. For example, planners routinely conduct *windshield surveys* and other observational site assessments. These data collection activities entail visiting a site like a neighbourhood or park, recording information about its physical characteristics, and developing a written record of the planner's observations and impressions. Developing systematic field notes is a core component of windshield surveys and site assessments.

In addition to traditional paper and pencil recording techniques used in field research, planners also benefit from other data collection tools. The most common tool used to augment jottings and other note taking is photography. It is increasingly common for researchers to incorporate photographic data into their field research and then write extensive field notes about pictures taken in a research site. This activity has been facilitated by technological innovations in digital photography and video recording. Advances in smartphone technology and computer tablets have also facilitated the development of field notes. For instance, it is now possible to record jottings using portable electronic devices. In some cases, the omnipresence of cell phones and texting makes their use in field research more unobtrusive than traditional forms of note taking.

Semi-structured interviewing

In addition to taking field notes and making field observations, semi-structured interviewing is an essential tool for qualitative research. Wengraf (2001) provides a detailed overview of different interviewing techniques used in qualitative research. As described in his and other texts, semi-structured interviewing is one of many interviewing techniques used in qualitative research. For instance, informal interviewing and impromptu conversations occur with people in research settings. In planning and other professional disciplines, opportunities to collect data through informal conversations occur naturally. Data from these exchanges become part of data gathered during fieldwork. The role and use of data from these types of interviews are discussed by Jorgensen (1989) and Lofland *et al.* (2005).

In contrast to informal interviewing, the purpose of semi-structured interviewing is to gain detailed and focused insights into how individuals perceive a topic of interest to researchers. For planners, semi-structured interviewing is used to gain an in-depth understanding of how key stakeholders perceive and understand an issue. Those stakeholders may include residents in a community, developers, policymakers, and public administrators responsible for the design and

implementation of a plan. I have found semi-structured interviewing to be indispensable in my research on community-based organizations and public participation (Silverman 2001, 2002, 2003a, 2003b, 2005, 2009). There are many other applications of this methodology to planning research.

The mechanics of semi-structured interviewing involve the administration of thematic questions. The semi-structured interview is guided by a set of predetermined questions, but it is conversational in nature and driven by the responses of an interviewee. The purpose of semi-structured interviewing is to identify emergent themes through a relatively naturalistic conversation. Semi-structured interviews are designed to ensure some continuity across interviews, but they are administered in a flexible manner. They are primarily composed of open-ended questions. After a discussion takes place using open-ended questions as a guide, data are collected based on a discrete set of questions that focus on biographical and demographic characteristics of interviewees.

The role of a researcher in semi-structured interviewing is to introduce topics for a conversation in an unbiased manner. The topics are organized around a specific set of issues that are the focus of a research project. After an interviewee responds to a researcher's questions, the researcher will probe in order to keep the conversation flowing and add dimension to the issues identified. The *interview guide* is the primary tool used by a researcher to keep the conversation flowing in a semi-structured interview. The interview guide is composed of three core elements.

The first is an informed consent statement. In most cases, informed consent statements are written out and either verbally administered or read by an interviewee and signed. The exact administration of informed consent is determined by the level of risk associated with a study and requirements of an institution's institutional review board. The general purpose of informed consent is to assure an interviewee of her or his confidentiality and explain the purpose of a research project. In addition to making an interviewee aware of the risks and benefits of participating in a study, informed consent is an important tool for initiating an interview for the purpose of data collection and establishing rapport with an interviewee. In essence, informed consent defines the parameters of an interview, identifies the rules of the game, and orients an interviewee to the research process.

The second element of an interview guide is a series of *grand-tour* questions with follow-up *probes*. This element makes up the bulk of the interview guide. Grand-tour questions ask a respondent to provide an overview of a major theme of interest to a researcher. Probes are more specific follow-up questions used to flesh out details of a theme covered in a grand-tour question. Both grand-tour questions and probes are open-ended in nature. Grand-tour questions and probes are organized in a logical sequence in an interview guide, but a researcher will adjust the sequence of questions based on the flow of an interview. Based on an interviewee's responses, the order of questions may change in an interview and all of the questions in an interview guide may not be used. As a rule of thumb, an interview should begin with a general icebreaker question to ease the interviewee into the discussion and develop rapport. This question is followed by more specific ones, with sensitive and potentially volatile topics covered later in the interview process.

The wording and style of grand-tour questions and probes should vary in a semi-structured interview guide. Some questions ask an interviewee to describe events and situations a researcher is interested in learning about. These questions are prefaced by terms like: "tell me about . . .", "describe a situation when . . .", "what types of . . .", and "in what ways . . .". Other questions ask an interviewee to "give examples" of events and situations a researcher is interested in learning about. Researchers also ask interviewees to recall experiences they have had. These questions ask an interviewee to: "tell me about a time you did . . ." or "what has your experience

been with . . .". When jargon is used by an interviewee, researchers often probe for definitions of indigenous terms. They ask, "How do you define . . ." or "what do you mean by . . .". Researchers also ask interviewees to compare and contrast things during the course of an interview. For instance, a researcher may ask an interviewee, "In what ways does *X* differ from *Y*?" or "how are *A* and *B* similar?" Finally, interviewees are asked to place issues in a temporal context. For example, a researcher may ask: "how was *X* done in the past?", "how is *Y* done now?", or "how will *Z* be done in the future?"

The last element of an interview guide includes demographic questions and a closing statement. These questions collect data on non-observable demographic characteristics of an interviewee and relevant dimensions of a research setting that the interviewee has knowledge of. These questions may include things like an interviewee's educational background or tenure of residence in a community, as well as characteristics of a programme the interviewee implements or a neighbourhood she or he lives in. An interview guide should include a closing question which asks an interviewee if there are any other issues she or he would like to discuss or elaborate upon. Closing questions sometimes bring forth crucial information that is relevant to a study. Finally, interview guides end with debriefing statements. In these statements, a researcher thanks the interviewee for participating in a study, provides contact information, and tells the interviewee how results from a study will be disseminated.

Once an interview guide is constructed and pretested, it is time to administer interviews. There are four issues to consider at this stage of the research process. First, a researcher needs to decide how to contact interviewees and recruit them to participate in a study. Typically, this involves the use of an advance letter, which describes the purpose of a research project and invites the prospective interviewee to participate in a study. The advance letter is followed up with a personal contact and the scheduling of the interview. The interview is usually scheduled in a neutral, private location where the researcher and interviewee can sit and have a discussion. At the initial stages of a study, participants are identified based on their familiarity with the research topic and the researcher's access to them. Once a study is underway, researchers use techniques like snowball sampling, purposive sampling, or theoretical sampling to identify additional research participants. Sampling techniques in qualitative research are discussed by authors like Glaser and Straus (1967), Lofland *et al.* (2005), and Berg and Lune (2012).

The second issue to consider before administering an interview is the preparation of materials for data collection. A researcher should bring a copy of the interview guide, a pen or pencil, and paper for note taking. In addition, a researcher should bring an audio recording device to an interview. Before attempting to collect data, the researchers should test the recording device and be familiar with its operation and capacities. A recording from an interview is the primary material used to create a verbatim transcript. In addition to a recording, notes taken during an interview are used to augment a transcript and any analytic materials associated with it.

The third issue to consider before administering an interview is how to comport yourself. It is vital that a researcher establish rapport with an interviewee. This entails maintaining eye contact and being an active listener. Eye contact, facial expressions, and other non-verbal cues can be used to facilitate and guide a conversation. It is important to take field notes and jottings during an interview. This gives an interviewee cues that the topics of discussion and her or his responses are important. Field notes taken during an interview also supplement the audio recording. In cases where the audio recording is inaudible or a recording device malfunctions, the field notes taken during an interview are critical to reconstructing a discussion.

The final issue to consider before administering an interview is what to do immediately following it. A plan should be in place to transition from interviewing to transcription and note

taking. Immediately following an interview, it is a good idea to verify that your audio recording captured the interview. If the recording worked, the researcher should make some initial field notes about the interview experience. Then the researcher should produce a verbatim transcript of the recorded interview. Once a verbatim transcript is completed, the researcher can add field notes and memos to it. If the recording did not work, the researcher needs to immediately sit down with her or his field notes and jottings from the interview and reproduce as much of the discussion as possible. Once an interview transcript and associated notes and memos are in place, the researcher can begin coding and analysing the data.

Traditionally, semi-structured interviews have been administered in person. Although face-to-face interviewing is the gold standard in qualitative research, there are times when it is not feasible. This is particularly relevant to some types of applied research that planners are engaged in. In some cases potential interviewees are not accessible for in-person interviews because of logistical and time constraints. When constraints to in-person interviewing are present, alternative strategies are sometimes available that apply new technology. Salmons (2010) discusses a number of these options. They include the use of the Internet, smartphone technology, Skype, video chat rooms, email, and telephone interviewing. Though each of these technologies has its own unique limitations, they represent a number of new platforms for collecting qualitative data.

Focus groups

Semi-structured interviews involve one-on-one interactions. However, it is sometimes advantageous to conduct group interviews. Qualitative researchers refer to this type of data collection as focus group interviewing. There is an extensive body of literature on how to conduct focus groups (Barbour, 2007; Gaber & Gaber, 2007; Krueger & Casey, 2009). Focus groups are group interviews guided by a moderator. They are advantageous in applied research settings because focus groups allow a researcher to collect data in a relatively short period of time from multiple individuals. They also entail relatively lower costs. Focus groups utilize a format that is familiar and understandable to participants. They mirror group discussions about a topic of interest. This format is highly conducive to the examination of planning issues, particularly when multiple perspectives are sought and there are logistical and time constraints involved in data collection. Focus groups are also useful when exploring a relatively new topic where there is a need to identify its parameters for subsequent analysis. I use focus groups frequently in my own research. For instance, focus groups were a central component of a study I did with a colleague on administrators' and policymakers' perceptions of fair housing policy in Buffalo, NY (Patterson & Silverman, 2011).

Despite the advantages of focus group research, this methodology entails challenges. Foremost is the challenge a focus group moderator faces in keep the discussion focused on the research topic. The presence of multiple participants increases the likelihood that a focus group discussion will drift off of its intended topic. It is essential that a focus group moderator is skilled in facilitating a discussion. Focus groups also entail challenges due to their inclusion of multiple participants. Group dynamics add layers of complexity to analysing data. Researchers must account for the social environment that group interactions are embedded in when analysing data. Focus groups also require greater logistical coordination. Multiple participants must be assembled and a moderator must coordinate her or his activities with other members of a research team.

Typically, a focus group has six to ten participants. The ideal focus group should be small enough so each participant has the opportunity to share her or his insights, but large enough to

include a variety of individual opinions. On average, a focus group discussion runs for about one to two hours. Studies typically use multiple focus groups to examine a topic. Each focus group is composed of participants with similar characteristics. For example, a series of focus groups on neighbourhood revitalization may include separate groups for: residents, developers, renters, homeowners, youth, and other stakeholders. As a rule of thumb, it is common to conduct three to five focus groups in an exploratory study. During the analysis of focus group data, researchers will compare within and between groups.

In a similar manner to semi-structured interviews, focus groups use open-ended questions to identify perceptions of individual participants. The focus is on identifying individual and group perceptions. Focus groups are not designed to develop consensus, solve a problem, or arrive at an agreed-upon plan of action. These outcomes may result from a focus group discussion, but they are not the goal. The purpose of a focus group is to generate usable data to understand the scope and depth of an issue under examination. Data are collected about participants' responses to questions posed to a group and their interactions. Verbal and non-verbal responses are recorded. Data are recorded using audio recording equipment, field notes, and sometimes video. These data are organized into field notes and transcripts for further analysis.

The moderator fills an essential role in the focus group. She or he brings structure to the group's discussion. The moderator poses questions to the group, probes for details, and maintains the group's focus. The moderator also ensures that all group members participate relatively equally in a discussion. This is achieved by calling on people who are reticent and preventing more domineering individuals from excessively influencing a conversation. The moderator should employ similar techniques as an interviewer does to stimulate conversation in a semi-structured interview. These include being an active listener, taking notes, and maintaining a neutral posture. However, a focus group moderator usually has the benefit of the presence of other research team members who exclusively take field notes and operate recording equipment for data collection.

The focus group is guided by a *questioning route*. This is similar to an interview guide that is used in a semi-structured interview. The questioning route includes five elements. The first element is the introduction. The introduction provides an overview of the study, a description of focus group participants' roles in the research, and introductions of the research team members and participants. The introduction also includes a discussion of confidentiality and elements of an informed consent process. Because focus groups entail group discussions, it is difficult to guarantee complete confidentiality. However, it is customary to request that each member of a focus group refrain from sharing the content of a discussion and individuals' comments outside of the research setting.

The second element of a questioning route is a statement of rules for conducting the discussion. In this statement, the moderator requests that the discussion remain an orderly and polite environment where everyone is encouraged to participate. Participants should be reminded that the purpose of the focus group is to identify the full range of opinions. Participants are not required to agree with one another. The moderator should also define her or his role as a neutral facilitator.

The third element of a questioning route includes the questions for discussion. This element of the questioning route is similar to an interview guide used in semi-structured interviewing. It includes a series of grand-tour questions and probes. The questions typically begin with a general question that serves as an icebreaker. This question is followed by questions focusing on more specific issues. The last question posed to a group typically asks for any final thoughts. Following the discussion, some focus groups are presented with a handout for individuals to complete, which includes basic demographic questions.

The fourth element of a questioning route includes special activities used to add dimension to data. Not all focus groups include this element. When special activities are incorporated into a focus group they include things such as: drawing exercises, mapping, the interpretation of photos and video, model building, role playing, and other group activities. In planning research, these types of activities are often applied in workshop or charrette settings. Focus group participants might be asked to review preliminary plans, building facades, or urban design elements, or discuss policy proposals. The materials produced by focus group participants through these special activities become part of the data record for later analysis.

The final element of a questioning route involves guidelines on how to deal with sensitive topics. Some focus groups deal with sensitive topics like drug abuse, crime, sexism, racial segregation, deviant behaviour, or other potentially volatile issues. In a group setting it is advisable not to put individuals on the spot when asking about sensitive topics. Instead, questions should be structured in a manner to allow participants a degree of separation from sensitive topics, as opposed to pressing them to insert themselves directly into a situation. For instance, individuals might be asked, "What do you think the effects of racial segregation are on a neighbourhood?" instead of, "Tell me about how you have been affected by racial segregation." This approach allows participants to first consider sensitive topics in the abstract before volunteering information about more concrete, personal experiences. Skilful moderators can guide group discussions of sensitive topics from general perceptions to concrete examples using probes that follow grand-tour questions.

Focus groups are frequently used in applied planning research. There are other methods for data collection that complement or mirror focus group research. Some of these include the holding of electronic town hall meetings, media focus groups, charrettes, and community workshops. New technology is increasingly being applied to focus group research through the use of remote conference calls, Skype, and online discussion boards. These methods are discussed by Sanoff (2000), Krueger and Casey (2009), and Salmons (2010).

Conclusions

In closing, qualitative methods add to the research capacity of planning scholars and professional planners. They are particularly beneficial when the perceptions of stakeholders are multifaceted and nuanced. Although they can be applied to all sub-disciplines in the planning profession, qualitative methods are most frequently used when questions of equity are raised in the planning process. This is one reason that individuals engaged in community development routinely apply qualitative methods to their work.

Each of the methods discussed in this chapter complements the use of quantitative data in planning. For instance, census and other demographic data are often used in conjunction with qualitative data to inform plan making. Other mixed-methods approaches are used in areas like environmental planning, transportation planning, disaster mitigation, economic development, and market analysis.

One of the more promising areas for the use of qualitative methods involves the growing field of participatory action research. This brand of research has become increasingly popular as more planners attempt to use research to empower community residents and other stakeholders. The fusion of equity planning and action research offers the potential to transform planning research and level hierarchies in society. A growing body of work has been initiated to promote the development of this stream of methodological development. Stringer (2007) and Stoecker

(2005) provide a framework for designing participatory research. Colleagues and I have critically examined the extent to which participatory action research can be applied to planning (Silverman, Taylor, & Crawford, 2008). Notwithstanding our critiques, scholars and practitioners continue to make progress towards the development of more inclusive approaches to planning research.

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3.3

RESEARCHING COMMUNITY ENGAGEMENT IN POST-1997 HONG KONG

Collaborative or manipulative practice?

Mee Kam Ng

Introduction: "seeking truths"

"What story do you want to tell?" my mentor, Professor John Friedmann, used to ask me when I was his graduate student many years ago. In our good "Asian" tradition, scholars are expected to tell the "truths" – we are not supposed to be just storytellers! It took me many more years to realize the value and fun of storytelling in various truth-seeking expeditions. The following is one of them.

Post-1997 Hong Kong had been hit by the Asian financial crisis that degenerated into an economic depression, exposing social polarization and inequity issues; health threats such as bird flu, red tides and, most tragically, severe acute respiratory syndrome (SARS) in 2003. In that fatal year the government announced its intention to pass a national security law that threatened to undermine freedom of speech in the liberal city; the result was that half a million people took to the streets to demonstrate and protest on 1 July, a date that marks the return of Hong Kong to Chinese rule. The protest eventually brought down the first chief executive of the postcolonial Special Administrative Region and his Health and Security ministers. Emboldened, the civil society has become more proactive in making their voices heard on various planning-related issues. In the face of its severe "legitimation crisis", the government then made bold attempts to engage the community on various fronts, most notably in urban renewal, the planning of a new cultural district in West Kowloon, and harbour reclamation and planning. However, if we look at the legal and institutional framework, the formal urban planning system remains intact and as top-down as ever and allows limited citizen participation. So I am intrigued to seek out the truth about the more bottom-up as well as the government's community engagement activities in post-1997 Hong Kong: Are they genuine collaborative planning experiments? Or are they just manipulative practices, to "legitimize" and "rationalize" the status quo of an unpopular

government? These become my initial questions of inquiry in the aftermath of the fateful year of 2003.

The need for an appropriate research framework

To seek "truth" about the nature of the spree of community engagement actions, I applied for a small research grant to carry out the research from 2005 to 2007. Crafting a good research framework and developing an appropriate strategy and suitable methodologies were important first steps, and this is even more important in the Asian context as many of the theories developed in the urban field are based on western contexts that could be fundamentally different from the Asian ones. In most cases, a preliminary theoretical framework can serve as an effective "lens" for us to develop a perceptive understanding of seemingly sporadic and incoherent events. However, given the fluidity of our studied phenomena and likely limitations of our conceptual construct, theoretical framing has to be done flexibly, allowing for modification as the research and reflections on research findings proceed.

To explain the intriguing phenomenon of an unpopular executive-led (top-down) government suddenly embracing widespread community engagement in planning activities, I started to explore the concept of "collaborative planning", and the meaning of "manipulative practice", "legitimation" and "rationalization", pertinent theoretical issues that have grown out of earlier discussions in the planning field on community participation (Arnstein, 1969; Long, 1975), the roles of urban planners (Friedmann, 1987; Gunder, 2003; Smith and Blanc, 1997) and the importance of a transparent and inclusive planning processes (McClendon, 1993; Webler, Tuler and Krueger, 2001). As I did not start with a clean slate, I did have the advantage of understanding the "communicative turn" of urban planning and the origin and evolution of "collaborative planning practice" in the western literature. The questions for me then are related to the need for examining the genesis and development of "collaborative planning" in the specific context of Hong Kong as a postcolonial, non-democratic, "liberal" market economy. Is the government genuinely embracing "collaborative planning" or is it just a calculated exercise? The answer to this question requires the formulation of a tentative evaluation framework on the processes and results of public engagement.

Formulating a research framework

Professor Patsy Healey at the 2010 AESOP Conference explained the origin of her thoughts on collaborative planning as a plausible and indeed more desirable alternative to what we now call "neo-liberalism", deregulation and reliance on market forces to resolve urban issues (Healey, 2003, p. 102). She emphasized that the idea was developed to answer a specific context in England, though it did subsequently travel around the globe and was implemented in other parts of the world. This anecdote is an important reminder for all "truth-seekers" or "storytellers", as it is our duty to search for the origin, emergence and evolution of a concept in time and space, a methodology not unlike the principles of "historical specification" underlined by Korsch (1938) or the kind of genealogical studies exemplified by Foucault (1977). Hence before we can answer the initial research question, we have to examine how the origin of "collaborative planning" in Hong Kong is different from its western counterpart. This will help us appreciate the uniqueness of the "collaborative planning" experiment in the city and identify more accurately the impacts such a move has produced.

To assess whether the collaborative planning experiments were genuine or manipulative, a framework needs to be developed to evaluate the format, contents and outcomes of "collaborative planning" (Flyvbjerg, 1998, 2001; Innes and Booher, 1999; Healey, 1997, 2000; McGuirk, 2001; Yiftachel and Huxley, 2000). Interestingly, the relevant literature reveals an intense debate on the possibility of collaborative planning, especially within an existing skewed power structure, also a central issue in the case of Hong Kong. And these debates point to the importance of not just understanding the collaborative planning processes and outcomes but also developing a sensitive and vigilant awareness of the wider contexts of power relations that give rise to collaborative planning practice and its implications.

The seemingly competing schools of thought constitute rich ingredients for setting the research directions with reference to the two key aspects of research outlined earlier: the origin of collaborative planning practice and the format, content and nature of the experiment.

On the origin of collaborative planning practice

In England, collaborative planning can be seen as a reflexive response by a group of academics to "salvage" and defend a long-established planning system in face of "high Thatcherism" (neoliberalism) and deregulation in the mid-1980s (Healey, 2003, p. 102). It was an attempt to redefine planning as a strategic way out for collective transformation in the governance of places (op. cit.). The story is totally different in Hong Kong. A version of "collaborative planning" was advocated by activist groups, and it was eventually adopted by the then rather desperate government as a way to "salvage" itself from a severe "legitimation crisis" (Ng, 2008, 2011). It was nevertheless a bold experiment in the city's planning scene, made possible at a unique space-time when the new Hong Kong Special Administrative Region (HKSAR) government encountered relentless opposition from a maturing civil society as the city slid into deepening crises on various fronts. It was an experiment to promote planning rooted in the collective wisdom of different stakeholders in a society that has always privileged the market and the executive-led government.

In other words, while "collaborative planning" was put forward as a means to transform a planning system that the British government then tried to deregulate, the experiment in Hong Kong was instigated by members of the civil society as a way to establish a more inclusive planning system when the government was relatively weak and its established top-down and exclusive mode of development and planning could not function properly in face of the economic and social crises.

Is collaborative planning possible at all?

"Collaborative planning" as a concept is simply an ideal type (Weber, 1949). Healey (1992) puts forward ten propositions (pp. 154–156) to characterize the "communicative turn" of planning theory and practice and suggests four questions to audit the collaborative planning process itself (Table 3.3.1). Interestingly, subsequent arguments in the literature help shed interesting light on my research questions. On one hand, critics argue that the planning context is full of "conflicting rationalities" shaping and maintaining certain power structures (Flyvbjerg, 1998; Watson, 2003), and hence communicative planning practice, ignoring contexts and power relationships, is seen as too naive, idealistic or simply impossible (Flyvbjerg, 1998; Yiftachel and Huxley, 2000). On the other hand, advocates of communicative practice and collaborative planning repeatedly argue that situated communicative analysis can help expose the dominant power relationships and point to critical spaces of possible resistance – that is, using communicative planning

Table 3.3.1 Auditing the collaborative learning process

Stakeholders and arenas: "To explore who has a 'stake' in an issue, and where discussions might take place. The arenas of political, administrative and legal systems create formal 'places' through which policy principles have to pass to achieve administrative or legal legitimacy."
Routines and styles of discussion: "It involves 'opening out' issues, to explore what they mean to different people . . . recognizing the often deep divisions among stakeholders, and the cultural, economic and political bases for these . . . making difficult chains of connection between what bothers people, what causes this, and what could be done about it."
Making policy discourse: "creating a new *policy discourse* . . . a knowledgeable consensus around a particular storyline, the task of consolidating the discourse and developing its implications can then proceed."
Maintaining consensus: "a strategic policy discourse needs to be subjected to continual reflexive critique . . . regular review combined with formal specifications of duties to review, and with rights to challenge the performance of these duties."

Source: Healey, 1997, pp. 268–283.

practice as a platform for a critical review of multi-sectoral and multi-scale power plays to grope for sustainable futures (Healey, 1997, 2003). These two contradictory schools of thought provide valuable resources in the development of a framework to evaluate the collaborative planning experience in Hong Kong.

In order to verify the foregoing "truth" claims, we have to develop some measurable or researchable aspects for the drafting of research questions and methodology. Flyvbjerg (1998, pp. 227–234) argues that power defines reality, rationality and knowledge and hence he challenges the transformative power of planning and discourses in face of skewed power relationships. In other words, while Healey searches for possibilities of alternative transformative practices in the collaborative planning process, Flyvbjerg cautions continuously about the power play that will keep thwarting such a search. The appreciation of the existence of this real tension is helpful in framing the research. And Innes and Booher (1999, p. 419), consensus building advocates, offer a useful framework to evaluate the quality of the processes and outcomes of "collaborative planning" experiences. Such evaluation will be instrumental to decide if the planning processes and outcomes are results of collaborative or manipulative practices. Table 3.3.2 attempts to employ Innes and Booher's framework (1999, pp. 419) to aid the operationalization of Healey's "auditing questions" into a set of research ideas.

Generating a set of research questions

The foregoing research directions contributed to the development of the following sets of research questions that aim to discover whether the spree of "community engagement" experiments was just manipulative practice or genuine practice with collaborative outcomes.

Healey's first two "auditing questions" relate to "stakeholders and arenas" and "routines and styles of discussion" (Table 3.3.1). Two specific contextual questions were set to examine how different stakeholders perceive the evolving roles of the government, the various private sectors, lawmakers, professional bodies, civil society organizations, etc. in the planning and development

Table 3.3.2 Auditing and measuring the collaborative learning process

Stakeholders and arenas	**Contextual** • Who are the key stakeholders in the current planning process? • What are the "existing arenas of political, administrative and legal systems"?
	Collaborative planning experiment • Did it include representatives of all relevant and significantly different interests? • Was it driven by a purpose and a real and practical task shared by the group?
Routines and styles of discussion	**Contextual** • How do different stakeholders evaluate the planning context and systems?
Routines and styles of discussion	**Collaborative planning experiment** • Was there high-quality information of many types with assured understanding and agreement on its meaning? • Is the process self-organizing, allowing participants to decide on ground rules, objectives, tasks, working groups and discussion topics? • Was the process engaging, keeping participants at the table, interested, and learning through various means?
Making policy discourse	• Did the process encourage challenges to the status quo and fosters creative thinking and learning?
Maintaining consensus	• Did it end stalemate? • Was the discussion thorough and solutions responsive to differences? • Was there a high-quality agreement? • Was social and political capital created? • Were there changes in attitudes, behaviors and actions, spinoff partnerships, and new practices or institutions? • Did the experiment result in institutions and practices that are flexible and networked, permitting the community to be more creatively response to change and conflict?

Source: Modified on a synthesis of Healey, 1997, pp. 268-283; and Innes and Booher, 1999, p. 419.

processes since the return of Hong Kong to Chinese rule; and to gauge their views on the utility of the urban planning system in Hong Kong in effectuating positive changes. Understanding different stakeholders' points of view on these issues would add to my own evaluation of the existing political, administrative and legal landscapes and, as Healey argues, "making difficult chains of connection between what bothers people, what causes this, and what could be done about it" (1997, p. 270). Auditing the practices then helped sensitize me and my interviewees about emerging practices or discourses in the various engaging exercises.

The main set of research questions aimed to examine if "collaborative practices" with characteristics highlighted in Innes and Booher's framework existed, contributing to "a new policy discourse":

- Who was involved in the "collaborative planning" experiments?

- What were the characteristics of the experiments in terms of the quality of information shared, the formats of engagement and the autonomy of the participants in shaping the objectives and agenda of the "collaborative planning" process?
- Were there efforts to allow in-depth discussions and debates among different stakeholders?
- Did new "discourses" emerge in the process? Were participants "allowed to voice their needs, aspirations and priorities" and did they "challenge the status quo"?
- How did the participants evaluate the results of the experiments? Did they develop or change their positions in the course of the engagement exercise? Would they agree that the process had produced "a quality outcome"?
- How would different stakeholders evaluate the costs and benefits of the experiments?

Developing a research methodology

Identifying strategic research materials (SRM) is very important, and Merton (1987, pp. 10–11) defines SRM as

> the empirical material that exhibits the phenomena to be explained or interpreted to such advantage and in such accessible form that it enables the fruitful investigation of previously stubborn problems . . . the (location) strategic research sites . . . and the (temporal) strategic research event.

In other words, SRM can effectively reveal the structures and operations of the studied phenomena. As I would like to evaluate the "collaborative planning" experiments in postcolonial Hong Kong, I identified four major cases as SRM to study. These cases were chosen because they were then representative and exhaustive of the controversial urban development and planning issues (Ng, 2013). These projects were all initiated by the government and were strongly objected to by the civil society, forcing the government to return them to the drawing board. Two of these projects represented the government's efforts in "collaborative planning" and two of them involved more autonomous community inputs:

- Redevelopment of the old international airport at Kai Tak;
- Redevelopment project of the "Wedding Card Street" (Lee Tung Street) (see Figure 3.3.1);
- The development of the West Kowloon Cultural District; and
- Harbourfront reclamation projects.

A three-pronged approach was developed to proceed with the research. The first one was desktop research to trace the origin and evolution of these projects against broader socio-economic and political changes in Hong Kong as a whole. The interpretations gained in this archival research were cross-examined by the contextual questions asked in the stakeholders' interviews. Not only did thorough archival research reveal the specific developments of each project, but also such works allowed the research team to identify stakeholders for interviews and follow-up actions. For each project, a list of potential interviewers was therefore developed and interview requests were sent out.

The second approach of the research involved twenty-five systematic interviews with different key stakeholders in the government, the professionals (intellectuals), NGOs and social activists, to compare and contrast their views on their perceptions of the collaborative planning experiment in post-1997 Hong Kong; their first-hand experiences in community engagement

Figure 3.3.1 Wedding Card Street.
Source: Author.

activities; and their assessments of the process as being collaborative or manipulative. These semi-structured interviews not only provided systematic feedback to the research questions derived from the theoretical debates, but also helped provide a wider contextual understanding of the changing societal trend towards community activism and engagement.

As a third approach to verify the foregoing research findings, efforts were made to participate in various engagement activities related to the identified projects. Some of these engagement activities were organized by the governments while others were organized by different networks of NGOs. Besides physically participating in the engagement activities, information and communication technology (ICT) has allowed me to be part of the virtual networks of various groups, which have provided yet another set of perspectives with reference to the formulated research questions. Furthermore, I was particularly fortunate to be a member of the then tripartite (comprising government, private sector and NGOs) Harbourfront Enhancement Committee in Hong Kong and was able to witness the engagement of communities in some harbourfront reclamation projects: some were promoted with the ideal of collaborative planning in mind and others were dominated (manipulated) by the government (Figure 3.3.2). The opportunities allowed me a better understanding of the complexities and challenges of promoting collaborative planning in an institutional set-up that "facilitates" manipulations by high-level government officials. When unchallenged, a fully fledged manipulative approach could easily unfold in a government-dominated process. In at least two incidences, we were successful in reversing the engineering approach adopted by the government to carry out a road-led reclamation project and allowed different stakeholders to reflect and discuss about the desirability of harbourfront planning and the incorporation of a main road on the reclaimed land. The whole process, in a sense, has transformed people's views on the harbour as "a unique natural heritage worthy of protection by law" rather than just a reserve for further land reclamation (Ng, 2011).

Figure 3.3.2 Reclamation project: community engagement workshop.
Source: Author.

As a result, the whole experience prompted me to reflect deeply on the critical roles of intellectuals, particularly in a non-democratic political setting (Ng, 2011).

In other words, the triangulation of these three sets of qualitative methodologies has allowed me to develop a much more nuanced understanding of the important roles played by the built-environment–related professionals as knowledge "bearers" or "workers" within or outside the government and the lay public as potential "power holders" in the planning processes embedded within the wider manipulative and contesting power relationships. Their perceptions and evaluations of a situation, especially in exposing dominant power relationships, and their active choices of consequent transformative actions to point to critical spaces of possible resistance (Healey, 2003) will make a big difference to the outcomes of events.

General research findings

The research was done when Hong Kong was in a rather long-drawn economic depression triggered by the Asian financial crisis in the first decade after her return to Chinese rule. Besides economic hardship, the city experienced environmental and health crises, including air pollution, red tides, chicken flu and SARS. Interviewees shared their observations on the general aspirations of the lay public, especially among the younger generations, to have a larger say in the city's development process. The economic depression and a slower pace of life had allowed professionals and the general public alike more time and resources to participate in the planning process. Many had adopted various approaches, including applying for land use changes, launching protests, staging community-based public hearings, exhibitions, discussion fora, etc., in order to have their voices heard. Due to losing its legitimacy and rising public sentiment in various planning-related issues, the government embraced "collaborative planning" experiments with reference to a number of controversial urban development projects.

Although Hong Kong had experimented with collaborative planning, the degree of the inclusiveness of the engagement process in the four studied projects varied (Ng, 2013, 2011, 2008; Ng, Tang, Lee and Leung, 2010; Tang, Lee and Ng, 2011). The research showed that engagement activities by local communities were the most inclusive but those organized by the government varied according to whether there was a degree of urgency or the existence of preconceived ideas by the public sector. Hence, some engagement activities were dynamic and served to nurture creative ideas to challenge the status quo and develop a "new discourse", while others were seen as having a "hidden agenda". Excluding those activities organized by the local communities, all the engagement works were controlled by the executive-led government. However, this does not mean that people were not allowed to express their needs, aspirations and priorities. For the urban renewal project, participants contended that there was no real dialogue. Yet for the replanning of Kai Tak airport, the interviewees believed that people had good debates and discussions.[1] As a general rule, the most enjoyable engagement activities were those organized by NGOs. Yet even for highly controlled and "manipulated" ones, participants considered it a good venue to "vent their frustrations". In fact, one interviewee complimented the change, as in the past, only a selected few would be "consulted". Through the engagement process, views were openly expressed and those participants who first joined the activities with their own self-interests in mind began to learn about the significance of wider public concerns, such as heritage issues and the importance of the local economy, etc.

While almost all interviewees were not happy with the quality of information nor the amount of time for discussion, they could all offer pertinent recommendations, such as the importance of a detailed and thorough understanding of the place and its meaning to local people and other stakeholders before the engagement activities, and the efficacy of asking good questions in order to obtain quality information. Most of the interviewees felt a lack of sincerity on the part of the government and believed that the government should provide real options for deliberations or at least explain why it was not willing to consider other alternatives. The engagement experiments did allow participants to practise majority rule or use evidence and facts to aid collective decision making. However, this took place only in projects with little urgency or controversy. As the collaborative endeavours had lofty goals, participants in general were not too happy with the final recommendations, especially when the engagement experiments were not part and parcel of the established institutional set-up and hence the eventual impacts of the recommendations could be limited. Similarly, most of the interviewees did not think that the agreements reached in the various projects were of particularly good quality. Yet they all admitted a change of position in the process, such as appreciating the merits of public interest or broader community views; witnessing the utility of the process; or encountering good quality information.

Although most interviewees pointed to a varying degree of intervention and control by the government in the collaborative planning experience, their evaluation of the whole exercise, surprisingly, leaned to the positive side. While they all agreed that engaging the public had cost implications and they expressed frustration at the process as it served largely to legitimize the government's actions, they were quick to point out that the experiments provided good training for the community to learn to be tolerant and respect others' views and to empower them through cross-sector networking to fight for their needs. The deliberations, no matter how manipulated, helped the participants appreciate the complexity of the planning process that went beyond land use planning, inspiring them to ask more and better questions and to demand quality information, thus boosting their capacity as good citizens. As a result, community groups have become more experienced in forming alliances and in using the mass media to advance their demands in the planning and policymaking processes.

Going back to my initial research questions, the answers are interesting because to a large extent, my interviewees perceived that the collaborative experiments were generally manipulative exercises, serving basically to legitimize the government's actions. However, there are surprises because the experiments did produce results that have helped intensify the changing political ecology of the city. Of course, without the wider socio-economic and political changes in the first place, the government would not have experimented with the collaborative planning approach. And once changes take place, outcomes depend on how individuals grasp and maximize the available opportunities for the public good.

Reflective practice

Hong Kong has been in interesting times. As an administrative, no-party, postcolonial city "quarantined" by the "one country two systems" policy initiated by socialist China, the undemocratic political system lags far behind the aspirations of its citizens. Lacking legitimacy and facing incessant social and health crises, the government chose to experiment with collaborative planning. Hence, in retrospect, it was inevitable that the attempt was made out of desperation to maintain control and earn legitimacy for the unpopular government rather than to share power and to seek creative and innovative ideas from the community as a way to move forward. Indeed, critics have been condemning the various engagement activities as smokescreens and accusing participants of their naivety in being exploited by the shrewd government officials. These arguments have prompted this study and, while the "charges" are proved generally correct, there are surprising results! In the collaborative planning experiments, power could potentially be exercised by everyone, not just by those who were in positions to manipulate it. Participants had to be vigilant to identify dominant power relationships and points of possible resistance. In fact, not all chose to "manipulate", and some planners and government officials genuinely engaged participants and came up with quality planning outcomes, especially in projects that had less pressing deadlines. And many of the community members have been empowered, through the government's and their own engagement activities, and become better citizens!

The concrete case studies have allowed a grounded evaluation of the theoretical debates surrounding collaborative planning in skewed power networks in the specific context of Hong Kong, allowing us to appreciate a more nuanced and realistic picture regarding the "bright" and "dark" sides of collaborative planning practices. The manipulated or otherwise engagement processes have constantly confronted the conscience of everyone within and outside the established institutions to use their knowledge and expertise to maintain or challenge the status quo (Ng, 2011); they enabled participants to experience and realize the complex relationships between land use planning, socio-economic considerations and abstract concepts such as public interest, social justice and environmental sustainability! However, the frustrating point is that the established institutions remain unchanged and the government goes back to "business as usual" when their projects are approved formally (Ng, 2013). This will require another study that probes the relationships between enhanced capacities of citizens and opportunities for transformative place governance, which inevitably would invoke debates on the concepts of development rights, the right to the city, etc. (Ng, 2012).

The study also reveals the strengths and limitations of the selected methodologies. Triangulating research findings through archival studies, interviewing stakeholders, and participating in engagement activities and government-facilitated committees have not only provided the author with first-hand experience in the collaborative planning experiments, but also presented

different important perspectives for the evaluation of the whole process. As most of the collaborative planning theories have their origins in the western context, practising representative democracy, the study provides a better understanding of the utility and limitation of collaborative planning practice in a non-democratic polity. While it is not groundbreaking, it helps engage Asian scholars to reflect on issues that need to be reflected upon when western concepts are adopted in understanding urban issues in Asian contexts. The methodologies adopted certainly have their limitations. For instance, since not every stakeholder was interviewed, the perspectives gained were bound to be selective and hence the conclusions drawn need to be further deliberated in the public domain for the critical scrutiny of the various stakeholders.

The result of this research inquiry should prove to be very important to participants in a planning process. The projects show that the choices of action in utilizing our expertise and knowledge would make a big difference to planning outcomes. In an undemocratic setting, it is all the more important to have professionals who realize and practise their roles as "public intellectuals" and work with the lay public to generate locally grounded knowledge, pointing to avenues of practical and transformative actions that help develop a more sustainable future for human flourishing (Friedmann, 2000; Ng, 2011, 2012)! Hopefully, for those in similar contexts, they will find our stories relevant and inspiring!

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Note

1 The collaborative planning experiment in replanning the old Kai Tak Airport, "Planning with the community – Kai Tak: real people, real places and real results", received a Hong Kong Institute of Planners' Certificate of Merit Award. The announcement can be seen at www.hkip.org.hk/admin/ewebeditor3.7/uploadfile/20071105162025306.pdf (accessed 5 August 2014).

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3.4
PLANNING FOR THE PLACE
Ethnographic research and planning practice

Sandra Lee Pinel

Social and spatial research is essential to planning practice, from the projection of trends and problem analyses to the evaluation of feasible alternatives and social impacts of implementation. In an effort to be recognized as a social science in the 1980s, planning embraced a positivist approach that isolated variables for probabilistic analysis and generalized application to problems (Madsen 1983: 113–116). As the application of knowledge to action in the public domain (Friedmann 1987), planning tries to anticipate or forecast events so that they might be steered, but the future is unpredictable and affected by multiple global and local drivers, institutions, actors, and technologies (Hopkins and Zapata 2007).

A recent meta-analysis of how planning theory uses empirical studies found a diversity of inductive and deductive planning research (Mickey and Wagner 2006). Positivist research approaches supported assumptions of rational comprehensive planning, such as a single public interest and modernization trajectory (Friedmann 1987). An increasingly diverse public cannot be assumed to agree on the most fundamental concepts of quality of life and the public interest (Dandekar 1986; Fainstein 2000). Jane Jacobs' fine-grained observation of informal urban support systems to demonstrate the unforeseen and destructive impact of federal urban renewal projects (1961), taught planners to recognize the importance of understanding human values, perceptions, institutions, and social dynamics for the development of acceptable, feasible, and beneficial plans for particular places (Contant and Forkenbrock 1986). Planners need social science to understand aesthetic and other associations to these built environments, and to explain interactions and decisions that often vary from recommended plans (Dandekar 1986, 2005). Increasingly influential scholarship is based on theoretically driven case studies (Innes and Booher 2010; Margerum 2011). Planning practice, however, continues to transfer practices from one place to another without sufficient attention to the role of context in outcomes. A survey of planning programmes shows growing but insufficient attention to training planners in qualitative methods – referring to a complex set of research designs, data collection techniques, and non-probability-based analyses such as case study and comparative research, institutional analysis, and the principles of inquiry using interview methods and observational techniques with other methods (Goldstein 2012).

This chapter agrees with Healey (2006: 323) that successful spatial planning practice is contingent on the social relations and opportunity structures of specific situations. Place-based social science research is needed to understand the interplay of economic, social, cultural, environmental, and political/administrative dynamics that affect spatial planning outcomes (Yaro 2007: 104–105). Healey provides a starting point and structure to introduce how and why ethnographic and cultural mapping methods can be applied to typical local and regional planning problems. The defining methods of ethnography are participant observation and fieldwork, supported by interviewing of key informants. Other methods may include free listing, the study of motion in places (proxemics and kinetics), the use of visual images and documents, and many more (Bernard and Ryan 2010). It is the researcher's proximity to the situation and his or her own process of questioning assumptions that help in the analysis. Ethnographic case studies can explain how a process succeeded in one place and failed to elicit input in another cultural setting (Abott 1999; Hou and Kinoshita 2007).

After a short review of planning problems that call for the use of ethnography, this chapter describes three of the most established ethnographic methods from cultural anthropology and human geography: participant observation, semi-structured interviews, and participatory mapping. Two examples from the author's own work as a planner and researcher in the western US are used to illustrate their application to three planning problems: (1) finding and documenting the values and concerns of stakeholders; (2) evaluating the feasibility and appropriateness of alternative courses of action; and (3) facilitating collaborative spatial planning through understanding various cultural landscapes. The chapter begins with the presentation of these three problems and a short discussion of key concepts regarding culture and the epistemology of research. After presenting the methods and examples, the chapter briefly notes important skills that must be taught for data analysis, review of research validity, and ethical conduct. The premise is that planning must attend to the values and social context in which it is proposed if it is to be beneficial and feasible. Rapid ethnographic and participatory action research approaches are also introduced. The reader should come to appreciate the usefulness and importance of using ethnographic approaches from anthropology and human geography to multiple planning situations and to appreciate the need for further reading and training.

Planning problems for ethnographic research methods

Problem one: public participation and the identification of the stakeholder values, knowledge, and interests

Planning theory and practice have heavily relied on public participation to ensure justice and legitimacy, as well as to include local knowledge. The discipline has long recognized severe limitations and biases in public planning meetings in terms of attendance and represented concerns. Peattie (1983) applied training as an anthropologist to evaluate or redesign urban planning projects in Latin America to uncover how important civic organizations and actors in community development affect planning outcomes. Tauxe (1995) used participant observation and analysis of word choice to demonstrate how a local public participant process marginalized white rural residents. Agency personnel were inclined to preference input from more educated newcomers who used "professional" wording in their comments. John Forester builds planning theory from interviews with planners (Forester 1989).

Ethnographic methods can be used to identify stakeholders, understand values and interests, uncover local knowledge, and gage the perceived legitimacy of the proposed plan or sponsor. Research methods for transformative, post-structural, postmodern, and critical social and

planning theories attend to gender, structural change, and the power of storytelling (Sandercock 1998, 2004). Ethnography can be used to document underrepresented voices.

Problem two: evaluation of alternatives and the practical possibilities of alternative planning and governance approaches and geographic scales given social dynamics and context

A most compelling case for the unjust or unrealistic implementation of plans without sufficient knowledge of cultural and social processes and priorities comes from James C. Scott (1998), who reviews a history of modernization projects based on generalized knowledge and state-endorsed universal indicators of social progress. Why did post-disaster victims in Turkey, for example, not move into provided housing (Ganapati and Ganapati 2009), and what transitional services should the development agency provide? When planners do not understand what Scott refers to as *metis*, locally situated knowledge, plans have unexpected or destructive outcomes.

Healey suggests that collaborative planning can create an additional layer of shared landscape values. One of the problems for regional and collaborative spatial planning is the development of a regional identity for collective political action. Regional governance has been found sustainable where people value a common landscape, such as the Puget Sound, Cape Cod, or Lake Tahoe (Foster 2001). Anthropology and human geography converge in the study of how places give material expression to meaning, and in understanding contested control over power, resources, and definitions of identity and authenticity (Appadurai 1988; Low and Lawrence-Zuniga 2003: 18). Ethnography is particularly compatible with the comprehensive and interconnected nature of public planning because it attends to the dynamic connection of household composition to economic activity, the political system, child rearing, resource use, trade, and more. Basic participatory mapping can be used with interviews to identify human and associative regions at different scales, as well as conflicts between groups.

Problem three: identifying power relations and dynamic processes in planning episodes and contexts

Anthropologists Scott (1998) and Escobar (1992) and many planners (e.g., Yiftachel 1999) have illustrated the destructive impact on social and cultural systems when modernization plans were adopted without regard to the historical, cultural, and economic contexts and power relations. Ethnographic methods provide detail on decision-making processes, especially when included in case studies, such as how citizens use a Portland plan to organize land use change (Abott and Margheim 2008). As an addition to other methods, ethnography can make spatial plans more participatory, culturally appropriate, socially feasible, and beneficial to diverse groups across a community or region. Participatory action research methods have also been popularized to empower "beneficiaries" with an understanding of spatial dynamics that could be leveraged in their own communities (Chambers 2008). In addition, with training and attention to ethical concerns, the planner can use participant observation in professional practice, especially when using rapid ethnographic research or participatory research approaches.

Ethnographic approaches, methods, and applications

Ethnographic inquiry is the close observation of the people and events being studied and accounting for how the actual context affects those observations (Emerson, Fretz, and Shaw 1995; Fetterman 2010). "Getting close, minimally requires physical and social proximity . . . in

the midst of key sites and scenes in order to observe and understand them" and to better understand the multiple ways that people experience and give meaning to these events (Emerson *et al.* 1995: 2). First used by anthropologists and geographers to describe unique cultures as bounded and unchanging sets of beliefs and practices (Fetterman 2010; Cloke *et al.* 2004), ethnographies also describe culture as how people mediate change through symbols, social institutions, and their own agents (Geertz 1983).

Rapid ethnographic research, like rapid rural appraisal (Chambers 2008) shortens the time needed for fieldwork. Research questions and tools are more focused so that a small team of researchers, comparing results from interviews and observations, can understand the populations affected by a plan or event, the common and different associated experiences and meanings and what explains these differences (Handwerker 2001: 5). The risk to accuracy from a lack of participant observation data is addressed by having multiple researchers and methods for comparison. Interviews are focused on three or four variables that are pertinent to the agency project. The benefit is the availability of targeted, cost-effective, timely results that are reported in a form that can be used immediately in plan design, monitoring, or evaluation. Limitations can largely be addressed through cross-checking findings among investigators and qualifying the results, as further explained ahead and in the literature that is referenced herein.

Participatory research connects knowledge to action by involving the "subjects" of the research or planning intervention in defining research questions and collecting data (Argyris, Putnam, Smith 1993). Within a large body of participatory action research from many fields, researchers, planners, and participants work together to examine a problematic situation and to use research to change it for the better (Kindon, Pain, and Keby 2007). Participatory action research goes one step further by focusing on how the community is empowered towards transformative action. By this participation, community members are engaged as co-researchers who use results to empower the group through a cycle of research and reflections, an approach first developed for ethnography by anthropologist Sol Tax (*University of Chicago Chronicle* 1995), and practised in many fields. Community and civic organizations or agencies become co-researchers who define the questions, analyse maps and interviews for barriers to progress, and thereby solidify action agendas and roles in community development initiatives. With participatory mapping and other data collection methods, the approach can offer insights into the political practice of negotiating local concerns within wider regional contexts and drivers. Validity, ethics, and writing methods must be addressed within the research design, which may include any or all of the following methods.

Participant observation

Participant observation involves collecting data of many kinds (numeric or qualitative) and taking notes in the natural setting of the processes of interest. The researcher accompanies people in their daily activities and establishes rapport while reflecting on the dynamics and meaning of daily events. Beard (2003), for example, provided a detailed account of how Indonesian residents learned radical planning indirectly within an oppressive state. The method can be used as part of planning practice, even when one is not doing official research. Participant observation can provide an understanding of power and influence as an aid in the identification of key stakeholders and underrepresented groups or world views. For example, participant observation of how different groups move through a plaza at different times of the day was used to redesign plazas and a national park (Taplin, Sheld and Low 2002; Low and Lawrence-Zuniga 2003).

The author used participant observation as a planner and programme manager with American Indian tribal governments in the 1980s at a time when federal policy encouraged all tribal governments to embrace business development for tribal economic self-reliance (Pinel 2007). The programme grant to a consortium of five small Pueblo communities required a strategy for economic development, but the Pueblos' planning committee objected to adopting what they considered to be capitalist values in large businesses that would compete on reservations with their own cultural emphasis on ceremony and egalitarianism. Development strategies were designed accordingly. Historical and cultural context mattered to these decisions and could be understood only through observation over time.

For example, the Clearwater Basin Collaborative in Idaho emerged from twenty-five years of public land management conflicts in north central Idaho among conservation, logging, recreation, and fish and game interests (www.clearwaterbasincollaborative.org). Observations of this group's monthly meetings since 2009 showed an ability of each member to respect one another's different values towards wilderness, logging, fish and game, and county revenue through a landscape restoration approach. At the same time, a stalemate over recommended wilderness designations was observed. Words used by participants indicated deep value differences. The logging industry kept using words such as "guarantee" and "getting something in return" when articulating what they needed to offer their support of wilderness, whereas the environmental representatives kept using words like "trust" and "good faith" and commitment to making the counties whole (Pinel 2013). It became clear that the values conflict was not just over conservation or development but also around the concepts of time and risk in making a trade or reaching a deal. When the author reflected that observation back to the co-chairs, they said that the gifting analogies and analysis were correct; they used the analysis in their next meeting and achieved an agreement on land designations the following year.

Interviewing of key informants

To estimate the parameter or proportion of a population with a certain attitude or attribute, the rules of random sampling for valid statistical analysis apply. However, when one needs to know why and how people think or act, then one wants to find cultural experts to interview.[1] Key informants are those who understand the information, share their knowledge, and help the researcher interpret and test results. Key informants are keen observers of their own culture or organization, rather than being selected to be statistically representative of a segment of the population. Methods have been developed to select key informants. Rather than quantity, key informants are usually selected for the knowledge they have of the topic or question (Bernard 2006: 186–209). Ethnography uncovers which segments of the population participate and whether the most senior and knowledgeable members are able to participate (Elwood 2006: 170–178). A few key informants can provide sufficient depth of information, provided they are selected for their level of cultural knowledge across diverse generations, ethnic groups, or historic layers of settlement or immigration. Interviews can be unstructured, as in the form of a data-rich conversation, or structured as questionnaires. Semi-structured interviews, discussed here, are based on a general interview guide of topics and questions that prod informants to expand freely upon a topic, such as watershed problems, followed by probing for details.

Informant interviews can be especially helpful in addressing the second planning problem, evaluating planning alternatives for their feasibility or impact, as illustrated in the Pueblo economic development example mentioned previously. The five-Pueblo planning committee, we

initiated a tribal agricultural production and marketing cooperative for traditional blue corn in order to enhance a traditional crop and build on family farming systems. We secured a few test participants, a harvest, and a market, but the participating families refused to sell the corn. We interviewed the women of these participating households to find out how they used the corn. Despite efforts to secure a market as an incentive for production, we found there was no "surplus" of corn. Cultural ideas of good citizenship rewarded sharing such corn with other families and ceremonial leaders, and selling it could have detrimental effects on social standing. The project was beneficial for non-income reasons. One of the participating Pueblos took over the project and corn drying equipment and developed its own commercial blue corn enterprise.

Interviews also deepened an understanding of a stalemate within the previously mentioned Clearwater Basin Collaborative by uncovering different non-negotiable principles and historical associations with the forest that worked against collaborative decision making with national interests (Pinel 2013). Informant interviews and focus group notes should be transcribed, coded, and interpreted with an eye to uncovering people's own concepts and description of events and to explaining diverse and contradictory responses or behaviours, rather than collapsing them into averages (Olson 2011). There are multiple hand methods and types of software to assist in coding interviews, as well as visual and text documents (Saldana 2009). For interviewing, essential skills include probing, active listening, observation of details, learning the way people use language, and having a good memory to supplement one's tapes and notes. Random samples are neither possible nor desirable in ethnographic research, although mixed-methods designs are often advised.[2] Participatory mapping can enhance the results of interviews for spatial planning.

Participatory mapping

Participatory and cognitive mapping have been applied in human geography, landscape architecture, anthropology, and planning to identify places, land uses, relationships, and meanings of places for different groups that might be affected by a plan. Participatory mapping is often used in cultural heritage planning (Valencia-Sandoval, Flanders, and Kozak, 2010; Shipley and Feick 2009), and with geospatial technologies to include people's perspectives in land use plans. With interviews and other methods, social scientists have long solicited hand-drawn maps to enrich an understanding of spatial relationships, such as land use, how people go to school, or how they perceive the spread of disease (see Figure 3.4.1) (Chambers 2008).

Participatory mapping practice developed from rapid rural appraisal for development and conservation practice (Chambers 2008) to develop: (1) conceptual maps of how events and places are interrelated with meanings and associations; (2) physical maps intended to retrieve local knowledge of those places, boundaries, land uses, trails, and conflicts; and (3) "counter mapping" to document indigenous and other land claims to be recognized by the state. Participatory mapping and boundary drawing are also political acts (Duncan and Ley 1993; Fortmann 2003; Walker and Peters 2001) that express conflicts and rights. Participatory mapping can reveal contested landscapes where different groups define their boundaries and meaning – how knowledge of these places is shared or kept within the group. The value of a landscape may be in the stories transmitted from one generation to another based at or about that place or landmark (Basso 1996). Associative and ethnographic cultural landscapes may have no material evidence. Vernacular landscapes evolve from the everyday practice of people and service functions such as social cohesion (Evans, Roberts, and Nelson 2001; Jackson 1984). For multiple perspectives on how culture is related to place, see Low and Lawrence-Zuniga (2003).

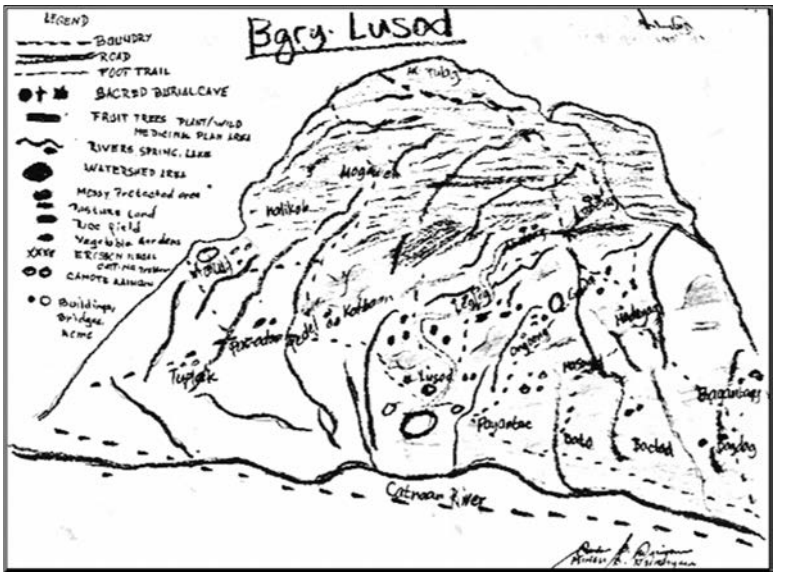

Figure 3.4.1 Lusod, the Philippines indigenous landscape, as drawn by an informant in 2005.
Source: Used with permission of the author.

To use participatory mapping in a selected focus group, one could start with a base map that people can recognize (roads, topographic, aerial photo), a blank paper, and markers or objects to place for each use within a zone on a map, and later rank the frequency of existing land uses or their perceived importance (Chambers 2008). This latter approach has been key to creating land use plans that incorporate locals' current uses and needs (Gavin, Wali, and Vasquez 2007). For example, University of Idaho planning students first gathered historical maps and stories by working with national parks and local historic societies to identify the phases of settlement by miners, farmers, and outdoor recreationally oriented retirees. Next, they created base maps for the basin and for one of the proposed trail plans. They used an interview guide that asked informants from these different heritage groups to locate the places most known or important to them and their families on the map and to tell a story about that place. Informants were also asked how these places had changed and how they felt about these changes as part of interviews with each member of the previously mentioned Clearwater Basin Collaborative. The method uncovered deep value differences and attachments to local or regional scales (Figure 3.4.2).

Technologies, including handheld global positioning devices (GPS) and geographic information systems (GIS), have been used to transfer hand-drawn maps into information that can be used by government planning and policy processes (Rambaldi, Kwatu-Kyem, and McCall 2006; Rambaldi and Callosa-Tarr 2002). As planners become familiar with geographic information systems, they invite citizens to draw spatial relationships, represent "sense of place", and represent social networks, or neighbourhood boundaries (Hopkins and Zapata 2007; Geertman 2002;

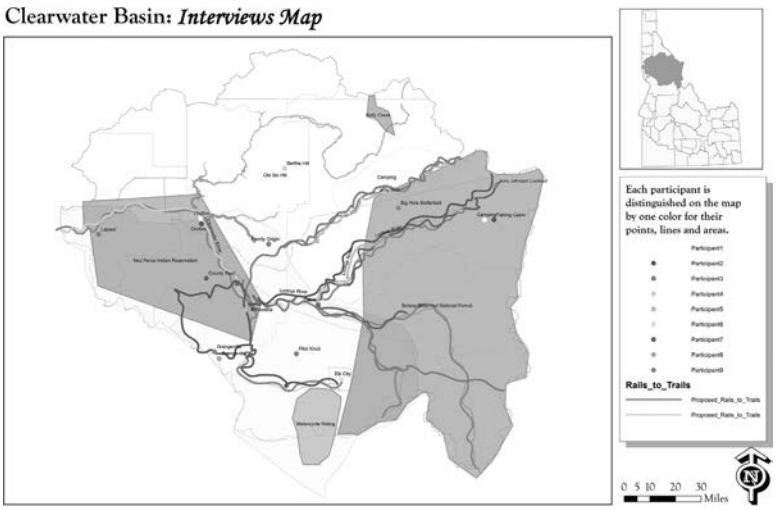

Figure 3.4.2 Clearwater Basin landscape values, compilation of interviews.
Source: Developed by Brian Sanders, Elvis Herrera, James Holt, and Daniel Callister 2010.

Talen 2000). Description includes not only important places and existing spatial relationships such as walkability, or proximity to one's neighbourhood, but also how residents conceptualize neighbourhood or community boundaries (Talen 2000; Stephenson 2008).[3] However, planning support system technologies should address issues of representation of local concepts of place and issues of equitable expression (see Slotterback 2011 or Lebeaux 2003 for a review of related GIS technologies). Ethnographic methods outlined earlier can be used with a base map, crayons, and stickers to facilitate interviews and planning sessions.

Participatory mapping is especially relevant to collaborative spatial planning and the identification of feasible regional planning scales. As described by Healey (1999; 2006), such planning should honour diverse cultural associations with the landscape while also building common landscape values. A new layer of values built through social learning may help to cultivate regional identity to support a voluntary regional approach.

Rigour, ethics, and writing

As in all social research, analysis is guided by the purpose of the research and the nature of the question and epistemological assumptions about the nature of knowledge and truth (Bernard 2006: 1–108). Statistical analysis of empirical data or surveys can answer questions of frequency, direction, or correlation, but not questions such as how or why to act or respond to plans in particular ways. Ethnographic research can be exploratory and descriptive of social and cultural meanings or explanatory of behaviour, decisions, and social dynamics. Standards of research reliability (consistent results from same methods or measures) and validity (correct interpretation of results) are met differently than in statistical and probability analysis (Baxter and Eyles 1997). Rigour depends on a sound methodological design, whether the research project is a full case

study, a project specific evaluation by the planner, or a contracted rapid ethnographic assessment. Participatory designs require attention to bias and interaction effects, whereas case study design requires careful selection of a case that represents planning theory (Yin 2002; Feagin, Orum, and Sjoberg 1991).

Cross-checking, comparing, and triangulating information from different informants and researchers and from observations and texts is continued until "saturation", when the story seems to repeat itself (Bernard 2006: 210–250). Ethnographic monographs historically required a year of fieldwork to improve one's understanding of context and cultural meanings. In applied work, rapid ethnographic assessment and rural appraisal compensate for expediency with more focused questions, use of known variables, and triangulation (comparison) of findings across multiple methods and researchers (Bernard 2006: 343–412; Handwerker 2001).

In ethnographic writing, one creates and illustrates a valid and credible story using the words of the informants. Ethnographic analysis takes care to distinguish meanings and places both from the emic, or concepts used by participants, and the etic viewpoint of planners and researchers, who apply generalized categories to the information, such as pathways or data analysis and social theory. The writing reveals the important concepts and dynamics at play, rather than identifying the most universally important variables. Ethnographic analysis should also explain apparent contradiction between behaviour and stated values using field notes without judgment. Many texts suggest ways of writing up these findings (Emerson *et al.* 1995; Handwerker 2001; Sanjek 2000).

Research ethics requires making a clear distinction between one's role as a planner collecting public comments and the use of that information as social research. Planners who work in a community or agency over an extended period of time have been participant observers, but must follow ethical procedures and disclose their positions and biases if using observations in research. A key difference between participatory planning and social science is the importance of information reliability, analytical validity, and the ethics of using people's information. Informed consent must be obtained to protect the confidentiality of informants, to disclose any risks to their person or reputation, and to ensure they know how their comments will be used. Because informants may be familiar with one another's communication styles, the researcher cannot ethically promise unanimity. Additional permission should be obtained for the use of quotations, voice recordings, photos, or drawings. In addition to formal human subject research review boards available to university personnel, indigenous communities and different countries may have their own required procedures for review, and to clarify the rights to use the knowledge produced. Participatory action research design may include a partnership agreement between the researcher, community partner, and others that contribute knowledge or plan to use results. The public interest and planning ethics are both normative and situational (Campbell 2006). Ethically implemented ethnographic research can aid in making plans that are feasible, beneficial, and sustainable through a better understanding of social change and collective action by planners and their clients and employers.

Participatory mapping, interviews, and participant observation can all be used to commonly address planning problems and processes by: (1) obtaining more meaningful public input, (2) developing feasible and appropriate alternatives, (3) evaluating social impacts, and (4) understanding spatial relations to landscapes in regional and collaborative spatial planning. In the typical planning process, goals and vision are improved by research into diverse local values and contested concepts or landscapes. Plan alternatives are thereby informed by local knowledge of the situation and by accounting for the interrelationships of an action on more comprehensive aspects of community life. Ethnography is also used as part of planning analysis, and in case study

research for evaluation or theory building. Ethnographic methods can produce several kinds of knowledge: comprehensive descriptions of the interconnectedness in a place of people's housing, transportation, and other activities; interpretation of expressions and speech; and explanations of behaviour and responses to plans and events.

Conclusion

Defined as the application of knowledge to action in the public domain (Friedmann 1987), planning has always spanned public policy, design, ecological, and social science disciplines. In the past thirty years, social sciences and research have shifted from trying to forecast change with limited variables to understanding multiple forms of knowledge (Sandercock 1998), as well as the role of agency and culture in spatial governance (Healey 1999, 2006). People are actors in these systems, affected by values, culture, and institutions. Planning schools are increasingly teaching qualitative as well as quantitative methods (Goldstein 2012; Dandekar 2005; Kelly, Mahayni, and Sanchez 1999).

Although qualitative and ethnographic approaches have a long history in planning and social impact assessment (Pinel 1994), they are increasingly essential to reflective practice as well as research that rigorously tests the validity of planning assumptions in different contexts. Participant observation, informant interviews, and participatory mapping were briefly explained with illustrations from the literature and the author's experience. These methods can be used alone or to enhance survey validity and explain other research findings. Several references were included regarding ethical considerations, ensuring validity and reliability of results, and applications to regional and collaborative spatial planning. Participatory and rapid ethnographic research was offered for applied work.

For planning to "operate effectively in a world of many actors and values," planning must draw on diverse range of methods (Hopkins and Zapata 2007: 1–17). Planning is also reflective (Friedmann 2008; Campbell 2006), requiring research that improves planners' anticipation of and response to the limited and significant effect that plans and policies have on social, economic, and cultural places. Social science concepts and methods from anthropology and ethnography are essential additions to the social analysis methods used by planners to make plans more acceptable, feasible, and beneficial.

Notes

1 For a full review of ethnographic methods, social science in anthropology, and non-probabilistic sampling methods, see Bernard (2006).

2 The process includes choosing the most inclusive venues and recognizable geographic representations, preparing interactive mapping and drawing tools, and choosing a facilitator to instruct participants in consistent use of spatial reasoning concepts, such as proximity or connectivity. Moving beyond the idea that important places are bounded "sites", it is also important to represent larger landscapes, pathways, or meanings with shading or directionality (Talen 2000).

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3.5

RESEARCHING PROFESSIONAL PERSPECTIVES IN PRACTICE

A pedagogic-ethnographic approach

Maria Håkansson

Introduction

This chapter presents an overview of a pedagogic-ethnographic approach, gives practical examples and discusses how and why this approach can be useful in planning research, especially to study professions.[1]

A pedagogic-ethnographic approach offers insights and results contributing to an understanding of practice, rather than linear explanations and unidirectional cause-effect relations. This goes quite well with planning studies, as practice and performance are central (e.g., Flyvbjerg 1998; Forester 1989; Healey 1992, 1997). The approach emphasises a description of social conditions and cultural frames from an everyday perspective. This considers the way meaning is shaped, individually and in interaction with others, and can, among other things, contribute to an understanding of how day-to-day practices are developed and maintained. Furthermore, the approach involves the ones studied – that is, they are not passive objects to be studied but rather co-researchers. It is in this sense that the approach is pedagogic – through the interaction with and involvement of the practitioners.

As planning by nature is multidisciplinary, complex and political, studies of planning practice in general have to recognise the ones involved in *doing* planning. This may be planners, experts and politicians, but also citizens, organizations, business and other private actors. To what extent and depth we study these, as well as what groups we include in our studies, might vary with the aim. Even if we are more focused on the outcome than the process itself, it is not possible to fully neglect the ones taking part in the planning. Therefore we also need a repertoire of suitable methods to involve people as subjects in our studies. Their experiences and knowledge of their practices are of foremost importance for the researchers' understanding. Here I will use the role of professionals in planning and the implications of their differing professional perspectives as examples of how this research approach can be used and what kinds of results it could generate. The practical examples are based on Swedish research on how sustainable development is integrated in planning practice (e.g., Håkansson 2005, 2006; Dovlén & Håkansson 2002; Håkansson & Asplund 2003).

To study professional roles and planning practice

In my example the research questions address how professions act and interact in practice, based on preconditions such as their professional culture, when dealing with sustainable development in the frame of planning. In the project, culture was used as a metaphor for describing professional groups, where the individuals have a number of conceptions and experiences shaping their professional culture. When cultures are brought to light, it gives professionals an opportunity to reflect on their own role and on assumptions not normally found at a conscious level in their profession. Through self-reflection there is a possibility of changing or maintaining this role, and thereby practice. Making the everyday life of practice visible forms the basis for defining and developing terms that make it possible to talk about what is done (Schön 1983; Forester 1999). Also things like the relation to the context, the roles of others and the interaction between different perspectives and understanding can be discussed and reflected on. What is beneficial is this elucidation, this creation of meaning, which is an incentive to change, if needed. This is quite consistent with the pedagogic-ethnographic approach, aiming to identify principles and highlight and present different phenomena.[2]

The pedagogic-ethnographic approach

The pedagogic-ethnographic approach was originally developed mainly in the context of educational science (Qvarsell 1996) with an aim to study learning processes and processes of change in society rather than traditional educational contexts. The focus of studies could, for example, be on patterns of power and practice or interaction between groups. This makes it close to the purpose of many planning studies and offers a frame for these kinds of inquiries.

The intellectual roots reach back to semiotics[3] and pragmatism[4] as well as ethnography[5] and social anthropology.[6] The approach includes the communicative aspects of actions and views humans as intentional, directed and meaning-creating, through social interaction. A critical perspective on practice, combined with a reflective method, offers possibilities to study as well the context as the actions and thereby the essence of practice.

Research within the approach does not start with a hypothesis or a fixed theoretical framework, but rather in wonder in the face of different phenomena. In planning research, this can, for example, be curiosity about why a planning process turned out in a specific way, or how planners shape their action space (Grange 2013). Looking for the unexpected or surprising from the researchers' perspective in material and generating new knowledge constitute the core of the approach, including a continual questioning of what is taken for granted. The researcher's frame of reference – that is, the researcher's experiences and knowledge in the area – and a formulation of what is expected in such situations serve as the starting point. When something unexpected is encountered, a reformulation of the original conception and development of the theoretical framework are required in order for the observation to be understood.[7] At the same time, concepts are developed. Concepts included in the initial formulation are reformulated and new concepts are created. We can say that we create labels to describe what we see. The work is carried forward in a converging process. This is often referred to as abduction. The results can be described as making everyday thinking more precise, with the aim to make the world understandable. Abduction can shortly be seen as an alternation between empirical data and theoretical development, as a wave through the research.

Pedagogic-ethnography can be both descriptive and explanatory. As for the explanatory part, it is not, however, a case of causal explanations but of retroductive explanations. It means the

results cannot be used to talk about what will happen in a similar situation, but to instead answer the question of why something happened, and bring about a creation of meaning, a construction made by the researcher to explain conditions and events (Qvarsell 1996) with a focus on comprehensiveness. The aim is to understand, discover and interpret.

The research outcome can be described as building a bridge between phenomena that are being studied, by formulating possible relations between them, and capturing qualities – or rather creating qualities (Löfberg 1994). Researchers are working not to find comprehensive laws but instead to identify principles, abstract concepts or empirically based relations in the empirical material. These serve as tools for opening up and revealing new phenomena or aspects, rather than as a system for explaining individual factors. Qualities are created and phenomena are given names, and in the interplay between research and practice,[8] artefacts like norms, values, documents and so on are created. Both directly applicable knowledge and a more general production of knowledge that identifies relations and aspects are developed. The basic ground in this kind of research entails asking what something means and reveals meaning of phenomena rather than a truth.

Even though the study is carried out in a specific place and with certain individuals, these are chosen as being representative of a more universal phenomenon – that is, the specific entity studied has a relation to the general, which is similar to what Flyvbjerg (2001) and others note about research by producing examples, making it possible for us to understand. Human understanding is organized by always understanding something by something else, making analogies to the known.

To summarise, studies that are carried out using a pedagogic-ethnographic approach can be described as converging. They start out broad and open-minded in order to later focus on core categories and develop concepts and theories. The starting point is an idea about a phenomenon or area that is interesting and then the research process proceeds to the gathering of data in as unbiased way as possible. Categories and patterns are then derived from this material, forming the basis of theoretical development and further data gathering. There is an interaction between data gathering and the development of theories. Ideally, the gathering of data, processing data, analysis and theory building take place simultaneously. As the research progresses, the focus can change, but not without limits. It is important that the initial phase makes clear the area of interest and, based on this, determines the perspective. The research process and the outcome include interpretative understanding – creating meaning, aiming to gain a more in-depth understanding of the individuals' experiences. Some illustrations will be given ahead about how to prepare, perform and process such a study. The following sections thus address research strategies and methods, the role of the researcher and the interaction between research and practice.

Multi-strategies and methods for empirical work

A research approach is a strategy that helps the researcher answer the question that is posed and ties it together with data and results. The research question, which usually arises from curiosity and an appreciation of usefulness, determines the choice of approaches and methods. Shifting between different perspectives, approaches and techniques helps to increase the quality of the results and thereby provide a deeper understanding.

In a pedagogic-ethnographic approach, as in most approaches, a variety of methods for data collection can be used and combined, due to the research question. Especially methods in the category often labelled qualitative methods are used. As qualitative research is focused on understanding a phenomenon in its sociocultural context, the methods used need to help us to grasp

people's perspectives, stories, experiences and valuations, and also to focus action and interaction. Suitable methods to use when studying professions and planning practice are interviews, focus groups and observations. Also text analysis as discourse analysis can be useful, but will not be further discussed in this chapter.[9]

Preparation

As preparation different document studies might be useful – for example, as a way to learn more about context, key issues, organization and involved actors. Thereby a pre-understanding of the conditions at hand arise, which can be used in planning how to perform the study and also serve as a mental backdrop during interviews and other interactions in the research and the analysing phase. But also the opposite strategy, "going naked out in the wild", could be used; starting to collect data by, for example, interviews and observations without any more in-depth preparations, influenced by a grounded theory approach.[10] Also here document studies might be used in later stages to complement and validate made interpretations. Anyhow, there will always be a preparation stage – choosing where to go, whom to start to talk with and what the basic research interest is. And note that we will always have some preconceptions about the order of the world. Both strategies can anyhow be equally beneficial, depending on the situation and the more precise research question.

Interviews

Interviews can be seen as one central method when we want to know more about professional perspectives, work experiences and people's assumptions. The aim of the interviews can be manifold, both gathering basic information as preparation and receiving a full and in-depth description. The length of an interview varies from as short as half an hour to several hours, and sometimes interviews are repeated with one and the same person, spread over a lengthier period of time.

The interview situation can be seen as highly interactive as it is a conversation between two or more people. During the interview, meaning is created and contested. For this purpose, what Kvale (1996) calls qualitative research interviews are most suitable. The interview can be entirely open or semi-structured. The point of not making it fully structured, with a fixed set of questions, is to allow new and unexpected themes, emanating from the interviewee's own experiences, to arise. There could be a validating process during the interview as the interviewer repeats his or her interpretation of what the interviewee relates. Generally, we use some kind of interview guide, covering some themes or areas that we are interested to know more about, given the initial research question. As an interview gives the opportunity to return to a theme several times with follow-up questions, it is possible to check whether the material is in agreement with how the interviewee sees it (Kvale 1996). Anyhow, it is of importance to let new themes arise during the interview. In the interview situation, it is therefore important to listen actively and to be curious about the person and the story told. Another prerequisite is to create a trusting relationship within the conversation. Choosing a place where the interviewee can relax is vital.

Example

A sub-study consisted of biographies of three well-established environmental professionals with documented experiences and interest in taking part in planning at local

level. Interviews were used to grasp their experiences and views of their professional life. Life stories give insight into both life processes of people and their interaction with other individuals and groups, as well as the situations they face in society and in work-life and choices they made. In this specific case, the interviews were held in the respective person's workplace, and the basic question was "*Tell me how you ended up in this work position?*" Depending on the direction of the story, complementing questions about choices and his or her experiences of planning were posed, complemented by follow-up questions related to facts and storylines to make sure the interviewer understood them in line with how the interviewee saw them. Themes revealed in the interviews relate to motives for work-life changes and stories about their view of the planners in relation to his or her own professional role and assumptions of planning as an activity, its aim and its outcome.

When the final texts were finished, people were given the opportunity to read and comment on the use of their stories and quotations. The material was thus validated during the interviews through questions related to the researcher's interpretations of the given account, and also by providing the chance to comment on the final use and interpretations of the gathered material, which also is in line with ethical considerations about how to use the material.

Focus groups

Focus groups can be characterised as group interviews, where the interactive processes are even stronger due to the dynamic among the persons taking part. In other words, the interviewees can reflect both on their own account and perspectives as well on the other persons' utterances, and develop their understanding and standpoints during the interview based on the common communicative process. In general, questions are not used, but rather a theme common to the interviewees. The theme can be a common project or role, or a question with relevance for the interviewees. The session can be organized, for example, by inviting people with similar experiences and roles, or people with differing backgrounds but a common task. A strength of focus groups is that the different perspectives of those taking part and their experiences can be brought up for discussion and be reflected on by the group in a process where meaning is created. The researcher acts as discussion leader, giving everybody the equal right to speak and creating an atmosphere of trust and openness. The session can be taped or video recorded. Several books are available on how to stage focus groups for different purposes; see, for example, Barbour and Kitzinger (1999).

Example

Two types of focus groups were used. In the first case, a study of four municipalities, professionals working with comprehensive planning in the same municipality took part together and discussed how they work with environmental issues in planning. The discussion focused on both their actual work and possible alternative ways to perform the planning process to better integrate environmental considerations. The importance of communication and the partly stereotypical views they have of their respective competences and their differing assumptions on the value of planning were brought up by the participants during the half-day the discussion took place. In the second case, focus groups were performed with planners, environmental professionals and politicians, one group at a time, all from different municipalities. Here the

overarching theme was sustainable development in planning and their own role in this work. Differences in organizational and geographical conditions were discussed. The discussions also allowed reflections on their own role in relation to other professions or groups, defining their own area of skills. In both cases, the respective group understandings of planning as an activity per se were brought up, and the group was asked whether planning is the best arena for sustainable development work, showing a taken-for-granted view of the planners about what planning is, differing from the other groups. In these studies, the validation of the analysis was made during the focus group by asking questions and by giving the participants opportunity to individually comment on the written text summarising the results. In a later study (Asplund *et al.* 2010) a feedback seminar was used. In the first step focus groups were carried out separately with regional development competencies and officials working with environmental and social issues in the same regional organization. The next step was a gathered focus group session, where the initial results from the first round were presented and discussed among the participants. The aim was three-fold: validation of the material, a new layer of empirical material to be included in the analysis and, not least important, an arena for common reflection and further discussion of the existing organization and content of the work.

Observations

Observations can be made in different ways, being directed to a specific situation in time or a single, well-defined phenomenon, comprehending a wider context or following a process over time. Participant observations, ranging from taking part in a few meetings to following a process in depth over long time, can be used to closer follow acting and interacting. Here the context and the preconditions given can be observed and connected to actions and choices. Czarniawska (2007) uses the term shadowing to emphasise that today field studies need to be done "on the move" due to the increased mobility and geographical and social fragmentation of social life. As the researcher is present on site, it could lead to adjustments from the actors, but in general this is not a problem. Nevertheless, there is a vast literature on these issues, not least on the frame of action research. An example with connection to pedagogic-ethnography is Westlander (2006).

Processing data

The analytical stage is an ongoing process in parallel with the empirical work. In general it includes thematic ordering of the collected material, whether it is text, transcribed interviews or filmed meetings. By repeatedly reading and listening to the material, combined with notes from the actual occurrence, themes can be discerned and further processed. In the analysis, unexpected as well as repeated themes are of interest to capture. The research interest will guide the reading and thematic work. It could be beneficial to have more people working with the material in several steps. Interpretation of what is seen, and its meaning, will differ depending on their experience and expectations. The degree of intersubjectivity[11] increases when more people are working with the material and when there is a clear account given of the interpretative routes taken, showing what choices were made and what alternative interpretative possibilities were considered (Gustavsson 1996). The aim of the interpretative work is to find the most well-founded and least contradictory interpretation in the material. There are no correct interpretations, but that does not mean that all interpretations are possible. Interpretations can

also be better or worse in understanding the phenomenon in question. In the interpretative work, the researcher makes possible interpretations of the object studied, and the number of interpretations is limited by such factors as the way the question is formulated (what is studied) and likelihood, for instance, of physical conditions.

The role of the researcher

The researcher needs a will and ability to critically reflect reality, and to dare to see other aspects of it. An open attitude is required to see other aspects than the expected. There is a strong emphasis on the importance of shifting between different perspectives, and raising the level of awareness about the perspective and understanding the researcher is actually working from (Qvarsell 1996). The critical reflection also includes openness and flexibility, and a certain amount of creativity to be able to see different aspects of the studied phenomena and the context. The role of being someone from "outside" and to some extent neutral in relation to the studied process and situation is in itself helpful for creating mental room for reflection for the ones studied.

The researcher also needs a will and ability to listen to what is said and what is not said. The researcher is intrinsically linked to those being studied. The results can never be separated from the researcher, who is involved and takes part in the process the entire time.

The researcher's own experience also constitutes an interpretative framework. Without this, interpretation is not possible; this understanding has also led the researcher to the questions and aims for the research. The researcher's own experience makes it possible to understand the observed (Gustavsson 1996). It can thus be an advantage if the researcher has personal experience of the phenomena studied, as it makes it easier to "read" situations. This means also a use of language in line with the ones taking part in the study, helping to understand what happens but also to create trust and make oneself understood. A risk might be that the researcher has the same assumptions as the ones in the study and thereby misses phenomena that a person with other references would see. But in general the familiarity with the area brings more benefits than pitfalls.

It thus becomes central to articulate one's own perspective and knowledge interest, when reporting results, to make it clear from what point of view the research is performed. During the research process it is furthermore essential to reflect upon one's own reactions and assumptions that might bias the interpretations. Asplund (1983) advocates a method in which researchers confronting a phenomenon ask themselves the question "Why then?" in order to challenge what is taken for granted. In this way, the researcher's perspectives might almost certainly change and develop during a study, which also can be reflected on in relation to the results.

The interaction between research and practice

In the approach, the ones studied are not seen as objects to be observed and mapped. Instead they are perceived as subjects and co-researchers (Skantze & Asplund 1999). This is in line with the assumption that humans are intentional and create meaning when acting and interacting with others. Hereby the research process itself brings direct value to practice by being a base for reflection over practice – its routines, values, aims and so on. Methods such as interviews and focus groups are essential in this process as they can allow the practitioner and researcher to interact in a co-production of meaning and understanding. The interpretations and translations

the researcher contributes in the research process offer the practitioner a way to see his or her own practice from outside and reflect more deeply.

Accordingly, the research does not give direct instruction to practice/practitioners about how to act, change or so forth. Instead an intermediate space is needed, where a dialogue between practice and research can take place. The function of research is to show alternative stories and descriptions of practice. When someone demonstrates another way of seeing things, it becomes possible to see it for oneself, at least when the person providing the account is seen as trustworthy. The decisions of what action to take need to be taken in the actual practice, based on context, conditions and expertise at hand. In short, the practitioners are experts in their field and thereby the ones to act. The researchers can provide a chance for reflection and mutual learning processes to take place.

What we can learn about planning practice with a pedagogic-ethnographic approach

The pedagogic-ethnographic approach is suitable if we aim to grasp experiences and how people involved in the planning process make interpretations of the situations they face, how they understand their own and others' roles in the process, how problems are formulated from different points of view and so on – that is, how the ones involved shape meaning in the process. It can be used for understanding groups as well as individuals. We can also discuss the context and preconditions of organizations, cultures, traditions, power relations and so forth.

When researching professional roles as well as processes in planning practice, the researcher can be seen as a "planning therapist"[12] when the researcher is asking about work-life and thereby creating an incentive for reflection and room for talking about what professionals do, which is something that most professionals rarely have time for. The researcher's presence legitimates reflecting on one's own work situations, routines, methods, perspectives and values.

With this approach we will not get any linear explanations that predict coming events and the probability of a certain cause-effect relation. Instead we gain an in-depth understanding of context and practices, which can function as a base for reflection as well as an example for understanding what happens in planning practice.

Notes

1 The chapter is mainly built on Håkansson (2005); it is summarised in English in Håkansson (2006).
2 A phenomenon is used to label the occurrences studied and can include facts, events, experiences and so forth.
3 Semiotics, "the study of signs". Signs can be as well physical as social, including, for example, language, art, myths and solid artefacts, such as buildings. The roots go back to several disciplines, such as culture studies (Roland Barthes), linguistics (Ferdinand de Saussure), anthropology (Claude Levi-Strauss) and psychoanalysis (Jacques Lacan).
4 Pragmatism deals with the linking of practice and theory. The roots go back to the 1870s in the US, with writers such as Charles Peirce, William James, John Dewey and George Herbert Mead. For example, Forester (1999) and Healey (1997) have discussed the relation of pragmatism to planning theory.
5 Ethnography encompasses the study of human societies, through field studies where the researcher usually lives with the ones studied for a longer period. A pioneer is Margaret Mead, with studies in the 1920s.
6 Social anthropology is the study of social behaviour, social organization and social life from a holistic perspective, usually with field studies. SA shares its background and many features with ethnography. A pioneer in both is Bronislaw Malinowski. Other central names are Claude-Levi Strauss and Clifford Geertz.

7 This is anyhow not exclusive for studies in this approach or studies of social phenomena. It is, for example, in line with descriptions of the work at the Cern laboratory with large experiments in physics. Most of the time is spent on observing activities in the accelerator, looking for the unexpected. When deviations are observed, a calculation is made if it is within the current theoretical framework or if adjustments are to be considered.
8 Here practice is used for the studied practices – for example, planning – but research in itself is of course also a practice.
9 Books on discourse analysis can be found from different disciplines and with diverse objectives and ways of doing the analysis. Related to planning, MacCallum (2009) gives an introduction to critical discourse analysis and how it can be used in the practice of participatory planning.
10 Introduced by Glaser and Strauss (1967). The approach includes generating knowledge by observations, not starting with existing theoretical models and literature.
11 Intersubjectivity means here an agreement on the meaning, in accordance with several people's understanding of the material, which in turn increases the quality of the result.
12 Here it is understood as the interventions by the researcher into the situation of planning, making the ones involved reflect on their actions. Gunder and Hillier (2007) instead see planning in itself as a form of therapeutics.

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3.6

ANALYSING CARTOGRAPHIC REPRESENTATIONS IN SPATIAL PLANNING

Stefanie Dühr

Introduction

Spatial planning maps are powerful instruments to frame discussions in plan-making processes and for the visualisation of existing and envisaged land uses on which future decisions are based. Yet despite their communicative potential, the role of cartographic representations has received less attention in spatial planning research than communication in planning processes through text or actions. Many planning researchers may therefore feel poorly prepared to analyse the design, content and meaning of planning maps and how they are used in planning processes. However, the analysis of maps and cartographic representations should be an essential part of the toolbox of every planning researcher interested in policy analysis and policy design. The visual expression of spatial policy can offer a different, and sometimes complementary, view on the envisaged use of space to that put forward by policy text. After all, planning maps have been described as the 'forms and crystallizations of the thought of […] planners as they go about their work' (Söderström 1996: 252). Moreover, any spatial planning researcher interested in unravelling power structures in planning processes and planning outcomes should develop a keen analytical interest in cartographic expressions of spatial policy. Especially in comparative planning research, analysing the style of spatial images in different spatial planning traditions – and the reasons for these differences – is a promising avenue to pursue to better understand how spatial planning systems function and perform.

In this chapter, a qualitative research design to investigate the design and content of policy maps and text is presented. The analytical framework for spatial planning maps that forms the backbone of such structured inquiry is based on theoretical perspectives on cartography and spatial planning, which understands maps as social constructions. This view acknowledges that maps are prepared in a particular sociopolitical context and in their analysis should be treated and deconstructed as such. The framework was developed to undertake a comparative analysis of strategic spatial plans in Germany, the Netherlands and England in order to investigate planning traditions of visualising spatial policy, as reported in Dühr (2005, 2007). In line with a social-constructivist epistemology, a qualitative research strategy and research methods that allow reflection on the 'rootedness' of planning practices are most appropriate. However, such interpretive approaches require a discussion of the

methodological challenges of empirical analysis, including how to control for subjectivity in the reading of maps and texts.

Spatial planning and cartographic representations: an analytical framework

In planning processes, maps exercise power through numerous ways. The decision of what should be 'put on the map' and how it is going to be presented opens up great potential to shape discourse, to empower some parts of the public or the territory, and to disadvantage others. Maps can be used to achieve coherence among actors in a territory and to position it externally, but they can equally be used to manipulate other actors (Dühr 2005, 2007).

But how should a planning researcher go about analysing maps? It is often said that if a picture is worth a thousand words, a map must surely be worth a million. While it is easy to see how such rich information and communication potential – if used effectively – is invaluable in complex planning processes, it also implies that different people – for individual or cultural reasons – may read maps differently and possibly extract very different information from the same map. Moreover, as semiology (i.e., the study of signs) emphasises, every single sign on a map can have multiple meanings. Connotations of signs can elicit feelings or emotions in the user that are often culture-dependent. Colour, for example, frequently plays on culturally embedded connotations, such as with the pale red traditionally used to depict the British Empire, suggesting strength and vigour (Vujakovic 2002). The multilayered meaning of maps and the inherent subjectivity in map reading and map use therefore require careful theoretical and methodological consideration when approaching the analysis of spatial policy maps in a systematic and comparable manner.

In this chapter, the approach taken to analysing spatial policy maps in European planning traditions is used to show how this might be achieved. The research on which this chapter draws (Dühr 2005, 2007) started from the observation that the reasons for highly controversial discussions among representatives of national and regional planning ministries of the EU-15 in the preparation of maps for the intergovernmental 'European Spatial Development Perspective' (ESDP) (CSD 1999) may be rooted in the differences among planning traditions' understanding of the role of maps in planning. The research aim was therefore to investigate whether such planning traditions in visualising spatial policy exist, and if so, which influence these different traditions – vis-à-vis other factors – have had on maps prepared during the ESDP process.

The spatial concepts used and the approach of a planning tradition to visualising spatial policy are historically rooted, but have over time also strongly been shaped by the wider geographical, socio-economic and political context. What emerges in contemporary spatial plans, thus, may be a combination of the traditional 'core' of a planning culture, complemented by more recent changes to the understanding of planning and planning responses and instruments. In analysing planning maps, thus, it is important to reflect on the context within which they have been prepared, the role of planning traditions and their understanding of planning.

Some classic texts on the analysis of historical maps in the cartographic literature, notably J.B. Harley's (1989) work on 'Deconstructing the map', prove inspirational for the question of how to approach an analysis of the socially constructed rules and values and the way in which they affect map-making. Drawing on Harley, Pickles (1992) proposed to consider maps as being constructed of two interrelated structures: one being graphical, the other linguistic. The graphical structure of the map and the effective use of symbols and graphic variables have been subject to extensive study over the last decades (for an overview see Dühr 2005, 2007). In contrast, the context within which a map is prepared and how this influences its design and content (i.e., the

'linguistic structure') are considerably more complex to analyse. However, according to Pickles (1992), the graphical and linguistic structures of a map are almost inseparable from each other, as the linguistic elements are embedded within the image. Analytically, this implies that the 'technical' procedures for the preparation of cartographic representations need to be considered alongside the social and political context within which the map was prepared and the uses for which it is intended. Such a social-constructivist understanding of maps that 'do not communicate so much as provide a powerful rhetoric' (Crampton 2001: 238) allows an approach to map analysis through which they can be 'critically examined as texts themselves' (ibid.).

Different types of maps are in use in spatial planning processes. Moll (1991, 1992) distinguished at least three main categories, which are used to varying degrees in the process of preparing a spatial plan. These categories include (1) 'base maps' of a mostly informative character – that is, maps of an analytical thematic or topographic nature (e.g., on population development or transport infrastructure); (2) cartographic representations for participative purposes – that is, maps setting out policy options with a strongly communicative character; and, lastly, (3) cartographic representations that lay down the objectives of the plan in its final form, often with legal status and that are aimed at reproduction. No map is value-free and unbiased, but spatial policy maps that express longer-term spatial development visions are most obviously expressions of political interests. However, these political interests may or may not be easy to identify, because aside from clear and dominant policies that can be identified there are likely also more subtle representations of interest or manifestations of power embedded in the plan map. By using a certain commonly accepted code of representation that communicates the legitimacy of planning policies or intended actions, cartographic representations in planning demonstrate a persuasive power which helps to win over public opinion and to coordinate the actions of a wide variety of users and interests (Söderström 1996). The representation of certain interests over others and the power of planning maps have become manifest through planning approaches such as the principle of zoning since the 1920s, because as Söderström (1996: 266) explains,

> what resisted graphic treatment would be slowly pushed into the background, so that the diffusion of zoning […] corresponded to the elaboration of a form of urban planning which essentially depended upon visualizations. This does not mean that urban planning was limited to dealing only with the visible forms of the city, but it does mean that the elements dealt with by urban planning would be taken into account all the more readily if they could be visualized. The passage through graphic representation became a condition of entry into the urban planner's laboratory.

In designing a framework for a social-constructivist approach to map analysis, criteria related to the linguistic aspects of maps were derived mainly from Harley's (1989), Pickles' (1992) and Söderström's (1996) work. However, because neither Pickles nor Harley provide a very detailed account of the 'elements of a map' with regard to its graphic structure, criteria for analysing the design of maps were further operationalised with the help of cartographic literature (see Dühr 2005, 2007). The criteria for analysis are shown in Tables 3.6.1 and 3.6.2 and explained in the following.

With regard to what Pickles (1992) has called the '**graphic structure**' of the map, three categories were chosen for the comparative analysis of the cartographic representations in strategic planning instruments: the level of abstraction, the level of complexity and the use of associative colours and symbols 'on the map'.

- The ***level of abstraction*** arguably reflects the underlying view on the reliability and binding character of planning policy (Dühr 2007), with a detailed approach implying

planning certainty and little flexibility for deviating from the plan proposal. A more generalised approach, on the other hand, can be seen as leaving room for lower planning tiers to work out more detailed proposals and thus communicating an understanding of the plan as 'guiding principles'. The 'level of abstraction' of cartographic representations can be operationalised through different criteria, as shown in Table 3.6.1.

- The ***complexity*** of cartographic representations is understood as an expression of the number of symbols and cartographic layers (expressed through the number of categories listed in the key). By categories, overall 'themes' are meant – for instance, 'transport network', under which road and rail infrastructure would be grouped, or 'nature protection sites', under which habitats or any nature protection designation could be listed. Usually there is limited overlap of elements within one category, and therefore even if the number of elements is high but the number of categories low one could expect the policy map to be still easy to read and to be of medium complexity. Nevertheless, the more elements (symbols) and categories are included in the cartographic representations of planning instruments, the more complex the map would appear overall, which might give hints both about the role of this instrument in the planning process and about the intended audience, as a very complex map might not easily be understood by laypeople.
- Within a planning tradition, association and conventions can help to communicate a message more easily (as can the standardisation of planning symbols among planning professionals). However, there might be differences in association and convention between different planning cultures, which can cause communication problems when discussing policy options in a transnational setting. Therefore, criteria on the use of ***associative and conventional colour and (pictorial) symbols*** in planning were also included in the framework for analysis.

Table 3.6.1 Criteria for the analysis of the 'graphic structure' (Pickles 1992) of cartographic representations in strategic spatial plans

Design and layout: graphic structure
Level of abstraction: 'scientific' / detailed versus 'artistic' / abstract representation
• Outline of the territory
▪ Detailed
▪ Generalised
▪ '45 degree' (highly generalised outline)
• Logical differentiation (Junius, 1991)
▪ site specific = relatively clear orientation at topographic elements or land use boundaries
▪ schematised = rough orientation at topographic elements or land use boundaries
▪ schematic = no orientation at topographic elements or land use boundaries, hence spatially vague
• Graphic differentiation of area symbols (Junius, 1991)
▪ strict = area contour delineated by line symbol
▪ medium-strict = coloured area symbols with little colour contrast adjoining
▪ fuzzy = indication of continuous transition
• Graphic differentiation of point and line symbols (Junius, 1991)
▪ territorially true = approximate location of an object
▪ locationally true = exact location of an object

(*Continued*)

Table 3.6.1 (Continued)

Design and layout: graphic structure
• Use of colour ▪ Strong/solid (expressing certainty) ▪ Pale/soft/mute (expressing suggestions)
Complexity
• Number of elements listed in key • Number of categories in key
Association and convention
• Use of colour • Use of pictorial symbols

Source: Dühr, 2007: 80.

The criteria for analysing the '**linguistic structure**' of cartographic representations in strategic spatial plans relate to the emphasis given to policy maps in the plan document, the question of what is most prominently presented on the plan map and how the plan territory is positioned in the wider context. These three categories have been operationalised as follows.

- The ***relative weight given to text and cartographic representations in the document*** allows one to assess the importance attached to maps in the planning process of different planning traditions. Several aspects have been chosen to analyse this relationship between 'text' and 'maps' (see Table 3.6.2), including an in-depth content analysis to explore the relationship between the themes and policy options discussed in the plan text, and those that are represented on the policy map. This approach allows an insight into the 'spatiality' of the chosen policy options, and the comprehensiveness of the cartographic representations, and helps to discover patterns of those themes that generally tend to be cartographically represented to the detriment of others.
- The criterion of the **visual hierarchy**, or what Harley (1989) has called the 'rules of social order', relates to the visually most dominant elements in the cartographic representation of spatial policy. This is a subjective method of map reading to identify those elements on the policy map that 'stand out' and therefore attract the attention of the reader. Such elements can be understood as being the ones that are at the core of the spatial policy proposals represented on the map.
- The last category to express the 'linguistic structure' of policy maps relates to the **spatial positioning and connectivity** of the planning area. This includes an analysis of whether and how the geographical context of the planning region is depicted. Furthermore, the analysis includes a discussion of the connectivity of the region – that is, a representation of network space and of underlying functional interdependencies (cf. Healey 2007). This appears particularly relevant in collaborative planning processes, where planners are expected to think outside their own territories and increasingly in relational spatial terms.

Table 3.6.2 Criteria for the analysis of the 'linguistic structure' (Pickles 1992) of cartographic representations in strategic spatial plans

Design and layout: linguistic structure
Relation between text and cartographic representations the document
• Number of pages in planning document
• Number of cartographic representations in planning document (excluding photographs and other 'non-cartographic' diagrams)
• Number of policy options in document (text)
• Number of policy options cartographically represented on policy map
• Content analysis: themes and policy options discussed in text
• Content analysis: themes and policy options represented on policy map
Visual hierarchy / 'rule of social order' (Harley, 1989)
• Visually dominant elements in cartographic representation of spatial policy
Spatial positioning / 'connectivity'
• Representation of planning context (neighbouring regions, regional, national or European context)
• Representation of connections with neighbouring regions / representation of functional interdependencies / underlying conception of space (Euclidean or relational)

Source: Dühr, 2007: 82.

Methodological considerations for the analysis of spatial policy maps

If applied systematically, a theoretical framework such as the one presented earlier can offer a useful tool to undertake a comparative analysis of the design and content of cartographic representations in strategic spatial planning. However, choosing an ontology and epistemology from the interpretivist paradigm not only is a theoretical choice but also has, of course, important implications for the research methodology. Applying a 'deconstructivist' approach to map analysis or map reading requires qualitative research methods that allow a deeper reflection on the planning context and the resulting plan maps. A promising avenue to a comparative analysis where phenomenon and context are closely interrelated is offered by situating such methods within a case study approach. Yet such a qualitative empirical approach, inevitably, bears the risk of subjectivity – not least because the researcher undertaking the analysis carries some 'ethnocentric' baggage, meaning that despite best intentions researchers often tend to view other systems or cultures from the perspective of their own (de Jong 2004). A solid analytical framework is crucial to ensure a systematic and transparent analysis of spatial policy maps according to qualitative criteria. However, despite having a framework based on suitable theoretical perspectives in a deductive approach, a certain degree of subjectivity remains when analysing maps according to the criteria defined. As in every research project, it is important to try to control as much as possible for such subjectivity and possible variation in the application

of the analytical framework to the object of study. Respecting good scientific practices is always important in a qualitative approach to map analysis, but especially so if a comparison of different planning cultures is envisaged. The framework as explained in the previous section and as set out in Tables 3.6.1 and 3.6.2 is intended to provide such a basis for the comparative examination of plan maps in different European countries, but a qualitative methodology as suggested for this research demands that its application by the researcher (or team of researchers) is made transparent and that the recording and analysis of data are clearly explained. Such an approach can then provide an interesting insight into the 'message' of cartographic representations in planning.

Every decision a researcher takes in setting up the methodology should be informed by the ambition to best answer the identified research question, and the approach to choosing examples or cases is no exception. For the research on which this chapter draws, the aim was to analyse planning traditions' approaches to visualising spatial policy in strategic spatial plans. Arguments for which countries to analyse were derived from this, such as the existence of mature planning systems with strategic-level (regional and above) planning instruments and planning institutions. Aside from such structural considerations, there are also practical aspects to think about, including whether all required information is accessible to the researcher (e.g., whether planning documents are easily available, whether they are in a language the researcher speaks or how approachable interviewees are).

Four tests are commonly used to establish the quality of empirical social research – namely, construct validity, internal validity, external validity and reliability (Yin 1999). Construct validity relates to the development of a sufficiently operational set of measures for the concepts being studied. To meet the test of construct validity, the researcher should therefore (1) select the specific types of changes that are to be studied (in relation to the original objectives of the study) and (2) demonstrate that the selected measures of these changes do indeed reflect the specific types of changes that have been selected. Yin (1999) suggests three approaches to increase construct validity: (1) using multiple sources of evidence during data collection; (2) establishing a chain of evidence during data collection; and (3) having the draft case study report reviewed by key informants. For the research approach discussed in this chapter, the desk-based analysis of the planning context and the interpretivist analysis of the policy maps were complemented with other data sources, such as qualitative interviews with planners and cartographers. The initial findings were discussed with experts in the countries and regions under study to test whether they were appropriately interpreted within the respective cultural context. In terms of internal validity, the researcher should ensure that interpretations and claims made are accurate and plausible. Building feedback loops into the research to allow reflection and critical discussion on initial findings with interviewees and national experts can help to increase the internal validity, as does a transparent account of the steps taken in the research design. A solid knowledge of the planning system under study and of the domestic language helps to avoid misinterpretation of analysis results and observed phenomena, and thus increases the construct and internal validity of the research. The best way to improve understanding of other planning systems is to spend part of one's life in these other countries and to know the language so as to avoid misinterpretation of planning terms and actions and to be able to interpret them correctly within their institutional context (Masser 1986).

External validity relates to the question of whether, or to what extent, findings can be generalised. It is a challenging test for any qualitative social science research, but especially so if the research is concerned with analysing a planning culture or tradition, as it places great demands on the selection of cases. Moreover, it requires considerable knowledge of the context within

which planning takes place to determine whether the cases meet the requirements. For the research presented here, the cases chosen were expected to be representative of other strategic spatial plans in the same planning tradition. As the fourth test, the goal of reliability is to minimise the errors and biases in a study (Yin 1999). In an ideal scenario, another researcher following the clearly described research approach would arrive at the same result. In social sciences, characterised as it is by numerous external factors that are difficult (if not impossible) to control, such exact repetition can hardly be achieved, so instead researchers should strive to be as transparent as possible in their explanation of the research design as regards their choices in setting up the research and the justification of these choices. In the case of the research discussed in this chapter, the search for distinct patterns in comparison to other planning traditions was intended, rather than generalisation from the case studies within the country to the planning tradition *per se*.

Data analysis and data representation: concluding remarks

A cross-national comparative application of the framework to spatial plans from Germany, England and the Netherlands is reported in Dühr (2005, 2007, 2009) and readers interested in the findings are invited to consult these references. In this chapter, the focus is on the particularities of analysing data from a qualitative inquiry into planning maps in a comparative perspective. Language and terminology are an important consideration throughout. Terms commonly translated as 'local plan' or 'structure plan' usually refer to very different instruments in the different planning systems. The researcher interested in comparative planning analysis is therefore well advised to use planning terms in their original language and explain, rather than translate, them to avoid misinterpretation.

Evidence collected from the use of the analytical framework for the comparison of the layout and content of cartographic representations in strategic spatial planning was recorded in a matrix according to the criteria identified in Tables 3.6.1 and 3.6.2. On the basis of these 'raw' data, the findings are easily combined and synthesised in diagrams and tables. Such an approach allows one to communicate the qualitative character of the data through representations that contain no watertight boundaries but show the fluid nature of the analysis (see for an example Figure 3.6.1).

There are significant differences in the understanding of planning in different European countries, and this also affects the content and design of spatial policy maps. The role of a plan in the system and the underlying planning concepts determine both what is visualised and how it is visualised. In this chapter, an interpretivist approach to the analysis of spatial planning maps was proposed, based on an analytical framework that draws on elements from planning theory and cartographic theory and allows the unravelling of the 'hidden text' within maps.

In many planning traditions, a deeply rooted acceptance of certain cartographic styles that are considered 'scientific' and seen as communicating reliability and trustworthiness for lower planning tiers and the public still seems to be widespread (Dühr 2007). This is surprising given the increasing recognition of the political and communicative dimension of planning, which – it is safe to assume – also leaves its mark on important communication instruments such as maps. The view of maps in general as being rational and scientific is moreover astonishing given the numerous choices and selection and schematisation procedures that each map undergoes in its process of preparation, with each step offering plenty of room for dominant interests to be pronounced and other aspects being neglected, and decisions on what to depict often driven by the availability of spatial data rather than balanced considerations.

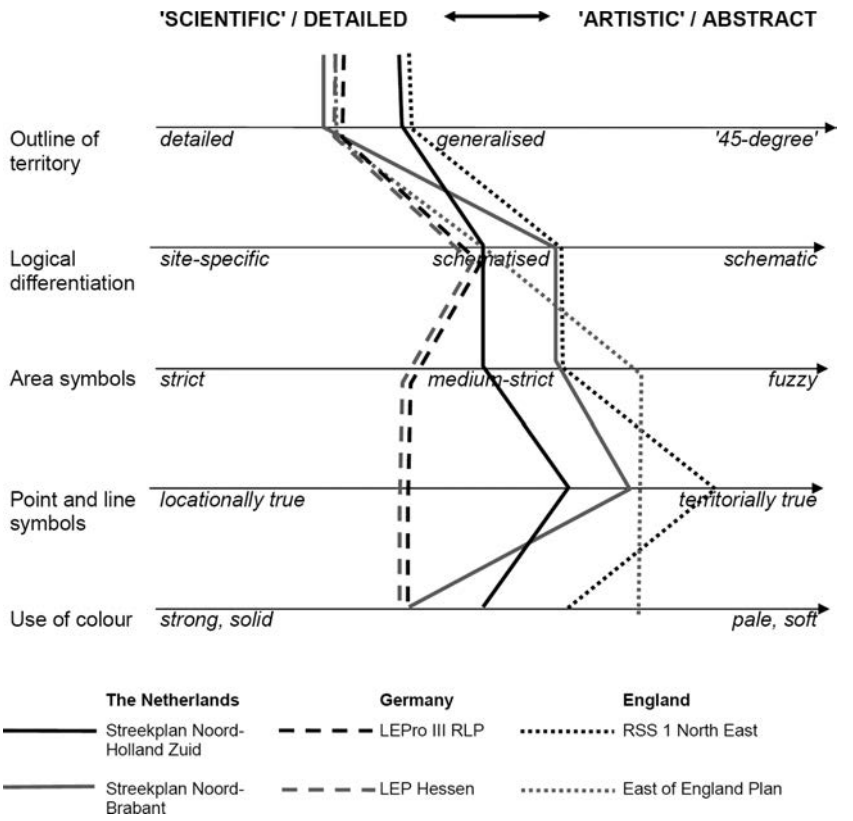

Figure 3.6.1 Varying concepts and representations according to countries' planning processes.

In transnational planning processes, where competences for spatial development are usually shared and policy is indicative and non-binding, such a belief in certain cartographic styles and their 'trustworthiness' can lead to serious misunderstandings among different planning cultures. Breaking through these underlying assumptions to raise the awareness that every cartographic representation is invariably a selection and interpretation of reality, and that policy maps in particular present political choices and preferences will require much effort. It is not facilitated by far-reaching reforms in many European planning systems over recent years, which have introduced new planning instruments and procedures without the accompanying and necessary reflection on deeply rooted assumptions about power and communication in planning processes and in plan maps in particular. However, for planning researchers, analysing the role of maps in planning processes at different spatial scales can offer a promising avenue to understand the core of a planning culture, to investigate how decisions over spatial futures are communicated and power is exercised in planning processes, and to better grasp current changes following reforms of planning systems and wider socio-economic and political trends in Europe and beyond.

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3.7

URBAN MORPHOLOGY AND CULTURAL EXPRESSIONS

Qualitative methods to understand the city's dynamic in a self-built area in Caracas, Venezuela[1]

Gabriela Quintana Vigiola

1. Introduction: what is this research about?

This chapter exposes the methodological approach applied in research regarding religious processions as an expression of popular Catholicism as an activity in the urban space of self-built areas.[2] As a result of the previous points, the aim of the research is to explore the relationship between the urban morphology and its inhabitants within the process of the religious procession and how a sense of place is constructed within this urban psychosocial practice, which is the interpenetration of procession and this specific morphology. This research tries to understand one of the most relevant activities of the human being, as it is the manifestation of the sacred in the form of movement, in a very specific place in order to comprehend the complexity of the urban space and the role of this particular use in that environment.

With the intention to comprehend the aforementioned relationship, it has to be specified that both urban space and popular Catholicism are taken as cultural expressions, not only because they are perpetuated by family members but also because both of them are ways of living, recognizing and interacting with the world. The use of qualitative methodology is vital in order to thoroughly understand and approach the sense of place and the interactions between urban morphology and people, a topic that we will discuss ahead.

As a result of the previous points, this theme is approached taking into consideration three axes: the morphology of self-built areas; the procession as a cultural practice; and the sense of place that is constructed within this urban psychosocial process.

It is well known that around the world almost half the population resides in cities (Negron, 2004; United Nations Human Settlements Programme, 2005). In Venezuela, urban living is even more consolidated, and thus almost 88 per cent of its inhabitants live in cities. From this percentage, specifically in Caracas where the research is being conducted, 50 per cent of this urban population live in self-built areas, called *barrios* by Venezuelans.[3] In Caracas, the *barrios* occupy almost 50 per cent of the city surface (Cilento, 2002).

Nevertheless, as important as the urban space itself, inhabitants are the ones who keep cities alive, with their actions, activities and ways of living and utilizing this place. People make the city a dynamic and complex entity. Delving into inhabitants, we have to acknowledge that those citizens have perspectives, routines and habits, perceptions, customs and self-beliefs. Framed in the aforementioned we can find religiosity, which is a fundamental part of human life. According to Ontario Consultants on Religious Tolerance (2009), 88 per cent of the world population hold some kind of religious belief, of which 32 per cent claim to be Christians. In Venezuela, 96 per cent of its inhabitants are Catholics (Pollak-Eltz, 1992).

For religious believers, who make up a large number of people in the city, there are different manifestations of the sacred, as well as other forms of expression of their religiosity, among which are the paths, specifically the processions. Such processions are conducted in different environments, in different places, in the urban space.

In order to develop the aforementioned research topic, three main objectives were determined related to the axes previously stated:

1 To analyse the different processes taking place in the (physical) **urban space in *barrios*** while processions are being held.
2 To reconstruct the complexity of urban space in *barrios* and the different **activities** that take place in them, emphasizing religious processions as one of the uses of those spaces.
3 To interpret the **sense of place** to the local residents of the sacralized space through the procession.

2. The context of study: where is the research being developed?

It is important to realize that choosing a case study is embedded in the methodology. When choosing an area to work with we have to be certain that it responds to the research objectives and with the paradigmatic perspective we are adopting. The establishment of clear criteria is essential to evaluate and conduct proper research based on case studies.

Therefore, considering all of the foregoing, the chosen general context of the research is the group of ecclesiastic parishes that make up the *Arciprestazgo*[4] of Petare[5] within the East Pastoral Zone of the Caracas Archdiocese.

The *Arciprestazgo* of Petare is composed of nine ecclesiastical parishes, making up almost 140 km^2. Half of the area is inhabited by nearly 1.5 million residents, in low-rise high-density dwellings, where overcrowding is common.

The criteria to choose this area as a general context of study are connected to urban morphology and personal factors:

- *Morphological factors:* The cluster of *barrios* that make up the *Arciprestazgo* is characterized by its position on the hills surrounding Caracas, which results in a morphology determined by the slope. This urban shape is mainly constituted by a continuous urban edge and skyline, small compact grain, with few defined gaps (predominantly used as vehicular and pedestrian roads), all adapted to the topography. This situation is representative of the physical reality of the Caracas *barrios* in general (Figure 3.7.1).
- *Personal factors:* In order to work in *barrios* there is the requisite to approach the settlement with someone involved with the community. This follows from the fact that

barrios residents generated over years a deep sense of place and territoriality. Moreover, *barrios* usually have a low-income population, making them concentrated areas of poverty and need, where high criminality rates can be found. The case study was thus selected because of the author's existing relationship with the priest of one of Petare's *barrios*, who acted as the primary link with other priests of different parishes, community leaders and other residents participating in the processions.

Figure 3.7.1 Panoramic view from Petare.
Source: Gabriela Quintana Vigiola.

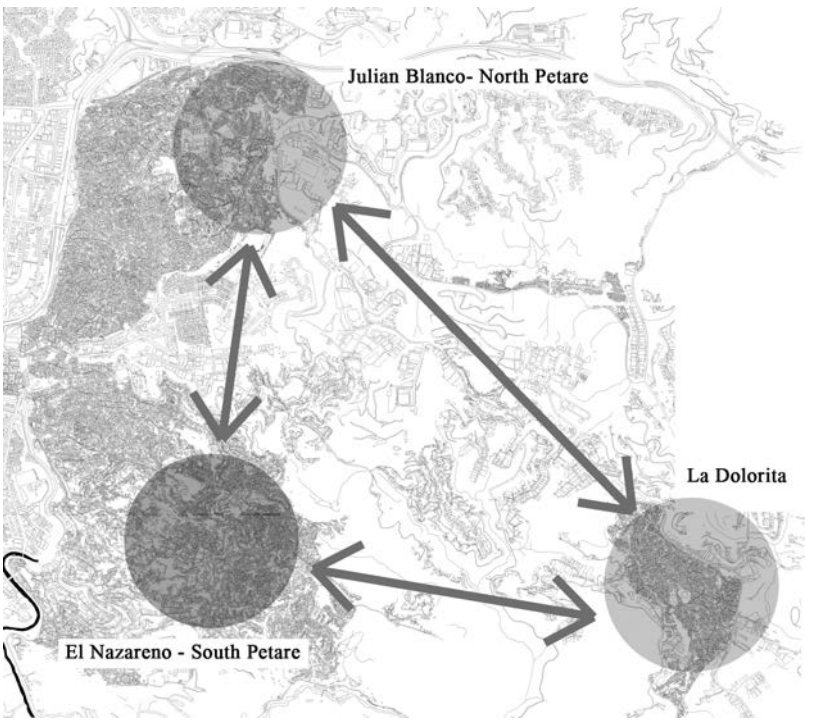

Figure 3.7.2 Selected areas of study.

In addition, other criteria that were considered to select specific case studies were the population and the number of processions that took place during the *Holy Week*.[6] In light of the aforementioned criteria, within the Arciprestazgo of Petare three parishes were selected: (1) St. Francis de Sales in La Dolorita; (2) Our Lady of Fatima in El Nazareno; and (3) the Evangelization Centre of Julian Blanco (Figure 3.7.2).

3. Methodology: how do we want to achieve our goals?

In order to achieve the aforementioned objectives and to address the different aspects related to researching sense of place, and urban culture and living, the methodological approach was thoroughly considered. This section discusses the different aspects of methodology relevant to this research.

3.1. Paradigmatic and methodological approach

In order to begin high-quality research the first thing that has to be done is to understand the nature of the process that we want to study in order to choose a paradigmatic approach. The latter refers to the perspective which researchers adopt to embrace and study phenomena.

The paradigmatic approach embedded in this research is constructionism, also known as the *emergent paradigm*, which arose due to the concerns regarding the positivism paradigm and its way of "understanding" different phenomena (see Part 1 of this book). Within this general perspective, we embrace socio-constructionism, which states that reality is constructed through social interaction, and that the only way to seize it is through recognizing as equals the actors involved in the actions and places we are studying.

Consonantly with the aforementioned, *qualitative methodology* was adopted; the purpose of it is "to reconstruct reality as we observe the actors in a pre-defined social system" (Hernández, Fernández-Collado and Baptista, 2006, p. 9, translation by the author). The intention is to be aware of the situation in relative terms as presented in its diversity. Moreover it is intended to deepen a specific topic through case study material.

We embraced this methodology with the aim of comprehending the relationship between urban morphology and people, in a deep and significative sense, not in a statistical matter. This approach presents itself as fundamental in getting to know a vital part of Venezuela's *barrios* through their people's cultural expressions – specifically Catholic processions.

3.2. Research design

While developing research, its design must also suit the action and place that is being studied. Because planning comes from a long-lasting *rational* background (positivistic), it has long been a tendency to approach phenomena with preconceived ideas that limit our understanding of the complexity of the urban space and its dynamics. However, when working with communities, who have values, beliefs, traditions and their own ways of living, arriving with an open mind is important to really get to know what is important and relevant for them, from the inhabitant's perspective. While understanding community dynamics and their priorities, it becomes clear what we need to address in our own research.

Considering the aforementioned, an emergent design was the appropriate strategy, because we were getting involved in an unfamiliar context (physical, cultural and community). It became therefore necessary to begin the research with no predefined conceptions of what was important

to study. This design allows the researcher to elaborate and conduct the study as the findings arise. Moreover, an emergent design was adopted because the theory is created from the data rather than verifying a previously existing theory (Hernández *et al.*, 2006).

3.3. Participants

Regarding the participants, it is emphasized that in qualitative research they are intentionally selected in order to explore their unique perspectives regarding the phenomenon under study. Considering this, it is anticipated that there is no discrimination of gender or age for the development of this research. However, we take into consideration that the people involved participate in the processions we are studying and currently live or have lived in the selected areas. These elements are emerging as critical to understanding the meaning of sacralized space, as these features allow establishing comparisons between the everyday meaning of space and the sense of place constructed through the procession. The number of informants was not previously determined. Moreover, it is vital to establish in advance the importance of the concept of saturation, which we take into account for this research, which occurs "when new interviews or observations do not allow deeper and broader understanding" (Vieytes, 2009, p. 73, translation by the author). However, we have established three informants as the minimum to interview for each area of the context, including others if they have not reached saturation point.

3.4. Data collection

The data collection methods were selected in accordance with both the paradigmatic and methodological approach as well as with the three fundamental axes outlined in the research: the physical-spatial, the psychosocial and the procession as an activity. For that matter, we selected different techniques, developed scripts and tools, developed a pilot and staged several phases.

3.4.1. Techniques

The techniques we choose should have close relationships with the object that we want to study. Understanding that each type of phenomenon requires a specific method that also suits the paradigmatic perspective is as important as selecting the proper case study. In this specific case, when dealing with places and people and their relationship, there is the need to widen the planner's perspective of understanding the physical context through maps (plans), diagrams and schemes, which were also used in this research.

The techniques that are being used for this research and discussed ahead were chosen because their analysis and interpretation helped to comprehend part of the urban space complexity from an integrated perspective.

Participant observation. This technique, originally taken from ethnography, encourages the researcher to be a part of the culture she or he studies, instead of approaching it with a distant lens. Our immersion in the popular Catholicism processions in *barrios* was at first a task of getting to know the area in order to establish rapport with the inhabitants and be allowed by them into their religious routines and everyday lives. As this was taking place, not only did we observe what actions people took regarding this ritual and the urban space, but also we became a part

of them, thus building relationships with the participants, which enabled us to understand their sense of place and their feelings and meanings that were related to our research. During participant observation, researchers took *field notes*[7] of elements that were relevant, specific details, noticeable and common characteristics related to the activity/space/people, aspects we needed to enquire about, etc. Furthermore, in this research, we developed a data collection tool comprising a table with information that needed to be filled in regarding participants, urban space and the procession.

Interviews and informal conversations. In understanding people, it is vital to give them a voice, and relate that voice with the urban space. Interviews aim to allow participants to express their thoughts, beliefs and knowledge through limited guidance about a certain topic or issue that relates to them. Through this method we could deepen what we observed during their everyday lives and during the different stages of the processions. We thus organized *in-depth*, open interviews, which were structured only by main topics linked to the three axes we wanted to discuss with key actors of this cultural expression.[8] Furthermore, in the process of reviewing the expression of the participants, the meaning of this cultural expression and the meaning of the space during its occurrence were remarkable. Moreover, the interviews allowed the researchers to contrast and compare our own field notes and observations as part of the process of analysis so as to reach some understanding about *barrios*' morphology and living.

Also informal chats during the activity with participants involved in the phenomenon that we were studying revealed insightful information about their relationship with it. This helped in the interpretation of sense of place.

Audiovisual/photographical survey. Besides the aforementioned, we used audiovisual recording and photography to complement the information obtained from participant observation and interviews. Furthermore through audiovisual data collection, it is possible to observe the actual interaction between people and the space, related to the specific activity that is happening in the moment. It also helps us understand that the phenomenon that is taking place in urban space is not the only activity, evidencing that the built environment is a dynamic, continuously changing entity.

Through photographs, we can compare spaces in different times, looking closely at the changes and transformations that occur there in relation to each activity. We can look at people's facial expressions, which denote feelings associated with the activity and the place; we can observe also the interaction between people and their place.

Bibliographic review. This method was used in order to obtain official data about dates and places mentioned by the participants, as well as historic facts about the urbanization process of the context of study.

3.4.2. Piloting

Within qualitative methodology, a way to clarify research with an emergent design and to test the script and tools you are applying is through a pilot test.

One aspect of piloting relates to a primary approach to the community, where you start understanding what is really important for them, which eventually is going to define the path and focus of your research. In our experience, we decided at the beginning of the study that it was relevant to study all the religious processions that took place in the selected areas.

Thus, we participated in two small-scale processions and conducted interviews with the organizers, which helped us understand that we shouldn't focus on all processions that took place all over our context, but only certain processions in certain areas. We realized that not all processions were equally meaningful, and therefore that we should focus only on the Holy Week.

The second aspect of piloting is testing the data collection techniques and the stages that we planned to use. Evaluating the interview script, the usage of a plan for the community to draw (this was discarded) and the on-site data collection tool helped us realize what questions and facts weren't relevant to the research, as well as what information arose as vital that we weren't considering. Through piloting, both tools were revised and improved.

3.4.3. Research stages

Once having finished the pilot, and having established the focus of the research, it was necessary to set when and how the study was going to take place. Considering the time frame of the research, the limited resources, the fact that Holly Week is a compilation of several days[9] that occurred only once a year, and that we had to participate in three different areas simultaneously, it was decided that the data collection was going to happen during 2009, 2010 and 2011, so the main researcher could attend each set of processions per place at least once.

Additionally, the compilation and immersion in this sociocultural phenomenon were established in three stages around the processions that were being studied: (1) prior to the procession, (2) during the procession and (3) after the procession. The first one corresponds to the period of preparation of the event (from three months to one day before the religious manifestation); the second is the day of the event – the immediate preparation, the journey itself and the end of the procession; and the third corresponds to the days after the demonstration is performed. Finally, a fourth stage was added, which occurred along the entire investigative process, formed by the continuous integration and analysis of the data collected in the phases previously mentioned. Table 3.7.1 shows a summary of specific activities to be performed in each of the stages.

Table 3.7.1 Summary of information collection and analysis

Stage			
1st (Before)	**2nd (During)**	**3rd (Post)**	**4th (Analysis)**
• Conversations with the key participants of the procession (priest, organizers, community members) • Photographical survey of the urban space	• Participant observation • Informal chats with the participants of the procession • Field notes • Photographical and audiovisual survey of the urban space and the procession	• Interview key participants in the organization of the procession	• Integration and analysis of collected data

3.5. Data analysis

Another focus regarding methodology is the data analysis, which, according to Fetterman (2008), begins the moment the researcher selects a problem to study and ends with the last word of the report. Qualitative analysis was applied to the information constructed through the interviews, field notes, informal chats with participants and the audiovisual methods, which allowed the researcher to enter into a semantic and sense level as well as conative level, taking into account the relationships and their interpretation (Vieytes, 2009). In order to achieve the foregoing, the programme Nvivo was used, which enables the linkage of the aforementioned data collection techniques.

The structure of the qualitative analysis, focused on the full comprehension of the concept of sense of place, is based on categorizing the key elements that were said and repeated by people as important. Besides repetition of and emphasis on themes and the experience commented in the interviews, the interpenetration of people with the procession evidenced in the audiovisual recordings provides an understanding about the meaning of the activity studied and of the space in which it occurs.

In addition, in order to understand the link between the sense of place constructed through the procession and the morphology of the *barrio*, a series of urban analyses, such as detailed grain, public space system, urban fabric, land uses and paths, among others, are linked to the places people recognize as meaningful.

3.6. Developing findings

In the methodological approach, developing the findings *after* the data analysis presents itself is one of the most important parts in research. In this stage, which is actually being developed throughout the whole research, findings from the literature review and theoretical background are integrated with the researcher's knowledge and the data collected and analysed.

In this specific study, knowing about *barrios*' morphology and the concepts of religiosity and meaning was essential in order to delve into and develop the findings. In *barrios*, public open spaces are those left after the construction of the self-built houses. Therefore it is quite difficult to find a square or a park. Most often there are narrow streets, a few sport courses and round-abouts where the buses must do U-turns to circulate through the settlement.

Regarding the *barrios*' public space, Hernández Bonilla (2005) highlights the lack of public spaces, stating that streets are the only ones. Considering this, it is in these streets, as public spaces, that various activities (such as the religious ones) occur, giving meaning to these places. Considering the popular religiosity in the temporal and spatial domains, it can be said that urban space is in a constant process of sacralization; thus it becomes a dynamic, sacralized public place.

As one finding, the appropriation and meaning of the *barrio*'s urban space during religious processions were expressed by various comments and actions of the parishioners and other participants. One example of this is the appropriation of places taken by criminal gangs, which highlights the influence of Catholicism in public spaces. A sports field located in the barrio Julian Blanco, which for almost 364 days of last year was taken by the gangs of the area, is an example of this. In some informal conversations (during participant observation) and interviews with residents, they emphasized the fear they feel about simply walking by this spot because it had become a very dangerous place. However, there is one day of the year, Good Friday, that this

court is used by the community. On this one day the community demands its right to use that place, as this is where by tradition the procession ends. You could say that this space becomes sacralized in that moment, because of the meaning given by the participants in this particular activity in that urban space.

Getting to know aspects like the aforementioned shows the importance of the methodological approach, for the chosen one was the best for understanding the meaning within space and culture. There is no statistical method or questionnaire that would have given us the same information that came from participants during the procession.

Another reflection generated during this research, specifically with respect to the physical space where the procession takes place, is that the streets and their morphology become a determinant of this religious activity. During the Good Friday procession, in an informal conversation with a key participant, when asked for reasons behind the choice of the different stops of the procession (the Way of the Cross stations), the answer was as simple as, "Can't you see this space is bigger? Here more people can be accommodated". In this sense, the *barrio*'s morphology, with its narrow streets, defines this other cultural-religious experience. Once again the importance of the methodological choices is shown.

4. Conclusion: sense of place, morphology and methodology

In urban design and planning, besides dealing with morphology, it is common to address the issue of sense of place. Although this concept is closely related to the built environment disciplines, it is lightly embraced by academics and practitioners, showing generally that by developing "better" spaces and plans, it can be created or enhanced.

Wiesenfeld (2001) defines *meaning*, the base of the concept of sense of place, as a social construction developed through experience and interactions of human beings in a particular context. Related to that, Hernández Bonilla (2005) states that "the meaning of public space is expressed through forms of appropriation exercised by the people, where the various daily practices, individual and collective interests and interactions of the community are essential elements of this process" (p. 195). The author also expresses that this process of appropriation can be generated only by connecting the space and people's experiences; all of this is mediated by the culture of the inhabitants.

Therefore, researching about sense of place in planning and urban design enhances the knowledge of practitioners and academics about the city, thus generating more appropriate and high-quality urban proposals and solutions. It is important to realize that truly delving into this concept allows us not only to develop closer links to the community that we work with (for) but also to get to know the place from other perspectives than the expert one.

It is vital to understand that the public space varies its activities; although sometimes activities shape the space and change it, it also happens that space shapes what people do in it. In *barrios* where you don't have a vast amount and diversity of recreational spaces, or public spaces at all, the street becomes a place of market, a place of playing and having fun, a place of pilgrimage or religiosity intertwined with culture.

Relatedly, regarding the methodological approach, as shown before, it is important to comprehend the nature of the phenomena we are studying. In this case, to understand the meaning within the space and culture, the qualitative case study approach and ethnographic methods presented themselves as the most accurate option, since there are no statistical methods or

questionnaires that would have given us the same information that arose from people – that is, *meaningful* data.

The appropriation and meaning of the *barrio*'s urban space during religious processions are expressed by various comments and actions of the parishioners and other participants. One example of this is the re-appropriation of places taken usually by crime (gangs), which highlights the influence of Catholicism in public spaces.

In addition, deepening methodological concerns, in the process of establishing rapport, the researcher gets involved with people, developing relationships with the participants and key actors. This combines both an advantage and a challenge for the research. The first one refers to the possibility of getting more insightful feedback from participants since a respect- and trust-based interaction has been created. The challenge it can bring is that while being involved there are parts of the phenomena that are not being considered by the researcher, since from this paradigmatic approach *objectivity* does not exist.

The socio-constructionism paradigm states that our interpretations of our experiences and our own beliefs are involved in the research process. Therefore, related specifically with this study, considering that a research team developed the data collection, we go through not only the double hermeneutics that Giddens (1987) described. In this case, we get a triple or quadruple interpretation of this phenomenon, considering all of our backgrounds and subjectivities were involved in the process of reconstructing the link and meaning of religiosity as culture and the open urban space.

Finally, the theme of religious processions and the urban space reveals aspects that are relevant to humans, specifically for the *barrios*' inhabitants. Now, given that in Venezuelan cities there are different areas and that they harbour different types of morphologies, space must be understood in the same way that cultural manifestations must be differentiated from each other. In the *barrios*, places less studied than other city areas, spatial configuration is the result of the development and consolidation of structures and residual spaces in an uncontrolled manner, and the religious processions that take place there are therefore also particular.

Researching about sense of place in both the urban planning and urban design contexts is vital in order to generate new knowledge and some guidelines for practitioners and academics, for we work for cities and communities. In addition, understanding sense of place, by applying the proper methodology, is important in order to better comprehend urban complexity, and to generate effective and high-quality proposals for the inhabitants we work for.

Notes

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2 *Self-built areas* are places originated by invasions of undeveloped land, where informal settlements have been established by new inhabitants. The terminology arises in contrast to slum, because of the houses' materials and conditions that have developed over time.

3 From this point on we are going to refer to self-built areas as *barrios*.

4 *Arciprestazgo* is an intermediate territorial field, led by an archpriest, between the archdiocese and the parish.

5 Petare is a region located in the eastern part of the Caracas, Venezuela, with a mostly low-income population. Morphologically it is very diverse, going from colonial urban fabric to self-built areas.

6 *Holy Week* in Venezuela is the most important religious event and lasts from Palm Sunday until Easter. The most important days of it are both the aforementioned, in addition to Holy Wednesday, Maundy Thursday and Good Friday.
7 Field notes could be written or audial; see chapter 3.2, this volume, by Silverman.
8 Specific questions were outlined in a script to enable conversation and keep participants focused. For further information regarding them, contact the author.
9 This research focused on Palm Sunday, Holy Wednesday and Good Friday, since those are the only days that involve processions.

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3.8

A VALUE-ORIENTED APPROACH TO DISCURSIVE ANALYSIS OF URBAN AND REGIONAL PLANNING

W.W. Buunk and L.M.C. van der Weide

1. Introduction

Spatial planning used to be defined as an instrument for making well-informed decisions about our physical environment (Friedman 1987). These 'well-informed' decisions accordingly were the result of careful preparation and consideration of various proposals, for which a logically argued preference was reached following a functional or technical-instrumental rationality that was laid down in plans (Nozick 1993). However, the practice of planning has changed considerably. Planning nowadays is a variety of process-oriented approaches, methods of analysis and design, often combined with participation of stakeholders, methods of negotiation and procedures for joint decision making (Healey 1997, 2003; de Roo & Silva 2010). In policy arenas around urban and regional development mutually interdependent actors need to make a joint effort to define the spatial development issue at stake and decide upon the preferred solution (Buunk 2003: 126–133). This often means that existing planning policies may need to be set aside in favour of new custom-made ways of working, which in the end require a new basic or political decision.

Whatever the planning approach followed or whatever professional techniques applied in these processes, in the end a basic decision needs to be taken about what is considered to be the best solution to the perceived problem. As these basic decisions are essentially the result of a deliberation of underlying values, they often appear – at least in part – to be an expression of somewhat random normative or political preferences, rather than of professional planning approaches and well-considered policies (Flyvbjerg 1998). Even after an extensive participative process, a final decision may differ considerably from what was expected to be a rational or logical outcome of the process, and was prepared by planning practitioners or expected by participants. From a perspective of technical-instrumental rationality, these decisions may seem illogical or riddled with situational or even emotional arguments. In this chapter, an alternative approach is suggested by following a value-oriented rationality to gain a better understanding of decision making in urban and regional development.

Following a value-oriented rationality means that planning is seen as normative effort, in which moral or ethical aspects of choices are made on spatial development issues. Such a perspective is rare, although there are some examples in adjacent fields (e.g., van Wee 2011). This normative approach to planning is explored ahead, drawing on two different research projects. Section 2 outlines the theoretical framework that distinguishes three forms of rationality and defines what values are and how they are relevant to planning. Section 3 shows how discourse analysis can be used as a research method to find underlying values that play a role in the practice of planning processes and decision making. In section 4 the outcomes of two different research strategies are presented. Section 5 reflects on the relevance of insight into underlying values for planning practice and identifies some future research challenges.

2. Rationality, values and pluralism

Planning practice and planning theory have long been dominated by a technical-instrumental rationality. Political philosopher Robert Nozick even calls the theory of instrumental rationality the "default theory, the theory that all discussants of rationality take for granted" (Nozick 1993: 133). The idea of instrumental rationality is that actors are supposed to choose rationally between instruments or measures that to the best of their knowledge help to achieve the aims that are set. With a view to theoretical critique, some of which are as fundamental as that of Friedrich von Hayek (1944), who challenges the very idea of rational planning, and the changing planning practice, the technical-instrumental approach to planning was later redefined by approaches that follow a communicative rationality (Fisher & Forester 1993; Forester 1999). Planning is seen as a process in which rich and multilayered policy stories are formed that help us understand spatial development issues and define the preferred way of dealing with them.

Yet when it comes to those seemingly random or odd decisions that are made about spatial development issues in practice – which often astound the practitioners that have been working hard to help prepare for proper rational and logical decision making – the concepts of technical-instrumental rationality or communicative rationality are insufficient. Both perspectives presume logical ways of reasoning and argumentation and thus fail to understand the normative aspects of the planning processes. In contemporary planning practice, decision-making about spatial development issues is a deliberation of values. In order to understand this fully, a different type of rationality should be looked for. Nozick used the concept of 'substantive rationality' to try to define ways of reasoning in which other forms of logic play a role, rather than an instrumental logic: "One way in which we are not simply instrumentally rational is in caring about symbolic meanings, apart from what they cause or produce. [. . .] Symbolic meanings are a way of rising above the usual causal nexus of desires, and it is symbolically important to us that we do this" (Nozick 1993: 139).

Making a proper scientific distinction between values was for long considered impossible, as it requires the scientists themselves to be neutral, objective and without values. The three great philosophers of modernity that have been so influential to planning theory, Weber, Schumpeter and Mannheim, placed values outside the field of rationality altogether (Blokland 2001). They argued that it was best not to discuss values in scientific political thought, as they considered it impossible to judge values without being guided by one's own set of values. This may seem a safe argumentation, but it also denies the importance of gaining insight into values and therefore is increasingly criticised. Flyvbjerg (2001: 53) argues for reconsideration of this stance: "Social thinkers as diverse as Max Weber, Michel Foucault and Jürgen Habermas have pointed out for more than two centuries value-rationality (*Wertrationalität*) has increasingly given way to instrumental rationality (*Zweckrationalität*). [. . .] Today, the Aristotelian question of balancing

instrumental rationality with value-rationality is forcing its way back to the foreground". Here, this logic of symbolic meanings is defined as value-oriented rationality (Buunk 2010). This leads to a research approach in which planning and decision making are understood as a normative effort and a deliberation of values.

Morality

Doing research into moral values may seem far-fetched to many planners. Yet many spatial development issues have an unspoken ethical or moral dimension. A question like "What is a just housing programme?" quickly makes clear what underlying dilemmas of an urban transformation project can be. Planners are not used to explicitly debating such questions. Long-term policy aims, such as an even distribution of the housing stock with 30 per cent social housing in new residential developments, are considered a general interest. When such policy aims are challenged, it may appear to be a numbers game in which the actors involved in reality differ on the need for social housing because they have opposing views on values like justice and solidarity that underpin practical housing policy aims. Statistics on housing need will not solve the disagreement.

Studying values is the field of moral philosophy, which has few linkages to political philosophy, let alone political science or planning theory. Recently, scientific interest in the role of values in society, in politics and in policymaking is growing. Frontman in this quest for examining the role of values, Alisdair MacIntyre stresses that "every action is the bearer and expression of more or less theory-laden beliefs and concepts; every piece of theorizing and every expression of belief is a political and moral action" (MacIntyre 2007: 61). Planners may take courage from his plea for understanding moral concepts. MacIntyre considers this necessary, because values play a role in choices made by social actors. Values are reflected in "his or her reasons, motives, intentions and actions, and in so doing generally presupposes some claim that these concepts are embodied or at least can be in the real world" (MacIntyre 2007: 23). Values thus have structural properties. The capacity of values to structure social interaction is much akin to Giddens' notion of rules and resources in the process of structuration (Giddens 1984), in which values lay particular emphasis on the motives, reasons and/or moral incentives of an actor. Following Giddens' view on the duality of structuration, values structure interactions and are in turn produced and reproduced in interactions.

A problem with contemporary moral philosophy is that it can be criticised for its emphasis on conservative morals. Moral psychologists like Jonathan Haidt *cum suis* pointedly argue that this may be true, but also show that social scientists are generally biased towards a distinct liberal morality (Haidt & Graham 2007; Haidt 2012). This liberal morality, in particular from a US perspective, is all about the prevention of harm being done to people, and about social justice and of the protection of individual rights. Research that focuses on the morality of social dilemmas is often based on these specific values and takes little or no notice of values like pride of a community or respect for authority, or the sanctity of religious beliefs, the latter being values – again in US society – that tend to be embraced, on top of values like justice and care for others, by people with a more conservative view of life. When studying planning from a value-oriented perspective, also outside the US context, this may be a relevant warning.

A specific moral bias prevents social scientists from taking a comprehensive view of the broad variety of values that can be at stake. In addressing their fellow social justice researchers, Haidt and Graham state that "recognising ingroup, authority, and purity as moral concerns – even if they are not *your* concerns – is crucial both for scientific accuracy and for the application of social justice research beyond the walls of the academy" (Haidt & Graham 2007: 111). Their plea

to take the full moral dimension into account in actions people take and choices people make means that value-oriented research needs to concentrate on the variety of values that may play a role in spatial planning processes.

Ethical pluralism

The assumption behind a proper value-oriented research approach is that 'good' decision making requires that all relevant values are explicitly considered – as far as possible – in decisions about spatial development, design and use of land or urban territory. This should not be seen as a judgement of decisions as an outcome, but of the quality of the decision-making process. As a scientific perspective, it has as a normative point of departure that follows the principle (or value) of the ethical pluralism of Isaiah Berlin (Berlin 1969, cited in Hardy 2002). Alternatively, a monistic approach that would favour one normative perspective over others would drastically limit the insight into possibly relevant values. Such a perspective would not lead to better decision making.

According to Blokland, Berlin argued throughout his work that there are many values worth pursuing, yet they more often than not are incompatible, which means we need to choose (Blokland 1997: 169). Berlin saw this as a tragic situation that we experience on a daily basis, and yet we need to deal with it somehow in a search for a better life. A pluralist approach acknowledges not only that a variety of values may be at stake in spatial development issues but also that this variety essentially needs to be taken into account in spatial planning and decision making.

3. The search for underlying values

The challenge for value-oriented research is to reconstruct the often implicit or underlying values that play a role in the explicit exchanges and interactions that make up the process of planning and decision making about the preferred development, the design and the use of land or urban territory. A value is an expression of a deep-rooted belief, motive, incentive, desire or ideal for spatial development, and for the design and use of land or urban territory. Values have no meaning for practice or for scientists alike, when they are a mere dead letter in a plan or policy document. Values have a true meaning only when they are recognisable in social interactions, as the underlying motivation of actors in their judgements for action. Similar to the political scientists' concept of power or social scientists' concept of meaning, values are real only in their application in social interaction.

Values are specific words in verbal or written exchanges to which an actor relates in an argumentation. Words like 'justice' or 'pride' or 'urban density' can be recognised as values, when it becomes clear in their context how they express deeply felt beliefs, general preferences or more practical judgements. Discourse analysis is the appropriate research method to unravel the meaning of these specific words in their social context. With the communicative turn of spatial planning, planning research has adopted methods of linguistic analysis, following great philosophers like Lyotard and Foucault (Hajer 1997; Torfing 1999). Discourse analysis helps to provide insight into the frames and storylines by which actors create their view of the world, and of spatial development issues. Discursive analysis of text and speech looks for specific words that are used often or that seem to specify certain meanings. Looking for signal words or phrases helps in finding dominant storylines that show what preferences actors have and how and why they will act on the issue at stake.

For value-oriented research, this type of discursive analysis needs to take one step further. Finding underlying values requires interpretation of these signal words and their use in building up an argumentation and motivation of preferences and of judgements behind choices that are made. Values can therefore be identified by finding specific phrases or sentences that are considered to characterise the deep-rooted belief, motive, incentive, desire or ideal behind a storyline.

Phronetic social research

However difficult it may seem to reconstruct underlying values of texts, it is no more difficult than selecting sections of text which a researcher thinks are typical for the dominant discourse. In the end, it is all about gaining insight into the categorisations, judgements and preferences of actors in social and political processes: "values, pragmatic considerations, and strategies for action are a prerequisite for, and part of, the method, and hence, do not stand in opposition to the understanding-oriented project" (Flyvbjerg 2001: 126). Flyvbjerg calls this a phronetic approach, following the Aristotelian distinction between scientific knowledge (*episteme*), technical ability (*techne*) and prudent use of knowledge and technology (*phronesis*). As a value-oriented approach to social science, "phronesis thus concerns the analysis of values – 'things that are good or bad for man' – as a point of departure for action. . . . It focuses on what is variable, on that which cannot be encapsulated by universal rules. Phronesis requires an interaction between the general and the concrete; it requires consideration, judgement, and choice" (Flyvbjerg 2001: 57).

In his call for a phronetic social science, Flyvbjerg doesn't further define values, nor appear interested in finding out what values guide these judgemental efforts in practice. The aim of the value-oriented research presented here is to focus on these processes and mechanisms of judgement on spatial development issues, in which values can be seen at work. The core of the analytical work is to select discursive elements, sections of text or even single words that appear to bear a specific meaning that can be recognised as a value. Researchers need to be able to select and understand specific sections of text that express a deeply felt desire about what is good, for that is what values are about. In other words, the challenge is to dare to interpret the outcome of discursive analysis, using all the academic knowledge and skills, as well as practical expertise.

Abstract and concrete values

In order to recognise, select and interpret discursive elements in storylines in search of these underlying values, a distinction between values and types of values needs to be made. Abstract values like courage or austerity can often be related to virtues. When spatial development issues are concerned, abstract values like justice (e.g., the just division of land) and beauty (e.g., the aesthetics quality of the countryside) may play a role. Values can also take concrete forms, which depends on the object to which someone refers. According to the Dutch Scientific Council for Government Policy (WRR), which made a concise study of the role of values in society, anything can be the object of valuation: things, cultural heritage, individual people, the nature of relations between people (e.g., trust) or social principles (e.g., freedom) (WRR 2003: 46).

Concrete values play a prominent role in the practice of spatial planning in the rather straightforward form of the value of land in terms of the money it is worth. Less obvious are concrete values of nature in terms of the scientifically based definitions of key ecological resources that indicate which natural habitats or species are worthy for conservation according to European and national legislation (Buunk 2002). Other distinctions between types of values are religious

beliefs or party-political values. Some consider values as something personal, and others define values as having a joint cultural origin that is preserved in a community. Values may refer to substance or to more procedural matters, such as the guiding principles of formal statutory planning systems.

Values can take a variety of forms and need to be identified as discursive elements that express an ideal of what is considered to be the 'good society' or 'the good life'. In the reality of planning and decision making about spatial development issues, actors will draw upon a mixture of concrete and abstract values. High density as something that creates a good and vibrant city may be linked to a preference for innovative and modernistic designed high-rise buildings, as well as a specific notion of mixed residential use, corporate businesses and small-scale creative industry. Density may even be defined as a concrete norm, in terms of the number of dwellings per hectare, yet may be combined with rather indicative design references. In actual decision making, actors may wish to deliberate on these values and norms vis-à-vis values that are linked to concerns about global climate change or social cohesion.

Defining a hierarchy of values is principally impossible and will add no new insights. The distinction between abstract values and concrete values therefore is an analytical distinction only. Values can be grouped in terms of their substantive similarities, creating an insight into more or less congruent sets of values that may play into basic decisions about spatial development issues.

4. Two value-oriented research strategies

The challenging search for underlying values of spatial planning processes will be demonstrated by different research strategies that were followed in two projects. The first strategy for a value-oriented approach is strictly empirical and was applied in a case study of a complex participative policy process for a comprehensive river basin redevelopment strategy in a Dutch region. Document analysis and loosely structured interviews with key actors were used to describe the dominant storylines. The challenge for the researchers then was to identify the underlying sets of values for each of these storylines. Experience with the practice of planning processes and research-based insight into policy fields such as nature protection, recreation and rural development proved necessary to select the viable textual elements for defining values.

In the second value-oriented research strategy, a categorisation of five basic normative attitudes was defined in an early stage of the research on a theoretical basis in order to help identify the variety of Dutch party-political values in spatial development issues and planning. This was not a theory-driven research strategy, but the theoretical framework was developed alongside the empirical analysis. Ahead, the outcome of both value-oriented research strategies will be presented, with particular emphasis on the way in which the sets of values were identified.

Four storylines, six sets of values in the Vecht valley region

Following problems of flooding and large-scale evacuations in 1993 and 1995, the Dutch government quickly launched a comprehensive programme of river basin enlargement along the Rhine and Meuse. As the answer to climate change and its effect on the raising river levels in the increasing periods of heavy rainfall, this choice for changing the river regime was an alternative to the traditional method of building higher dikes. A similar strategy was introduced for the small regional river Vecht, in the northeast of the Netherlands. After some years of research and planning by central government and regional water boards, the coordination of the programme

was decentralised to the provincial authorities. The province initiated a broad interactive planning process in which the two regional water boards participated together with four local municipalities, representatives of large private estate owners and two (semi-)public nature conservation organizations and representatives from tourism and agriculture. Also linkages were created with local communities and local groups of nature conservationists. They all added their own range of issues and preferences to the process, which in 2009 eventually led to a master plan, "Ruimte voor de Vecht", and a subsequent implementation programme and projects. The strategy combines the river basin enlargement and provincial nature policy aims with an ambition to deal with social and economic challenges to the region.

In the discursive analysis of this interactive regional policy process, four dominant storylines were found in a discourse on the need for and social and economic opportunities of changing the river regime. Each of these storylines was described, keeping close to the empirical material, and was then interpreted by the researchers in order to construct the underlying set of values (see Table 3.8.1). One of these four storylines is about the Vecht as a "semi-natural river", and clearly has been influential from the start of the process in 1997. It is a storyline that covers a range of issues, is rich in discursive elements and arguments and, not surprisingly, could be linked to three distinct sets of underlying values. These sets of values are about safety, nature and liveliness. The other three storylines appear to be linked to underlying values that can be grouped in one set each.

The underlying values of each of the storylines are an interpretation by the research team. In each of the storylines, signal words and phrases were identified that convey a clearly motivated preference for the region. The aim of the research team was to identify a value with one word (or a combination of two) that could be explained in a concise description of its meaning and motive as part of a storyline. Interpretation in terms of values was aimed at showing the variety of these motives, as far as this variety is distinctly recognisable in the storylines.

The storyline of the semi-natural river tells of a river regime that is in need of change. It emphasises the effects of climate change, makes a general appeal for a society that plays a role in global processes and an almost unspoken appeal for prudence. It conjures a powerful picture of how the current canal-like river can be turned into a freely meandering river that opens up into a broad estuary flowing slowly into the lake *IJsselmeer*. It is the image of a vibrant river with a natural dynamic of erosion and sand deposition, although the full force of nature needs to be contained carefully. As such, it is a telltale example of the cautious civil engineering tradition of Dutch river management. Austerity in river management, safety first, seems to be the real underlying message. The interpretation of the storyline adds up to a first set of values of *prudence*, a deeply felt responsibility for the effects of climate change (identified here in terms of *guilt and penitence*), the *fear* of rising water levels and *austerity* in allowing the river to behave more naturally.

As proper planning concepts go, the metaphor of the semi-natural river was never defined precisely. Instead, a document with reference pictures was produced to show the beauty of the idea in an understandable way to non-experts and its possible use for tourism. The concept of the semi-natural river is linked to the formal national and provincial nature protection policy, which initially set out to create an ambitious area of 1,100 hectares of new nature reserves for precisely defined key ecological resources typical for river delta wetlands. The underlying value in this respect is the *responsibility* for global biological and aquatic biodiversity, albeit in this regional process closely connected to locally felt love for variety of the landscape and its ecology.

Table 3.8.1 Underlying values of the Vecht river valley strategy

Sets of values	*Key values and their meaning in Vecht river valley strategy*	*Storyline*
Safety	**Prudence**. Adequate river regime is a necessity. **Guiltand penitence**. Climate change is a man-made burden society needs to adapt to. **Fear** of flooding limits possibilities of natural river regime. **Austerity** in allowing natural dynamics of the river.	The Vecht as a semi-natural river
Nature	**Responsibility** for global biodiversity (in particular rare species and habitats). **Love** of local variety of nature and natural landscapes.	The Vecht as a semi-natural river
Lively river	A lively river has high aquatic **diversity**. The **beauty** of natural river dynamics needs to be visible in the landscape. **Harmony** in natural beauty and recreational experience of the river. **Utility** of business potential of the river valley region.	The Vecht as a semi-natural river
Self-determination	Economic **self-determination** for farmers (e.g. in case of necessary changes in allotment of fields). **Justice** in respecting property rights vis-à-vis decisive public interests for changes in river regime and surrounding fields.	The Vecht as a lively prosperous river valley
Landscape	**Pride** of the singular scenery of Vecht valley region. **Self-consciousness** of regional identity should grow with individual inhabitants and communities. The agricultural, military, recreational and spiritual history and **traditions** of the Vecht valley region are worth rediscovering.	Rediscovery of Vecht valley identity
Cooperation	Cooperation is **useful** for all.	Vecht Carnation, local species of the flower that is used as a symbol for cooperation

The rich storyline of the semi-natural river could be linked to yet another distinctly different set of values. The idea of more natural dynamics of the river also fuelled ideas of recreational use of the river, albeit in their explanation in harmony with the ecological aims. The other three storylines are less complex and proved easier to interpret. The set of values about the beauty and identity of the landscape was supported by an inventory of the feudal, military and cultural history of the landscape. This seems to have unlocked feelings of regional pride and self-consciousness. The impressive full-colour book about it sold out quickly.

In this interpretation, the research team distinguished between values that identify the variety of motives. A random list of possible values – or words that are generally used to indicate values

– was used to help recognise values behind these discursive elements of each of the storylines. Values that identify congruent motives were grouped together as sets of values, mostly relating to a certain theme (e.g., nature). The sets of values that were found remain an interpretation by the researchers, but were cross-referenced with comments of key actors involved in the policy process to ensure accessibility for others. With this way of working, sixteen different values were identified, grouped in six sets of values.

Five sets of party-political values in Dutch spatial planning

With a more structured research strategy, a proper map of the Dutch political landscape around spatial development issues and planning was made. This strategy set out to design a suitable categorisation of the variety of political values, to help analyse the empirical material of some eighty political documents and the outcome of three expert sessions. Initially, a distinction between four or five political 'families' was used in a preliminary analysis (Buunk 2010: 34). This appeared to be inadequate to grasp the variety of political thought in the fragmented field of the nine Dutch parliamentary parties.[1]

A categorisation was needed in which the variety of moral judgements of people in modern society is reflected. According to moral philosophers like Micheal Sandel, moral judgements essentially concern the just course of action, which make 'justice' a pivotal value in modern society (Sandel 2011). Others, like the Dutch philosopher Andreas Kinneging, point at the struggle people have to square the notion of justice, which is mainly a formal principle of legislation in modern society, with other moral concepts that guide choices in day-to-day life, like honour or respect (Kinneging 2005: 100–114). Best suited as a framework for analysis for the variety of arguments, motives and preferences on spatial development and planning[2] proved the moral foundations defined by moral psychologist Jonathan Haidt (Haidt & Graham 2007; Haidt & Kesebir 2010; Haidt 2012).[3] Haidt and his colleagues distinguish five distinct normative attitudes that are starting points for moral judgements people have, in particular about their relations with others, social interactions and society.

These five moral foundations were reformulated with a view to the Dutch political landscape around spatial development issues and planning on the basis of the first stage of qualitative analysis of party political documents and relevant planning documents. This created a framework for a structured analysis and interpretation of the empirical material. This material included the outcomes of two expert sessions in which practical political experience and expert knowledge were unlocked. On the basis of the preliminary qualitative analysis, overviews of the variety of political points of views (not yet in terms of values) were produced and applied to two selected cases for these expert sessions. Mind mapping software helped to keep track of the lines of argumentation and identify signal words and phrases that might indicate underlying political values.

In a series of more than ten iterations, starting already in the preparation of the expert sessions, continuing in reporting on their results and finalizing it in the analysis of the whole of the empirical material, the research team set out to interpret what the underlying values were. The theoretical framework of the five moral foundations (based on the work of Jonathan Haidt) was used in a heuristic way to help understand and interpret the empirical material. In this series of iterations, the research team set itself a goal of defining just one word for each of the values at stake. For each of these words that indicate a political value, an explanation was needed to be recognisable in the empirical material. These explanations were then rewritten into a concentrated one- or two-sentence version of a formulation that should be recognisable for practitioners.

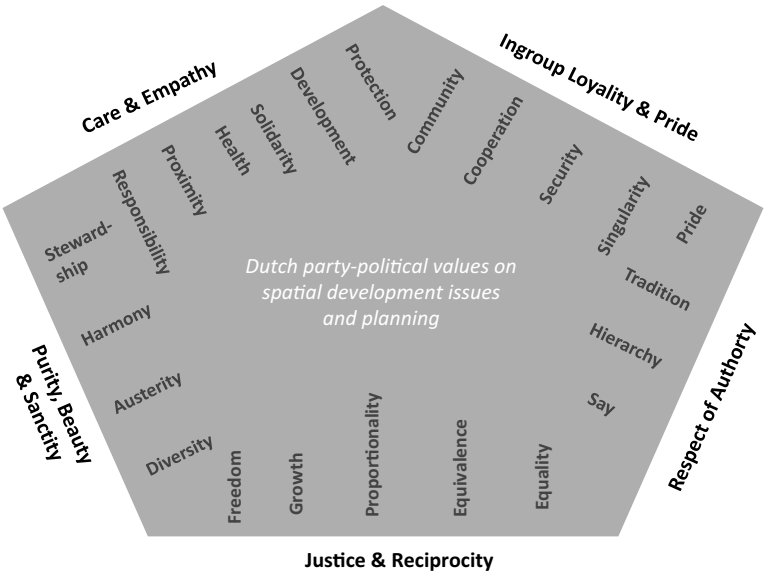

Figure 3.8.1 The Dutch political landscape around spatial development issues and planning.

The result is an overview of twenty-three political values which the researchers think are representative for the variety of Dutch party-political values (see Figure 3.8.1).[4] These twenty-three values reflect the complete variety of Dutch political values, without breaking it down into endless variations. The draft version of this overview was then tested in a third expert session with high-level civil servants of the Dutch ministry of planning who prepare legislation, budget decisions and debates for the minister in parliament. Only minor adjustments were needed, like small changes in formulation to prevent misinterpretation, and a practical guide for using the map was made.[5]

The overview cannot be discussed here extensively, but from the perspective of methodology and practice it is relevant to point out a few remarkable insights. The moral foundation of Care & Empathy is reflected in political values like *solidarity* and in ideals of caring for others. It is recognisable in political preferences for social housing and for the use of comprehensive spatial planning methods to protect weak interests and design strong neighbourhoods. The moral foundation of Justice & Reciprocity is reflected in notions of *fairness* of the regulatory land use mechanisms and of housing allocation, in terms of *equality* or *equivalence*. Also notions of spatial development opportunities for (economic) *growth* and individual *freedom* in land use can be understood in their linkage to this normative position.

These two moral foundations seem to dominate the normative frame of reference of many planning professionals. Much underestimated in planning policy and in the views of planning professionals is the moral foundation of Loyalty & Pride. Apart from the mandatory foreword by the mayor in planning documents about the beauty of the municipality, values like *pride* or *loyalty to the community*, neighbourhood, town or region rarely seem to play a role in planning. Yet it is a moral foundation that may help one to understand recent surge of political interest in feelings of (in)*security* and fear of changes to one's living environment.

5 Values, normative beliefs and informed decision making

In the value-oriented research strategies presented here, the mutual confrontation of scientific thought and insight about planning practice and politics proved indispensable. This structured mutual confrontation was needed to select the proper words to define the underlying professional, sociocultural and political values that play a role in decision making about spatial development issues. This value-oriented research is an attempt for the reflexive social science Flyvbjergs calls for: "The purpose of social science is not to develop theory, but to contribute to society's practical rationality in elucidating where we are, where we want to go, and what is desirable according to diverse sets of values and interests" (Flyvbjerg 2001: 167). His call for a "phronetic social science" aims to link mainstream 'proper' scientific analysis to the practical knowledge of people involved in practice.

Flyvbjerg's call for prudence in applying scientific knowledge to practical issues is also followed in the result of the analysis of the Dutch political landscape. A clearly designed map offers a tool for planners and policy advisors to interpret and understand the political field around their plan or project. Each of the twenty-three values is illustrated by a sentence that can typically be found in political talks or debates, to help them recognise that particular type of value. In practice, each of the words used in the overview to indicate the underlying value will have different meaning for different people, depending on the context and the situation. The challenge for practitioners is to interpret what is being said or written, as it will be a specific word or a sentence that expresses a motive, incentive, desire or ideal that can be recognised as a value. Sometimes, a negative statement indicates a distinctly positive preference for an underlying value; sometimes interpretation is needed of what was not said or written.

Political scientists have cast value-oriented research aside, considering it principally impossible. This is a loss for other fields of social science like planning and for planning practice that are confronted with unknown political and normative influences. Hayek in particular has warned that planning experts who conceive plans are not morally or normatively neutral themselves (Hayek 1944: 61–62). There is a need for a better understanding of the underlying values involved in decision making about spatial development issues. Planning professionals, citizens and developers may have specific interests; they also have their own personal and professional normative beliefs, ideals and deeply rooted preferences. These are the underlying values which guide them in their actions. Proper debate and well-informed basic decisions about spatial development issues require insight into these underlying values.

Notes

1 Further attempts included a distinction of citizenship styles based on work by a Dutch research bureau, Motivaction (Gijsbers & van der Lelij 2010) and German research bureau Sociovision (de Vries 2006).
2 Schwartz' basic human values system was also considered (Schwartz 2006). His nine categories of personal morality have a strong individual focus, whereas political thought is mostly about the individual person in a social context or about communities or societies as a whole.
3 Haidt and his colleagues have based their framework on insights in human driving forces in social behaviour as found in psychology, philosophy and evolutionary biology and tested them (and keep doing so) in moral psychological surveys. He later added a sixth moral foundation, 'liberty/oppression', with a strong focus on values like individual freedom. This moral foundation could not clearly be linked to values that were found in the empirical material.
4 The research team consisted of the authors, one of whom is a planning researcher and part-time politician in a city council and the other a political scientist, together with De Argumentenfabriek, a research bureau that specialises in a mind mapping approach and in designing clear overviews of complex information and research outcomes.

5 A clearly designed version of this 'value map' is available in Dutch only, under the name Waardenkaart Ruimtelijke Ordening. A free download can be found at www.windesheim.nl/lectoraatareadevelopment (accessed 5 August 2014).

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3.9

IMAGINATION AS A METHOD FOR GENERATING KNOWLEDGE ABOUT POSSIBLE URBAN FUTURES

Diane Davis and Tali Hatuka

Imagination as critical thinking

Utopian ideals have not always been relegated to the sidelines in planning and architectural practice. In fact, imagining dramatically different alternative futures for cities was once a standard element of planning theory and practice. From Plato and Aristotle's ideal republics to the more recent utopian visions associated with leading voices in western architecture and planning (e.g., Robert Owen, Charles Fourier, Ebenezer Howard, Frank Lloyd Wright, Lewis Mumford, Le Corbusier and Paul Goodman), the imaginative search for novel physical or discursive renderings of a desired state of affairs has persisted throughout the ages. The creative visions emerging from these practices have influenced the form and character of contemporary cities, mainly because of their potential for improving the welfare of individuals and communities. *The garden city* by Ebenezer Howard and *Ville radieuse* by Le Corbusier are key theoretical examples of the apparently utopian projects[1] that influenced twentieth-century architecture and urbanism before falling into disrepute from the late 1950s onward.[2]

Despite their defining influence in the field, charges of authoritarian excess and tensions between advocates of "planning from above" and "planning from below" derailed the creative search for utopia, bringing alternative strategies to the table (Davidoff, 1965; Forester, 1989; Healey, 1997; Innes, 1998). In more recent years, citizen participation, communicative practices, and strategies of stakeholder negotiations that recognise the importance of including social groups and non-government organizations in the planning processes have joined the repertoire of planning methodologies. Planners today usually draw on a range of these now-standardised methods to produce "local knowledge" of the urban experience, a key component in the generation of agreed-upon urban policy outcomes. However, the local knowledge produced through such processes can constrain as well as enable effective planning action, particularly when social and spatial inequalities mediate the urban experience in ways that produce stark divisions over the most appropriate urban policy action. More critically, in the decision to rely on the grounded, everyday experience of citizens as the principal reference point for planning action, many of the imaginative dimensions of planning have disappeared and been

replaced by results-oriented techniques and a preoccupation with proving accountability to citizens and their immediate priorities.

Our aim here is to bring creative visioning back into the planning lexicon. Building on a recent manifesto by Mostafavi and Christensen (2012) about the importance of constructive imagination, we argue that future visioning can be a "method" deployed by planners and designers to generate knowledge about the city as well as to assess the limits and possibilities of effective planning action. We begin by proposing an analytical framework for exploring the role of imagination, asking whether citizens' conceptualisations of *time*, *space*, and *change* enable them to construct alternative visions. In this exercise, imagination is perceived neither as a naïve celebration of utopian thinking nor as a futile exercise in futurism. Rather, imaginative visioning is used as a methodological tool to enable and expose uncensored views about the hopes and desires of citizens for their cities. At its best, such visioning exercises can produce a critical understanding of real-world institutional and political-economic constraints, while at the same time nurturing the hope that the future can be different. At their worst, they can reveal the misperceptions, intransigence, and biases of citizens and other stakeholders, although these, too, must be recognised as key elements in the planning process because of their role in reducing consensus and setting limits on action (Aalbers, 2011). Our premise is that by offering citizens a chance to imagine a different and better future, rather than asking them to work pragmatically within the limitations of the present, new ideas will be generated both for urban policy action and for research on the construction of alternative social, political, and spatial arrangements for cities. As Lefebvre (1996, 147) noted, any useful critique of "really existing" human geography or the practices of contemporary urbanism will necessarily entail both imagination and the need for creative activity through information, symbolism, prophesy, and play. We could not agree more.

Although imaginative visioning methods can produce valuable knowledge for planners in all settings, they are particularly effective in locations where patterns of extreme social exclusion and urban injustice characterise the urban domain. In such settings, citizens often feel constrained by the grounded social realities and the power structures of the present, mainly because animosity, antagonism, and mistrust often create limited faith in the capacity of authorities or fellow neighbours to build a city that could be embraced by all. In such cities, consensus-oriented planning techniques may be least useful, because they either hide – or fail to reveal – the deep divides and tensions that lurk beneath the surface of formal planning exercises (Davis and Hatuka, 2011). Given these constraints, the turn to imagination as a method for soliciting deeply held views about alternative urban futures may be one of the few tools available for uncovering effective possibilities and enabling a multiplicity of socially just outcomes for highly contested cities (Massey, 2005). Once armed with both critical insight and a wider template of possibilities produced through visioning exercises, planners will be better able to identify planning goals in ways that may not be immediately obvious through consensus exercises and that may, in fact, transcend conflicts that can derail planning practice when stark social differences predominate.

In making this argument about the role of imagination, we base our knowledge on data generated in the course of an experimental project called the *Just Jerusalem Competition*, which used visioning to generate non-conventional planning strategies for that city.[3] The turn to imaginative visioning in the case of Jerusalem was built on the assumption that in divided or aggressively contested cities such as this one, there was a need to transcend the partisan constraints of the present and orient towards the future if any exit from cycles of seemingly intractable conflict is to be achieved. This experiment, which took the form of an international "ideas" competition that called on citizens rather than state actors to offer future strategies for the city, solicited new visions that would enable a just, peaceful, and sustainable Jerusalem by the year 2050.[4] Launched in January 2007, potential entrants had one year to design, develop, and submit their ideas to an

open website housed at MIT, with jury deliberations beginning three months after the competition closed in early 2008.[5]

In the remainder of this chapter, we build on findings from the *Just Jerusalem* project to propose a general framework for tracking citizen views and enabling the production of novel or inventive ideas that can be effectively incorporated into new forms of planning research and action. We begin by discussing a range of principles that could be used to frame solicitation of – and research on – imagination in conflict cities and elsewhere. We then suggest a method for mapping and analysing the findings. In the final section we discuss the importance of imagination as a planning method, and discuss its potential to produce hope and an expanded array of constructive actions that might build better urban futures.

How to stimulate imagination

Citizens unhappy with conditions in their city often seek change; but how they do so, and through what measures, will inevitably be limited by the social and political facts on the ground. In conflict cities, years of raised expectations and dashed hopes have taken their toll, often discouraging further activism or efforts. In such conditions, the starting point for soliciting new proposals for a better urban future must begin with open discussion on the city, including what might be reformulated as a range of "non-expert" or "non-local" visions about alternative possibilities. As people articulate their hopes and dreams, it is critical to ask them to think about the following questions: Do they see a role for experimentation in the production of place; how do they approach time, space, and change in the city; and if so, what terminology best describes their current living environment and the preferred urban future? To solicit answers to these questions, planners also must be willing to use different methods (interviews, questionnaires) and cultural representations (planning ideas, master plans, media programmes, newspapers) to stimulate imagination and to generate a range of data and metaphors about possible futures that can be translated into actionable planning ideas. To a certain degree, the most useful framing questions will be specific to place. In the case of Jerusalem, this entailed soliciting visions and ideas that addressed boundaries and borders, governance structures, and the relationship between city and nation. All cities have historical reference points – whether social spatial, political, or economic – that live in the imagination of their citizens and that must be tapped through the visioning process. Even so, there are several analytical principles that can serve as guides in any visioning exercise, whether asked of citizens or of professional planners in a conflict city or elsewhere, each of which will call attention to the scale or the boundaries of the visioning exercise as well as its temporality.

Principle #1: Deconstruct perceptions of the city. Is the city seen as a reflection of society, a subject of governance, or a collection of divergent sites for neighbourhood-based claims? Some of the most intractable and enduring contestations in cities revolve around social and spatial inequalities in the distribution of urban goods, amenities, and services (Bollens, 2000; Beall, Crankshaw, and Parnell, 2002). To the extent that participatory planning techniques produce a fragmented array of spatially bounded claims, they may reinforce social and spatial differences at the level of the city, even when the democratically deliberated claims of a single community are achieved – precisely because the gains of one community may mean losses for another (Hillier, 2003; Mouffe, 1999). One way to overcome such distortions is to ask citizens and planners to imagine what planning practices will be best for all inhabitants of a city rather than asking just a few, no matter their physical location. This is a key question for many cities, with looming environmental challenges that call into question the functioning and resource consumption of cities in their entirety. Likewise, once the city is conceived to be a reflection

of society, imaginative practices can be marshalled to construct a vision for the society or city that best reflects the needs and desires of all its citizens (Amin, 2006; Friedman, 2000, Fainstein, 2010), using future ideas about the good city to work backwards towards an array of spatial forms and uses that best enable the achievement of this vision. The challenge is to imagine futures based on humanistic, inclusive ideas that recognise the relationships between the inhabitants of a city and its formal institutions as well as its lived spaces.

Principle #2: Question the nature and role of stakeholders. Do citizens consider themselves as part of a larger whole, or as individuals who retreat to the local sphere? The call to imaginative practice as a concept derives from the works of Henri Lefebvre and John Rawls, each of whom were deeply concerned with universal rights (Lefebvre, 1996; Rawls, 1993, 1999). To achieve universality in thought and deed, and to increase the likelihood of visioning an inclusive and socially just future, imaginative exercises should be expanded to all who might have an interest in a particular city. In more specific terms, this means that the possibility of imagining a different urban future should extend in scale from the smallest to the largest unit of society, with the different insights generated from these divergent spatial vantage points combining to produce the most universal ideas about a better urban future. This means that imaginative exercises should draw on the larger terrain of national and global civil society whenever possible, rather than remaining confined to a particular city's (or neighbourhood's) current residents. The major epistemological challenge associated with this parameter is its intellectual justification: Why widen the potential "planning" audience beyond the neighbourhood or city itself? The rationale for doing so is built partly on recognition of the changing nature of cities and citizenship in today's globalised world, in which both local and transnational citizenries struggle for recognition, rights, and identities. The contemporary era suggests that global imagination is already a reality, with policymakers, architects, and planners acting globally in a variety of ways, such as designing, developing, and appropriating models and experiences from cities all over the world. However, the logic also rests in a deeper understanding of highly contested cities. By opening the imagination process to civil society at scales of participation beyond a single city itself, it will be easier to minimise the stalemate that comes when only those residing in that city are involved. In addition to reducing the biases or self-censorship that may come from being tied to existent localities, power structures, or institutions in a city, opening the dialogue to include global civil society provides citizens from around the world the opportunity to deepen and expand their knowledge about the social, political, and economic conditions in other cities.

Principle #3: Critically examine the territorial scale of planning action. What are the limits that city boundaries impose on the creation of equitable and socially just urban experiences? This question has been extensively discussed by legal theorist Gerald Frug (2001), who comes to similar conclusions about the challenges to democracy and social justice that arise when cities are dominated by states or are not allowed to "gather" – to use Lefebvre's notion – the multiple localities and social collectivities that constitute a society. However, in a departure from many other theorists of urban democracy, especially those who build on the Tocquevillian tradition of reifying "partial" or exclusive groupings as the bedrock of democracy (whether in neighbourhoods, communities, or other smaller-scale territorial units), Frug advocates for empowerment and autonomy on much larger territorial scales than the formal city. In particular, he ties the search for a truly egalitarian and democratic project to a better understanding of new territorialities that are larger than the neighbourhood or city but smaller than the nation and sub-national states. In fact, Frug goes so far as to suggest that the legal contours of

overly localised power prevent cities from fulfilling their democratic and civil society function by turning them into "vehicles for separating and dividing different types of people rather than bringing them together, withdrawal from public life rather than engagement with others, and the multiplication of private spaces instead of walkable streets and public parks" (2001: 8–9). Such concerns are also pre-eminent in highly conflicted cities, particularly when groups in conflict are located or segregated in different corners of the urban fabric and when issues about the boundaries of the city are part of the source of the conflict. Among such cities, Jerusalem may be most known for this problematic conflict, with much of the struggle fuelled by competing views of what are the most appropriate spatial (or territorial) boundaries of urban policymaking, and whether they are coincident with political boundaries or sovereignties or even with the symbolic and cultural bases and boundaries of governance for the city (i.e., whose religion, culture, or law should prevail, and how, when, or where should they prevail). As a general concern and constraint, however, many cities face the problem of how to draw boundaries for policymaking action, with such issues apparent in controversies over redlining and political re-districting, to name but a few. Questions about who draws institutional and/or spatial boundaries on city activities and for what purposes have long affected the utility of the participatory planning process, primarily by reinforcing scales and locations for policymaking that favour some groups over others. Critically examining the territorial logic of conventional planning action is a key component of imaginative visioning.

Principle #4: Specify and prioritise the relationship between the whole and the parts. In cities we see contestation not only over symbols, infrastructure, and resources but also over jobs, housing, transportation, water, and other requisites of the built environment. Questions of governance and civic authority likewise draw considerable attention as political allegiances mix with citizenship and established environmental priorities to drive desired urban policy outcomes (Miraftab, 2004; Roy, 2006). Given the multiple activities that create urban spaces, those who seek to imagine alternative possibilities must think carefully about prioritising which of these various domains should be the subject of action, and in the process, they should use their imagination to cultivate a reflexivity about which sectoral activities are most or least likely to contribute to a better city. What a conventional urban planner might identify as a key problem for resolution – perhaps because her domain of action is bureaucratically circumscribed by given structures, processes, and resources, such as an affordable housing stock or transportation infrastructure – may or may not be a good entry point for visioning a different future. Given the fact that cities are sites of multiple activities, services, infrastructures, and institutions that contribute to or constrain liveability in complex and, at times, in contradictory ways, it is important to track the different ways a city's main activities are framed in space and time. The logic here is not just the importance of thinking about the "whole" and the "parts" of the city but how they might more constructively relate to each other. Also important is the need to transcend the traditional planning practices that take *either* one *or* the other sectoral vantage point in the search for action. While comprehensive or master planning may engage the whole of the city, by laying out a systematic but relatively abstract organizational or spatial logic to integrate all urban activities, such planning leaves the complexity of managing a city's constantly moving "parts" to individual transport, community, or housing specialists. Imaginative exercises should be used to rethink the causal relations among the moving parts by inviting new ideas about how to make connections between sectors or the territorial spaces in which they operate and the city as a whole.

Mapping modalities: analysing the gathered data

What will be achieved by introducing imaginative methods into planning that build on a better understanding of the foregoing principles? For one thing, a body of ideas and approaches towards space and change can lay the foundation for future research about a city and what its citizens see as desirable in that city. For another, this body of ideas can serve as the basis for mapping knowledge that is of utmost importance to planners, who must then translate multiple desires into actionable policies that accommodate the largest array of stakeholders.

Using discourse analysis, it is possible to map and assess the data about possible urban futures in two ways that are useful to planners. One is by (1) recognising and then analysing the range or extent of imagination, or what we might call the "mode of orientation," defined as the extent to which a proposed idea appears conventional or predictable, as opposed to whether it offers a non-conventional and imaginative way of thinking about the city. A second is by (2) examining and understanding whether certain transformative themes or new ideas for a city are at all contingent on views of space or time, and then specifying these assumptions and articulating the connections (see Figure 3.9.1).

In terms of mode of orientation, we suggest categorising distinct "modes" of orientation along a continuum that reflects the most *pragmatic and most utopian ideas*, and then identifying yet a third category of ideas that explicitly transcends the pragmatic-utopian divide, from which *visionary* ideas might emerge. The following parameters are useful in distinguishing which ideas fall into what categories (see Figure 3.9.2):

1 *Position on the city's socio-institutional structure.* Does the proposed vision accept, avoid, or reconfigure current realities? Stated differently, does the person doing the imagining accept the existing sociopolitical situation and work with conventional assumptions about power and institutions; or does she avoid the existing sociopolitical situation by showing an unwillingness to consider any changes that might disrupt the larger dynamics of power or reconfigure the existing sociopolitical situation by challenging conventional assumptions? Are visions focused on tangible activities, feasible processes, and identifiable outcomes as opposed to more abstract ideas?
2 *Approach to territorial space.* Does the approach to space represent a willingness to consider multiple or non-conventional scales or sites of intervention, as well as a flexible approach to territory? How are spatial entry points identified? Do they start with boundaries and borders that are well established as opposed to those yet to be determined?

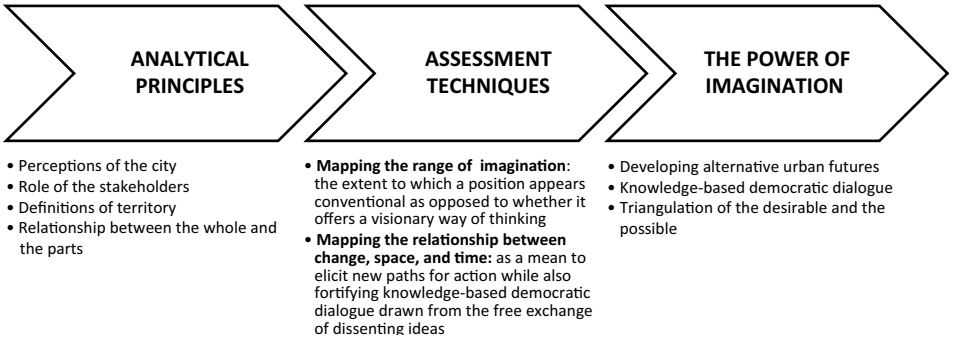

Figure 3.9.1 Framework for generating knowledge about possible urban futures.

3 *Conceptions of the past, present, and future and the temporal orientation towards change.* Here it is also important to differentiate between approaches that are pushing for immediate change and those that are more abstract, specifically future-oriented positions. Are proposed visions about recovering the past, reinforcing the present, or enabling a new future?

It may be worth noting that in the case of the *Just Jerusalem Competition*, even despite the project's stated aim of generating novel ideas that could straddle or bridge the pragmatic-utopian divide, the majority of respondents failed to strike that balance. In fact, the competition entries split relatively equally among these three modes of orientation. Slightly more than one-third of the entries followed a more conventionally pragmatic planning approach (forty-five *pragmatic*), forming the largest category of entries. The remaining two-thirds of the competitors adopted a more imaginative approach, although more competitors preferred utopian ideas with little reference to reality (forty *utopian*) than visionary ideas that sought to connect tangible actions to more imaginative concepts (thirty-six *visionary*). This was a surprising outcome, yet through this type of data analysis new knowledge was gained about the discursive and epistemological barriers associated with planning for the city.

Beyond mapping modes of orientation, it is also helpful to document the all-encompassing themes that emerged in the process of analysing the new ideas, new discourses, or new realities generated through the visioning process. To the extent that these large themes have discursive meaning, or could be seen as a call for challenging existing mechanics of the city, for confronting inequality, and for pushing authorities to be bolder and more transformative in their aims, they are useful renderings of citizen views of both the city and the planning processes more generally. In the case of Just Jerusalem, the competition revealed several "mega" themes and narratives about the city's essential character and its predominant dilemmas, which future planners must be prepared to take into account, whether in terms of recognition or repudiation. Specifically, most competitors observed Jerusalem through one of three distinct lenses: as a city that was either *connected or fragmented*, as a city whose fate depended on a *shared past* or a *shared future*, or as a city whose significance rested in its *symbolic* as opposed to its *real character* (Davis and Hatuka, 2011). Not all visions fit neatly into one or the other end of these seeming dichotomies (i.e., some saw translating a shared past into a shared future as key), and many visions adopted a combination of concerns with space, time, and meaning in a single meta-narrative. However, as larger framing

Table 3.9.1 Mapping modes of orientation towards place

	Accepting	*Avoiding*	*Reconfiguring*
Suggested Action Framework	Local, bottom-up, a particular location for action.	Static, top-down, escapist, no conflicts/paradoxes	Multiple scales and times, paradoxical
Conception of Space	Local, Intimate, Familiar	Abstract, Virtual, Hegemonic	Unspecified, Relational
Conception of Time	Present oriented, short-term; emphasis on ideas where effects of change are evident immediately	Future oriented but abstractly; few identifiable markers for situating ideas in time or realms of the imaginable	Future-oriented but concretely; identification of actions that explicitly lead to a different future

devices, they provided substantial information about how Jerusalem was seen by those who cared most about it.

The value of extracting meta-narratives and mapping degrees of imagination rests not just in its contribution to further discussion about possible urban futures, but also in its capacity to provide a set of freely formed ideas that can help strengthen democratic dialogue and more equitable outcomes, themselves key objectives of the planning process. As David Harvey has suggested, the right to the city is "not merely a right of access to what the property speculators and state planners define, but an active right to make the city different, to shape it more *in accord with our heart's desire*, and to re-make ourselves thereby in a different image" (Harvey 2000, 939). Because such vastly humanist aims cannot always be readily achieved by conventionally pragmatic planning methods, letting citizens' imaginations jump-start discussion about the city is one of the best ways to guarantee such goals. As Lefebvre asked, "*Why should the imaginary enter only outside the real instead of nurturing reality? When there is a loss of thought in and by the imaginary, it is being manipulated. The imagination is also a social fact*" (Lefebvre 1996, 167). Social facts, both "real" and imaginative, create the landscape of cities, conflict-ridden or otherwise, and thus they can and should be the basis around which planning action unfolds. Imaginative visioning builds on the premise that perceptions about what is desirable for a city can also be considered "social facts," albeit ones that could not have been arrived at through conventional planning techniques and consensus processes. For planners, of course, the point is not merely to understand the facts but also to change them. Yet to do so, both imagination *and* practical action built on imaginative visions may be necessary. Mapping alternative visions and discursive metaphors provides a basis for extracting and identifying fundamental meta-narratives of the city in question, particularly the conflicting meta-narratives that so often lurk under the radar screen of conventional planning practice, either unspoken or unacknowledged, which are then used by planners to help achieve the realization of citizens' most noble desires.

Conclusion: the potential uses of grounded imagination

How exactly does soliciting and documenting imagination open up alternative urban futures? For one, imagination has discursive meaning and can, accordingly, be perceived as a call for protest, for challenging existing representations of the city, for confronting injustice, and for saying the unsayable without the constraints of censorship, whether self-imposed or otherwise. For another, mapping trajectories of imagination holds the potential to open new windows of understanding on citizens' true desires in ways that force planners themselves to be more innovative in their own practice. To be sure, the more distant the planner and citizen from the reality the freer they may be to imagine, but also the less practical they may be. When planners incorporate imaginative thinking generated from citizens with their own professional knowledge of planning constraints, they are in a better position to give policy life to the concept of "grounded imagination" in ways that can serve as the basis for planning more inclusive cities. Such a method does not aim to find a negotiated "solution" for a city, but rather seeks to inspire imaginative ideas that can open alternative or innovative ways for discussing and eventually dealing with urban policies. And by standing in contrast to conventional planning practice, such a method is both liberating and constructive, particularly in highly contested urban environments where the "usual" planning approaches such as negotiation or consensus-building (Bond, 2011; Hillier, 2003; Mouffe, 1999) may produce very little urban change because such practices are built on the acceptance of the authority of given institutions or on the legitimacy of certain

territorially circumscribed governing arrangements. Indeed, in such settings standard planning practices like negotiation or consensus-building can even reverse constructive imagination because, by insisting on finding an agreed-upon solution, the desires and creative imagination of participants are jettisoned in the search for a single, negotiated view – even efforts to impose a homogeneous set of urban priorities may be precisely what is driving urban dissatisfaction in the first place.

Stated simply, by soliciting and enabling imagination, planners can achieve a better understanding of the basic urban conditions that enable or constrain a city's inhabitants – no matter their location or identity – to find common cause. In urban situations where local governing authorities are more powerful than the planners in establishing the terms of negotiation, and where citizens have starkly conflicting urban priorities, imagination may in fact be the only effective tool available for constructing a shared terrain of agreement. Moreover, constructive imagination as a conceptual framing for the planning of cities can take us one step closer to achieving more socially inclusive cities (Fainstein, 2010; Soja, 2010), where envisioning a better city becomes a truly shared task. Constructive imagination without an audience is socially meaningless, but constructive imagination that is documented, shared, and incorporated into planning processes is inspiring to citizens and planners alike. For this reason imagination must be solicited, precisely because it is a message of hope that the future can be different. Like all messages, the more public this communication and the more engaging, provocative, and sellable the ideas, the more likely it is that these messages will have staying power. At the end of the day, imagination, as well as the capacity to communicate the value of novel ideas, is not merely a tool for planners. It is also a key tool in the arsenal of weapons used to construct world views and to understand and reconfigure our cities and the societies of which they are a part.

Notes

1 On questioning the extent to which Howard, Wright, and Le Corbusier all projected urban utopias, see Robert Fishman, *Urban utopias in the twentieth century*.

2 For further reading on utopian visions in western architecture and planning, see Nathaniel Coleman, *Utopias and architecture*, and Robert Fishman, *Urban utopias in the twentieth century*. For criticism of utopian visions in architecture and planning, see Manfredo Tafuri, *Architecture and utopia*, and Colin Rowe and Fred Koetter, *Collage city.*

3 When visionary exercises are deployed in standard planning practice, they usually come in the form of top-down exercises in which planners and architects introduce self-created models of a preferred urban future, generally built around a tangible or readily implementable project and followed by a reactive response from citizens who, in turn, exercise their right to comment and critique. The result tends to be a well-managed if not sterile and highly unimaginative dialogue that lacks the basic qualities of visioning and sidelines fundamental societal transformation. Such processes usually generate a commitment to pragmatic and incremental gains, both of which tend to reproduce the power differences between those charged with the juridical authority to plan the city and those who are only in a position to accept, critique, or perhaps even modify such plans.

4 The competition was the culminating stage of a long-term project (started in 2004) titled *Jerusalem 2050: Visions for a Place of Peace*, developed by the Department of Urban Studies and Planning in conjunction with the Center for International Studies at MIT. We the authors were directly involved in the development of this project and later became part of a subgroup of the steering committee who contributed to the design and analysis of the competition.

5 Most of this information is documented on the Jerusalem 2050 website (http://web.mit.edu/cis/jerusalem2050/ and http://video.mit/channel/jerusalem-2050/) (accessed 5 August 2014). Visit this site for more elaboration on the project, the jury, and the competition specifications, and for a closer evaluation of the entries to the competition (discussed in greater detail by entry number in the chapter's final section).

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3.10

FROM WICKED PROBLEMS TO ELUSIVE PLANNING

Exploring Dubai's development conundrum

Mahyar Arefi

Introduction

Almost four decades ago Rittel and Webber characterized planning problems as "wicked," and argued that they are not only inherently complex but also highly intractable and hard to pin down; and, while unique, they can be explained in different ways. Depending on the angles from which they are described, though, solving planning problems would not involve choices as much between true or false or right or wrong as between good or bad. Hence, conducting planning research requires good judgment as much as relevant data. Seasoned researchers can formulate good question(s) and adopt effective methodologies based on their initial understanding of the problem.

This chapter probes Dubai's rapid development conundrum and its mixed impacts on collective identity: a global city image vs. a city with an Arab Islamic identity. On the one hand, Dubai shares strong cultural roots with the Persian Gulf Arab states, not to mention with the southern parts of Iran. The design of its old core, Al-Bastakiya, was inspired by Iran's vernacular architecture. Narrow alleys, small openings in an organic urban fabric with elegant wind catchers invokes an introverted, sustainable, and environmentally conscious urban design.

On the other hand, thanks to its Guinness world records position, with the tallest building, the biggest mall, and the newest and longest unmanned transit system, Dubai's ambitious mega-projects offer alternative development models for many cities, from Amman, Jordan, and Tripoli, Libya, to Khartoum, Sudan. But "the process of Dubaization" (Elsheshtawy, 2004a; Alraouf, 2005), to some, has been a high price to pay when the UAE as a whole is akin to "a country without a soul" (Walters, Kadragic, and Walters, 2006: 86).

Dubai's rapid growth and modernization, largely due to windfall oil revenues (Melamid, 1989; Bagaeen, 2007; Davidson, 2012), act as a double-edged sword and involve significant trade-offs and sacrifices. The myriad behaviours, activities, and practices associated with Dubai's fragmented

urban form (Lavergne, 2006) reflect an increasingly weakened local identity (or soul), yet enhanced global city status. These mixed development effects indeed remind us of what Barnett (1986) called "elusiveness" over three decades ago. Elusiveness implies that things are not necessarily what they seem, and its preponderance here lies in the discrepancy between Dubai's dual development perceptions.

These paradoxical development signals add to the allures of an exotic city whose reputation even precedes that of the country where it is located. Coupled with the pressures of harsh climate and gender and income divides, Dubai's phenomenal growth redefines and reshapes its private and public realms from attire to architecture, and from religion to recreation.

Probing this dual status question has prompted this study with two complementary research methods: a deductive approach through hypothesis testing, and an inductive method based on fieldwork and observation. The deductive approach theorizes Dubai's current development quality. Koolhaas' critique of Dubai's development known as "junkspace" (2002) and Deleuze's (1988) "any-space-whatever" theories offer alternative hypotheses of the same phenomenon. "Junkspace" criticizes Dubai's incessant development over the past three decades. However, "any-space-whatever" challenges this theory, and conceptualizes the possibility of rectifying it by creating spaces of transition amidst the dualities of chaos and order, modernity and tradition, and fragmentation and integration. One wonders, therefore, whether the actualization of an "any-space-whatever" type of development (or spaces of transition) can make Dubai's rampant growth more congruent with its original Arab Islamic spatial fabric. Even if the majority favours and supports Dubai's unprecedented growth as a precondition towards globalization, and celebrates convenience, consumption, and cosmopolitanism as its by-products, others resist these temptations and lament the loss of local identity. This group associates much of Dubai's development quality with "junkspace." The concept of elusiveness articulates these two extremes in Dubai's contentious development trends.

An inductive approach, however, neither hypothesizes nor generalizes based on Dubai's dual development nature, but adopts relevant case studies (Yin, 1993) to arrive at a grounded theory. This method combines data collection with observation and case study analysis. Observing various forces, from globalization (Lavergne, 2006) and urbanization (Ouf, 2007) to modernization and immigration (Ali, 2010), which have collectively influenced Dubai's rapid development is key to using this method. *The social life of small urban spaces* (Whyte, 1980), *Looking at cities* (Jacobs, 1985), and *Outside lies magic* (Stilgoe, 1998) exemplify the power of observation and analysis in discerning planning issues in inductive research methods.

The following overview provides a brief background of Dubai's complex development history and the type of data needed for the research. From its inception as a fishing village to its rise as an emerging global city (Elsheshtawy, 2004b), Dubai (Figure 3.10.1) has come a long way in a short time. Nowadays a familiar brand name thanks to its phenomenal growth over the past three decades, Dubai has transcended obscurity, and has achieved acclaim as an "ever booming city" (Baldauf, 2008: 228). In addition to its Arab roots Dubai has joined the global economic network, and has assumed leadership as a "main trading and export center" (Baldauf, 2008: 225) in the Middle East.

Figure 3.10.1 The remarkable physical growth of Dubai.
Source: Wisam Allami.

Research design, conceptual framework, and data collection

Paying attention to two radical interpretations of Dubai (junkspace and any-space-whatever) directed data collection towards operationalizing the concept of elusiveness. Elusiveness incorporates both the physical and non-physical attributes of Dubai's ambivalent development outcomes. To capture these dual attributes, this research focuses on Dubai's old and new commercial geographies (*souqs* and shopping malls) where multiple interpretations of "elusiveness" coexist. Malls and *souqs* occupy a considerable portion of Dubai's land use where the tension between globalization and tradition (or junkspace vs. any-space-whatever) manifests.

As a ubiquitous symbol of global cities, malls typically drive *souqs* out of business and sever their local ties. A cursory observation proves otherwise in Dubai. *Souqs* and malls carve their own niches and operate within their local-global economic networks. A useful conceptual framework should, therefore, represent the typologies and scales of such networks. Whereas the former aims to track the diversity and prevalence of types of elusiveness in malls and *souqs*, the latter epitomizes its broad scales from the micro (local) to the macro (global).

Such a framework should be narrow yet comprehensive enough to capture the "intricate interrelationships" and "unsettling juxtapositions" of Dubai's development question. Barnett (1986) articulates two key attributes of elusiveness. Were they neither intricate (i.e., the ways in which malls or *souqs* relate to their local contexts or global networks in the case of malls) nor unsettling (i.e., how new and old developments curiously abut), evaluating Dubai's development would not have been contentious (read elusive) to begin with. Hence, the elusiveness of Dubai's malls and *souqs* transcends merely physical/spatial attributes, and encompasses socio-economic and cultural *relationships*, *behaviours*, and *activities.* Hunches about these intricacies and unsettling relationships need not initially define an overarching coherent logic of elusiveness. They involve "little logics" (Strauss and Corbin, 1990), arising from multiple observations of the same phenomenon (i.e., seeing fake architectural elements showcasing nostalgic historical memories, or *souqs* which cater predominantly to tourists rather than the locals). Such observations contain bits and pieces of the junkspace vs. any-space-whatever debate discussed earlier. From the observation of these little logics broader theoretical constructs emerge, which help sort out new meaning and planning knowledge. The sequence of sorting, clustering, and coding makes up the process of research, which evolved from observing little logics to creating coherent arguments surrounding elusiveness.

The data for this study were collected in 2010 as part of an urban planning course offered in the fourth-year architectural engineering program at Sharjah University. Twenty-four students

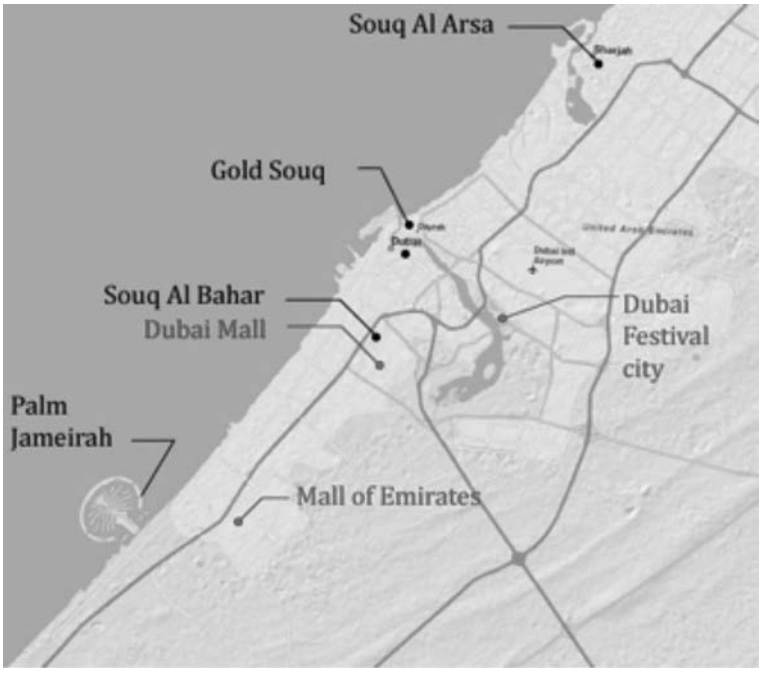

Figure 3.10.2 Location of case studies.

formed eight teams, each of which conducted extensive fieldwork on one *souq* and one mall (Figure 3.10.2). The "constant comparative analysis" (Glaser, 1978) of malls and *souqs* offers a potent method whereby multiple manifestations of the same phenomenon (the tension between the dual forces of tradition vs. modernity or local vs. global) determine the type of data to collect and where to go next. Comparing *souqs* and malls, thus, captures the elusive dualities Dubai seems to experience.

Fieldwork consisted of the sequence of observation, comparison, and measurement (Bosselmann, 2008) on various levels. During the observation stage students paid attention to the following aspects of the malls and *souqs* they visited:

- What types of activities characterize souqs and malls?
- What are the distinctive patterns in them (i.e., hours of operation, shopkeepers' and patrons' behaviours, scales, shopping experience, modes of access)?
- How do forms, functions, and flows (design of buildings, types of services offered, movement of people and information) relate within and beyond these establishments?
- Are malls more vibrant than souqs?

The students measured the vibrancy of malls and souqs within their contexts. Observing vibrant souqs packed with patrons was elusive and counter to the initial expectation of finding them fallen from favour, or out of business by malls. Seeing local Emiraties in malls rather than souqs (which symbolize the Arab identity) seems equally elusive. To do this the students examined the activities, services, and goods offered and the ethnicity of shopkeepers and patrons. They also paid attention to patterns of walking and perceptions of safety in or around the case studies. Observing how malls and souqs operate in their immediate contexts and beyond played a key role in conceptualizing elusiveness and better understanding the patrons' expectations, ambitions, and perceptions.

Analysis

Analysis involves sorting, clustering, and coding the collected data. The students reported their collective experiences and whether their observations pointed to larger patterns of behaviour, functions, or occurrences. To produce visually coherent and accurate comparative drawings of the case studies, the students were instructed to use a 500m x 500m grid. Using a similar grid-iron pattern helped them to compare malls and *souqs* in terms of scale as well as context (i.e., being part of a disjointed and fragmented or contiguous urban fabric).

The final class presentations covered the students' reflections and self-discoveries and what struck them as unorthodox, unusual, or unexpected in the malls and *souqs* they had monitored for several weeks. Discerning patterns went beyond the semester, was too complex to be handled by novice researchers, and requires experience and foresight.

"Types" and "scales" represent the two dimensions of the little logics of elusiveness observed in *souqs* and malls. "Types" shows the diversity and nuances of elusiveness whereas "scales" highlights its prevalence on multiple levels of scrutiny from spatial to social and experiential (Figure 3.10.3).

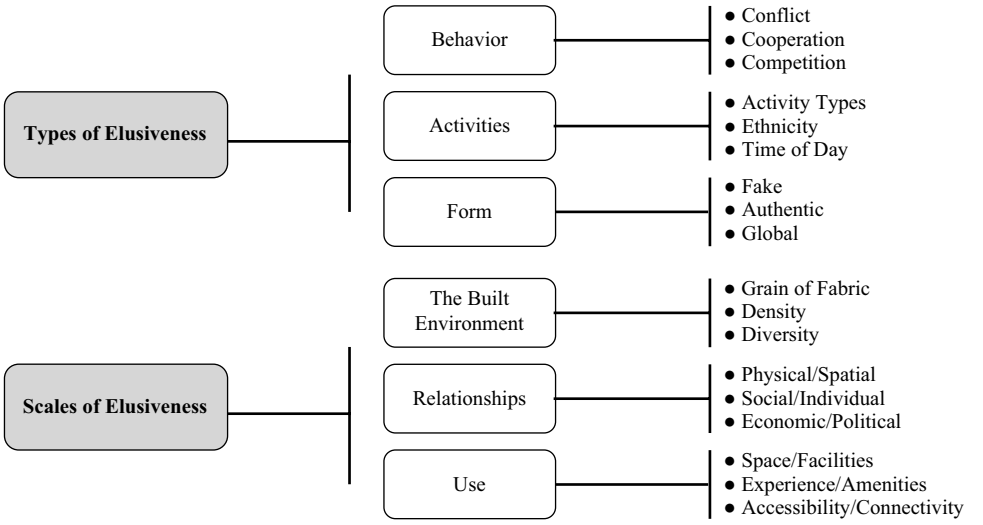

Figure 3.10.3 The conceptual framework of elusiveness.

A) Typologies of elusiveness

Malls promulgate an increasingly pervasive global consumer culture. *Souqs*, however, operate as local marketplaces with important venues for social and cultural interaction. Dubai houses some of the world's largest and exotic malls as the poster child of junkspace, and several vernacular *souqs*. In the spatial structure of the Middle Eastern city *souqs*, mosques, and residential quarters reinforce each other and generate a tight-knit integrated network, while malls with huge footprints are typically disconnected from their immediate contexts.

1. Behaviour

Exposure to the bulky literature of how design affects social behaviour prepared the students for comparing the malls and *souqs* on the basis of social behaviour. In the aftermath of the failed American social engineering policies of the urban renewal projects of the 1950s and 1960s planners faced harsh criticisms. Regardless of the degree to which the built environment shapes social behaviour—often referred to as physical determinism (Gans, 1991)—Dubai's malls and *souqs* highlight three discernible elusive behaviours.

Conflicting behaviours exhibit the mismatch observed in how people or firms behave in the contexts within which they operate. The students observed some of these discordant behaviours both in malls and *souqs*. Prior to the emergence of malls as all-day-long destinations and active focal points, *souqs* served as vibrant marketplaces and public spaces among the local population. With the advent of malls and their strong presence, however, *souqs* did not entirely fade away and are still fairly active – especially among the Pakistanis, Indians, Iranians, and tourists, albeit not much popular among the local Arabs anymore. The observed discrepancy among the lower-income Asian labourers and tourists, who keep the *souqs* vibrant despite the hostile climatic conditions and limited accessibility and safety compared to the convenience of malls, and the lure and variety of goods and services they offer are elusive.

Figure 3.10.4 The traditional Gold Souq and Dubai Mall's glittering gold souk.
Source: Class report.

Another unexpected observation was the cooperation between the malls and *souqs*. If a *souq* offers a particular commodity (i.e., herbs and spices) or supplies such goods to specific ethnic groups, then malls and *souqs* arguably carve their own niches in a cooperative rather than competing fashion. Malls were expected, however, to force the *souqs* out of business – similar to the dominating "big box retail," which pushed small, mom-and-pop local stores out of business in the U.S.

While at first blush, the volume of trade in *souqs* seems negligible compared to malls which operate globally, yet some competition between the two still exists. *Souqs* use different practices to attract and appeal to customers. Notable among them is that by creating *souq*-like environments (see Figure 3.10.4, the Gold Souq in Dubai Mall), malls lure those who do not seek brand names. *Souqs*, however, carry non-brand items, which appeal to certain clienteles (i.e., the Indian and Pakistani customers with a limited budget).

2. Activities

Examining the activities carried out in malls and *souqs* was the second attribute in their comparison. For centuries, *souqs* symbolized robust commercial and communal spaces in Middle Eastern cities. As informal gathering spaces where trade took place outdoors, *souqs* evolved into semi-enclosed or enclosed marketplaces. The great *souqs* of Cairo, Isfahan, Baghdad, or Damascus exemplify such economically and culturally vibrant places. Linkages to other communal nodes, including mosques, caravanserais, and alleys, made these markets active and lively. With this rich history, one still expects to see strong linkages between *souqs* and their local contexts in Dubai.

However, while malls and *souqs* carve their own niches, *souqs* have succumbed to malls in the range of activities they offer. Dubai malls reflect the dual signs of junkspace and robust indoor and outdoor public spaces simultaneously. As junkspaces malls are little more than theme parks and provide entertainment, trade, and casual social encounters. For example, in addition to hundreds of familiar brand names, Dubai Mall is known for numerous non-commercial activities, and is home to exclusive programmes for children and women (i.e., fashion), a unique indoor ski resort, and the tallest outdoor dancing fountain in the world. It is therefore hard for *souqs* to compete with these unique spectacles. Nevertheless, *souqs* remain fairly active, even during hours when malls may be less busy.

Figure 3.10.5 Crowded Bur Dubai Souq and Dubai Mall's empty spaces.
Sources: Planetizen.com and class report.

Ethnicity illustrates another elusive point in the mall vs. *souq* comparison. Whereas the malls' shoppers range from the locals to tourists and expats, the *souqs*' shoppers are limited mainly to Pakistanis, Indians, or Iranians. Locals, by and large, do not shop at *souqs* as much as they visit malls for entertainment and cultural and leisurely activities.

The time of day illustrates the third aspect of elusive activities carried out in Dubai's commercial geographies. While due to harsh climate and with their open structures one expects to see the *souqs* inactive during the day, Bur Dubai *Souq* proves otherwise. Figure 3.10.5 shows this *souq* to be filled with people on a Friday afternoon, whereas at around the same time, the air-conditioned, covered Dubai Mall was quite empty.

3. Form

Comparing the architectural design and the visual aspects of malls and *souqs* seemed particularly meaningful for architecture students. They were familiar with the elements of vernacular architecture, such as wind catchers. Dubai's upscale shopping malls and theme parks, however, manifest displaced, deterritorialized, and detached enclaves dissociated from their immediate surroundings (Baldauf, 2008), and remind users of exotic non-places of imaginary settings rather than showing compatibility with the local cultural/commercial practices.

The students paid particular attention to authentic, fake, and global urban and architectural forms dotting Dubai's urban landscape. *Souqs* with pre-modern designs exemplify complex, organic architectural elements, which served specific functional, visual, and physical purposes. Not only do they maintain strong linkages to mosques, residential quarters, and public spaces around them, but also their designs help control high temperatures through direct ventilation and shade (Kheirabadi, 2000).

Some *souqs* (Figure 3.10.6) in Dubai do not use wind catchers (*barjeels* in Arabic) for natural ventilation and are air-conditioned. With exposed structural elements, these *souqs* serve as replicas for cultural consumption and aesthetics rather than functional reasons. The interior spaces of these *souqs* mimic the old traditional bazaar stalls for tourists, who enjoy visiting exotic places. They also lack linkages to their contexts, with only parking spaces surrounding them.

As linear commercial passages, which created strong senses of place and enclosure, *souqs* historically expanded parallel with the rest of the city and represented innovative design thinking in the Middle Eastern city. Dubai's spatial structure, however, lacks such integrity through

Figure 3.10.6 Covered Souq Al Arsa, Sharjah and derived architectural elements of Dubai Mall.
Source: Class report.

continuity and connectivity to its context, and instead epitomizes fragmentation and reinforces junkspace.

Junkspace provides convenience, flexibility, and fluidity in design by sealing the buildings' interior from the outside world, and gives more freedom to explore new architectural and global urban forms and building technologies. Fragmentation downgrades integration and tends to intensify junkspace by sharpening rather than blurring the spatial boundaries among the different parts of the city. This goes counter to what any-space-whatever as its alternative promises.

Designed by global architectural firms, most shopping malls showcase visual and physical uniqueness and prominence in size, scale, and composition of their components, and attention to construction details and quality. In most cases, the impressive and impeccable architectural outcomes by far overpower their traditional counterparts, which exemplify modest but nevertheless long-lasting solutions to hostile environmental conditions through pre-modern and at times primitive construction techniques.

The global forms of malls vs. the vernacular forms of *souqs* raise two elusive notions: first, the incoherent fragmented spatial relationships among the constituent elements of the former (à la junkspace) contrast the unpretentious and cohesive structural and physical form of the latter. Second, numerous distractions, including details, number of people per square mile or crowdedness, colour, scale, etc., lead to two different experiences of place: walking the same linear distance in the *souq* takes longer compared to the mall. This is an important observation tested and verified by several students. The lacklustre, no-frills, and modest presentation of goods and merchandise offered in *souqs* makes the shopping experience more exciting and perhaps more

adventurous at malls. Comparing the real vs. imagined time is a good indicator of assessing the shopping experience in the malls vs. the *souqs*.

B) Scales of elusiveness

In addition to the typologies of malls and *souqs*, scale characterizes Dubai's other elusive dimension. Elusiveness of scale involves the grain of the fabric, density, and diversity, along with the spatial, socio-economic, and political relationships, and the uses of space.

1. The built environment

The students were asked to compare malls and *souqs* within their surrounding contexts. *Souqs* historically operated as part of an integrated urban form with symbiotic relationships to many local institutions, and governmental or non-governmental agencies (i.e., mosques, caravanserais, gardens, plazas, public baths, schools, and so forth). Centrality, walkability, permeability, and multiple access points between the *souqs* and their immediate contexts kept their scales large enough to be well connected to the other neighbourhood elements, yet small enough to be walkable. These principles endowed the pre-modern Middle Eastern city with a peculiar organic figure-ground relationship quite dissimilar to the spatial properties of the modern city based on automobile access and single-use zoning.

These two types of fabrics (Figure 3.10.7) show somewhat elusive growth patterns in Dubai. Some *souqs* have gradually lost connection to their contexts and resemble malls with large open spaces around them. More recent *souqs*, however, resemble the hybrids of *souqs* and malls. Linear slender forms akin to *souqs*, the use of vernacular local construction materials, and decorative elements such as *barjeels* exemplify these features. Detached from their contexts these *souqs* are beset by parking lots. Somewhat elusive is that although, unlike malls, *souqs* depend on and operate on smaller local scales, and perhaps lend themselves more to walkability, they are still fairly active among the Pakistanis and Indians, who neither walk nor drive to them, but use public transportation such as buses or *abras* (Arabic for traditional boats made of wood).

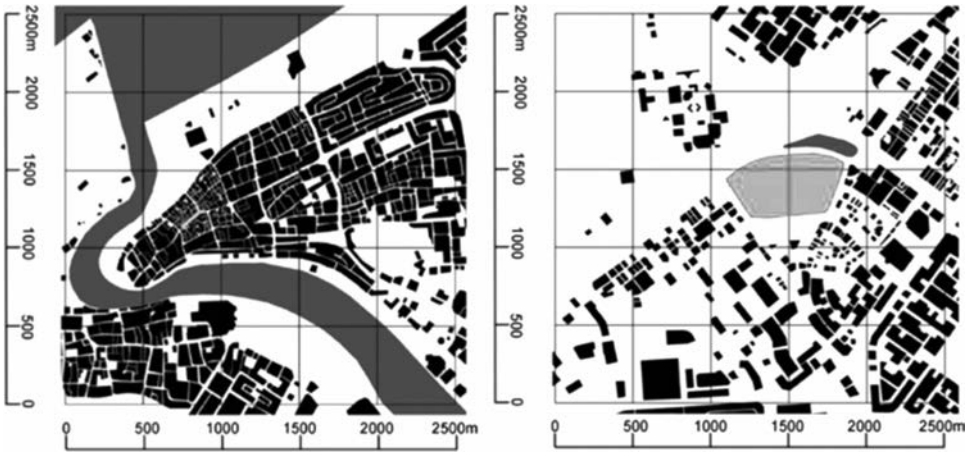

Figure 3.10.7 Figure-ground relationship of Gold Souq and Mall of Emirates.
Source: Class report.

Density constitutes the second aspect of the built form. *Souqs* historically thrive in areas with dense organic spatial patterns. This spatial arrangement gives malls, which are typically located in urban fabrics with coarser grains and public open spaces, and wider roads, a regional rather than merely a local competitive advantage. With the *souqs*' increasingly weakened and severed local ties, however, they still remain vibrant and attract specific clientele from places other than their immediate neighbourhoods.

The third observation concerns the diversity of forms, functions, goods, and services offered in malls and *souqs*. Even though *souqs* are generally smaller in scale and popular for their linear forms to facilitate their future expansions, Dubai's *souqs* prove to be fairly diverse in their forms, types of contextual connections (or lack thereof), and the range of goods and merchandise they offer. The Gold *Souq* is known for specializing in gold while Dubai's Spice *Souq* is known for exotic spices. Comparatively, malls have more variegated building forms with much larger scales, and provide more goods and services to a much larger clientele.

2. Relationships

The students compared the scales to which malls and *souqs* belonged. These comparisons revealed certain relationships, which warrant attention. First, physically and spatially, *souqs* have gradually adopted some attributes typically associated with malls. For example, unlike most traditional *souqs*, *Souq* Al-Arsa (Figure 3.10.8) is weakly connected to the organic spatial pattern surrounding it, air-conditioned, and largely accessible through *abras*.

Second, *souqs* historically thrived in small, densely populated residential neighbourhoods. Ironically, however, the growing influence of malls and the shift towards the planned, sparsely populated neighbourhoods have eroded the distinct physical and social nexus that made them special. On the other hand, while the diminishing social role of *souqs* in Dubai is somewhat predictable, in some cases, women unescorted by men actively shop the Gold *Souq*.

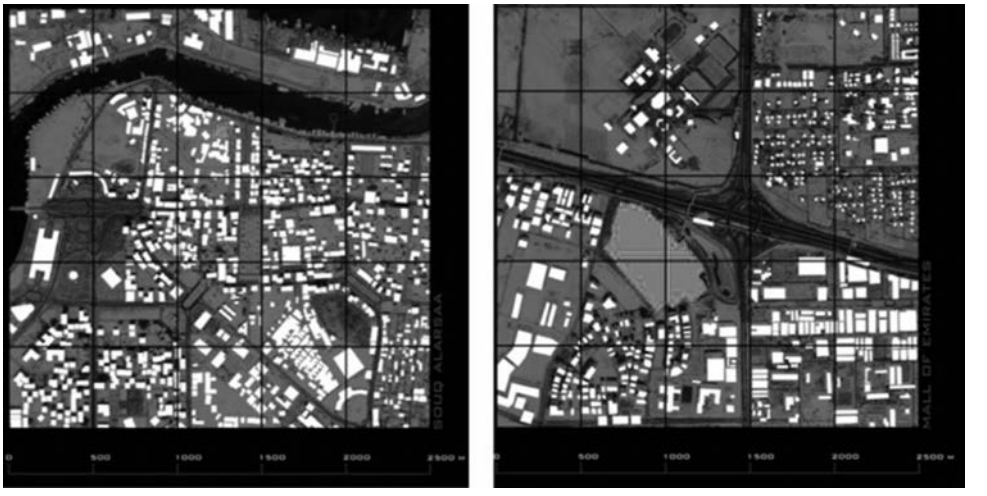

Figure 3.10.8 Figure-ground relationship of Souq Al Arsa, Sharjah and Mall of Emirates.
Source: Class report.

This observation contrasts with the perception of *souqs* as generally unsafe (compared to malls with private security and surveillance cameras), particularly for women. Third, *souqs* and malls represent two separate financial and politico-economic institutions. While the organically designed *souqs* depend on local financial ties, the generically designed malls symbolize global financial practices.

3. Use

Third, the students were asked to compare the ways in which malls and *souqs* were used. Although as global shopping centres malls share fairly common characteristics distinguishable from *souqs* (i.e., size, a wider array of goods and services offered, and branding), perhaps special circumstances have made Dubai's malls unique and somewhat elusive. Malls in Dubai have become popular destinations and certainly serve purposes besides shopping.

Being more than merely shopping centres, "theming" distinguishes the Dubai malls from typical American or European malls. Named after the famous fourteenth-century Arabian world traveller, and with more than fifty restaurants and twenty-one cinemas, Ibn Battuta Mall, for example, is the largest "themed" shopping mall in the world. Its six courts with their distinctive architectural designs represent the six major destinations (Tunisia, Egypt, Andalusia, Persia, India, China) Ibn Battuta travelled to in his lifetime.

The largest mall in the world, Dubai Mall, is another example, which houses a unique ski resort and a famous aquarium, not to mention other exclusive facilities, including restaurants serving international cuisines, exotic boutiques, and outdoor and indoor recreational spaces (i.e., the tallest dancing fountain in the world). Maintaining such amenities in extreme climatic conditions requires superb management. The unique experiential quality of these services in Dubai malls creates perceived or imagined, deterritorialized landscapes on a par with or superior to those found in Paris, New York, Tokyo, or London.

In what ways, then, does shopping at malls and *souqs* evoke different experiences in Dubai? The ubiquitous presence of tourists and the local shoppers in Dubai malls, and shopping brand names (i.e., Armani, Gucci, the Ferrari World, and the like) does not seem surprising at all. However, the presence of foreign shoppers and tourists, rather than the local shoppers, and specialized exotic goods, such as spices and gold, in Dubai *souqs* seems elusive.

The last case of elusiveness pertains to accessibility and connectivity of *souqs* and malls to Dubai's spatial structure. Infrastructure distinguishes Dubai as a post-global rather than a non-global city. Accessibility and connectivity play major roles in the current location of Dubai's shopping malls. Malls are located in close proximity of the major transportation nodes (highways and metro). However, *Souqs* represent the remnants of their initial organic spatial patterns of walkability and high density, and like their global counterparts, seem well connected to arterial roads, water, and public transportation. Therefore, the perception that *souqs* are isolated and not connected to the transportation network is not accurate, and remains somewhat elusive.

Conclusion

A city rooted in its Arab Islamic heritage, yet known as "the hippest city in the world" (Hippest City, 2005), merits examination as a case of elusive planning. The logic of an inductive case study research complements the hypothesis-testing logic of deductive methods. This type of research requires foresight and experience. The senior students from the Sharjah University architecture program operationalized two prominent attributes of elusiveness – namely, its unsettling

juxtapositions and intricate interrelationships. For example, they observed that the locals flocked into malls rather than the *souqs*, or that fake *barjeels* decorated the rooftops of Jumeirah's modern commercial architecture. Ultimately, they wondered whether such make-believe landscapes of consumption and imaginary "elsewheres" (Baldauf, 2008: 224) benefit tourists and temporary visitors more so than the locals, who take pride in their national identity and celebrate vernacular Islamic architecture. These questions exemplified Dubai's unsettling juxtapositions, while *souqs* with their local ties and malls with their global linkages epitomize intricate interrelationships on both physical and socio-economic scales. Although the students may not have found answers to all the aspects of "wicked" or "elusive" planning in Dubai, they learned a great deal from breaking complex research questions into manageable components with conceptual clarity. Speaking more broadly, elusiveness unfolds the intricacies of rapid planning and what planners should know to discern its outcomes: how things are vs. how they seem to be. Elusiveness elucidates how malls and *souqs* were perceived to be different when in some respects they were similar, or were thought to be similar when they were rather different.

To what extent were these similarities and differences planned or fortuitous? Though not quite directly, such studies provide some answers for planners, whose job it is to observe, analyse, and predict. In hindsight, if Dubai's vision for rapid development has been doing away with its past and the icons associated with it (i.e., *souqs*), then the reality has turned out differently. *Souqs* not only have not vanished but also have carved out their own niches and synergistic environments to thrive. With some local ties (albeit not as close as before), *souqs* signify the "anyspace-whatever" landscapes, which contrast the malls, known as "junkspace." As this research shows, Dubai's collective identity still partially draws from *souqs* as well as malls. But to what extent from each requires further research on the degree to which *souqs* and malls contribute to Dubai's economy through their "forward" and "backward linkages" (Hirschman, 1958), and to its everyday urbanism.

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PART 4

Working within a quantitative tradition

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4.1

QUANTITATIVE METHODS' EXPERTISE – A DIVERSE LANDSCAPE IN EUROPE AND AROUND THE WORLD

Elisabete A. Silva

It is unquestionable that quantitative research methods (QRM) have an important role in the development of society. The ability to count, to perform arithmetic equations, and to understand algebra and geometry is at the basis of progress in most fields of human activity. Modern knowledge of quantitative methods goes beyond the understanding of applied statistics and equations in themselves to include an understanding of spatial and behavioural factors that can alter results in data collection and/or contribute to its analysis and understanding (i.e., a good design of a questionnaire is as important to the quality of the results as a good understanding of the most appropriate statistics is to analysing/displaying the data distribution resulting from those questionnaires).

Given that *Planning* focuses on the study of place and space (concepts at the core of both the RTPI and AESOP;[1] see also the overall introduction) it is undeniable that QRM and geographic/spatial information play an important role in the planning of space and space. Nevertheless, QRM of the past are very different from today's methods. The deterministic models of the rational plan that obeyed blindly the metrics related to density, volume, and proximity are now seen as a thing of the past. QRM are now perceived as a part of a wider set of tools available to researchers and practitioners.

In the same way as the advent of geographic information and computation unveiled important opportunities, it is now believed that digital spatial data and computers models *per se* won't solve the problems of the world. Lee's seminal paper on the pitfalls of large-scale urban models (1973)[2] provides one of our best reminders of this point. From a data-needy environment we have moved to a data-'overwhelmed' overflow where clear research questions and data mining techniques try to help 'narrow down' to levels suitable to contribute to the problems at hand (Silva, 2011; Silva and Wu, 2012).[3] The comprehensive plans and large-scale models of the past that provided 'one fits all' solutions and that attempted to define one unique output are now replaced following the notion that we are in an uncertain environment, and solutions are as valid and suitable as the methods we use and the suite of tools selected. From this viewpoint, quantitative and qualitative methods go hand-in-hand, contributing equally to a reasonable answer. We

now live in a world of probabilities, given by the evaluation of stakeholders though participation methods that will vary accordingly to the situation such evaluations are closely followed by the new suit of dynamic behavioural simulation models that rely in the research design of qualitative and mixed methods in order to provide best fit calibrations.

Nevertheless, while it is clear that QRM and geographic information play an important role, different research traditions and local socio-economic constraints have significantly affected the evolution of teaching and practice during the last one hundred years. For instance, in the US, and as pointed out by Silverman's chapter in this book, most planning and planning-related schools emphasize quantitative research methods and the need is to expand the teaching and research on qualitative research methods; in Asia we see an emphasis on growth development variables. In Europe, on the contrary, in the last thirty years planning schools have developed a strong focus on qualitative research methods.

Studies by the Nuffield Foundation,[4] the Higher Education Academy,[5] ESRC, and HEFCE[6] point out the fact that the UK has a shortage of social scientists trained in quantitative methods and consequently is unable to meet the demand from employers across all sectors – academia, government, charities, and business – for staff who can apply such methods to evaluating evidence and analysing data. They point out that this deficit is caused primarily by market failure to attract students and teachers into quantitative social science training.

If one considered that teaching and research of quantitative methods are reducing at both secondary and university levels, the scenario is worse if one considers the areas of GI and ICT. There are three factors: the lack of inclination for undergrads to take those courses when they arrive at the university with little to no knowledge of maths and stats; (2) the cost involved in building the labs necessary to teach those subjects (hardware and software costs); and (3) the recent shortage of staff capable of teaching and researching in these subjects.

Nevertheless, it seems that practice is at odds with academia, because there are jobs and investment available in these areas: the UK Trade and Investment Department states that software and IT services have a market value of £58 billion per annum (www.ukti.gov.uk/investintheuk/sectoropportunities/ict.html). If one looks at the GIS market, estimates as to the size of the geographic information business in the UK vary from around £650 million to over £900 million, according to the Association for Geographic Information (AGI).[7]

With such high technical requirements and need for specific hardware, software, and expertise in such diverse areas of implementation, are we producing the right type of expertise? Are we producing the innovative research to feed the development of new computer applications and new analysis? Are we producing the number and right qualifications to feed this increasing need of the labour force? How do we overcome these barriers?

The first step is to produce teaching manuals that are integrated and recognize the need for both quantitative and qualitative methods (it is amazing that it took thirty years to produce such a book). The second step needs to be teaching- and research-related; all planners need to be aware of a compressive portfolio of methods available, and just after that knowledge is acquired they should be allowed to specialize. The third step has to do with the fact that planning questions need to be answered with both qualitative and quantitative tools and methods.

As we have argued in the overall introduction, while the book's organization follows a 'traditional' approach of segmenting methods into qualitative and quantitative types, we don't believe that successful planners can live with such a division in real life. They need to be aware of and prepared to speak about and practice making use of both types. In today's multidisciplinary teams, planning practitioners and researchers do not need to know in detail every research method, but they do need to be prepared to explore the potential of the full range of methods

and techniques available. What is needed is an attitude of keen curiosity about what different methods can offer, in relation to a particular research inquiry. In this way, as a body of researchers and practitioners, the planning community should develop a more reliable, inclusive, and robust knowledge basis for our own work.

With this acknowledgement in mind, we encourage all readers of this book to explore the eleven chapters of this part, as a stimulating introduction to the range of methods which have developed through the quantitative tradition as relevant to our field. Obviously with time, they will 'cherry-pick'; they will come back again to the readings and advice produced by certain authors. Nevertheless a successful research methods course should provide a suitable portfolio of readings with chapters from all of the four parts – the number and detail would vary with the level of knowledge of the student and with the approaches taken during teaching (i.e., basic module, followed by advanced module, undergrad vs. grad course, broad Ph.D. programme followed Ph.D. specialization, etc.).

Here you will find out from Robert Haining (University of Cambridge, UK) that planning will require you to think spatially and statistically, and from Cecilia Wong (University of Manchester, UK) that in order to do that you need to understand what you are going to measure, what kind of indicators and for what purposes, and in which kind of context. You will learn from myself and Jose Reis that there is already a portfolio of metrics enabling you to start measuring. Particularly if you are new to the area of planning we will keep you grounded in what you *must* know, and Helen Bao (University of Cambridge, UK) will take you through the steps of regression analysis (certainly one of the most used methods in QRM), telling you that there is more to it (I can reveal that she is also an expert in understating how we can include the immaterial values in valuation through hedonic models). For those that think that unfortunately statistics is not about maps, Pedro Matos (University of North Carolina, US) shows you that even in economics we have spatial-econometrics (this chapter together with Bao's and Haining's chapter are the foundations for those who want to specialize in analyses which will make extensive use of statistics, metrics, and spatial statistics).

But, in the digital age, it is fair to assume that planning work will follow the main trends of the new digital world, and there is a suite of methods and technologies in support of planning decisions. Planning support systems' (PSS) contribution to both qualitative and quantitative methodologies is now beyond what we can imagine (to a point that even the hard-core qualitative researchers end up using PSS without even understanding they are doing so; it is almost at the same level of using a mobile phone). Stan Geertman (Utrecht University, Netherlands) describes in a clear way the importance and potential of PSS as research instruments. And that will obviously lead us to find out a bit more about geoprocessing and what is commonly known as geographic information (systems), through the chapter by Jorge Silva and Tiago Marino (Universidade Federal do Rio de Janeiro, Brazil). And that, in turn, will lead us to find out a bit more about one of the most important advantages of using new technologies: visualization, the capability of producing and transmitting information to experts and lay people (explained in the chapter by Claudia Czerkauer-Yamu and Andreas Voigt – Vienna University of Technology, Austria, and Pierre Frankhauser – Université de Franche-Comté/France).

But, at the core is still the data, in a data-rich world, now with the technology capable of collecting and processing vast amounts of information. Regardless of whether we are aware of it, we live in the digital world. Massimo Craglia (of Joint Research Centre [JRC] European Commission [EC], Ispra, Italy) describes the importance of spatial data infrastructures for spatial planning. This part ends with a good example to justify how integration of different methodologies plays such an important role, in this case, answering one of the most important questions

tormenting us since the dawn of time: 'How do we define a region?' I can tell you that in the chapter of Chaolin Gu (Tsinghua University, China) we will find most of the methodologies described in the previous chapters, and more, demonstrating that even old problems require innovative solutions, and these will depend on the type of question we want to answer, and on the type of data we have.

My final remark returns to the challenge we face as a planning community in our research, teaching, and practice. We don't give enough attention to research methods, and there are serious imbalances in the range of methods taught and used across the different continents. We need much more attention to the clear gap in the knowledge of existent research methods applied in the planning field and in the proposal of new research methods suitable for the planning arena. I hope this book will be a clear contribution to that, by providing this diverse group of chapters, *a truly united nations of research methods in planning*, as we can see by the themes and geographic origins of its authors, a good way to spread the word about what is available and how diverse and resourceful research methods in the planning field need to be.

Notes

1 Royal Town Planning Institute (RTPI), www.rtpi.org.uk, and Association of European Schools of Planning (AESOP), www.aesop-planning.eu (accessed 5 August 2014).
2 Lee, (1973) Requiem for Large-Scale Models, Journal of American Institute of Planners, 39 (3):163–173.
3 Silva, E. and Wu Ning (2012) Surveying Models in Urban Land Studies. Journal of Planning Literature. 27: 139–152; Silva, E. 2011 Cellular Automata Models and Agent Base Models for urban studies: from pixels, to cells, to Hexa-Dpi's. In: Urban Remote Sensing: Monitoring, Synthesis and Modelling in the Urban Environment. Edited by: Dr Xiaojun Yang. Wiley-Blackwell. pp. 323–345.
4 Nuffield Foundation, www.nuffieldfoundation.org (accessed 5 August 2014).
5 The Higher Education Academy, www.heacademy.ac.uk (accessed 5 August 2014).
6 Economic and Social Research Council (ESRC), www.esrc.ac.uk/; Higher Education Funding Council for England (HEFCE), www.hefce.ac.uk (accessed 5 August 2014).
7 Association for Geographic Information (AGI), www.agi.org.uk/ (accessed 5 August 2014).

4.2
THINKING SPATIALLY, THINKING STATISTICALLY

Robert Haining

"Thinking spatially" means different things to different groups of academic disciplines. The geographical location of objects or events is often an important way of organizing and presenting data, of interrogating large databases. The study of the attributes of particular places (e.g., neighbourhoods, urban areas, regions) in order to understand one aspect or another of their history, economy, society and politics is a dimension, to a greater or lesser degree, of many academic fields within the arts, humanities and social sciences. And a similar remark can be made with reference to places in terms of their environmental and physical characteristics and the different branches of the natural and environmental sciences. To study particular places is to become aware of the role that different processes, operating at different geographical scales, have on the shaping of each place and how the particularities of each place impact on or modify larger-scale processes. Knowledge of such larger-scale processes helps us to understand what we observe in particular places, but those same places and their spatial relationships may shape how such processes play out in both space and time. To think spatially is to take seriously and think through the implications of where things are located, why events occur where they do and why the changes we observe over time (perhaps in response to a common stimulus, such as a national economic recession, a regional crime wave or a threat to health) are not the same everywhere. In the field of policymaking and policy evaluation it means thinking about how the impacts, say, of a national policy, differ between different areas, as well as thinking about how forms of geographic targeting (e.g., health and crime action zones) and geographic tailoring might be implemented and form part of a wider policy agenda.

The scientific study of place is not an experimental science in the sense that the researcher is able to vary the level of one or more variables whilst controlling the levels of the others in order to study effects. Often there is only partial replication (there may be interesting combinations of the values of different variables which are not realized) and for any individual replicate there may be only one case, so it is difficult to assess the variability associated with observational error (the difference between the true value of an attribute and what is measured) that may be linked to instrument or human error. In trying to assess the effects of a geographically targeted policy it may be difficult to introduce randomized control (indeed it may not be ethical), raising concerns about allocation bias when evaluating that policy. The scientific study of place, particularly

for the social scientist, is based on natural or quasi-experimentation in which the levels of the independent variables are out of the control of the social scientist and the opportunity to assess measurement error or measurement variability may be non-existent. To acquire knowledge the social scientist must work with the world as observed, or when assessing policy, as implemented – often for both practical and ethical reasons. In these types of situations it is likely that there are additional complications: unobserved confounding variables influencing outcomes; a high degree of correlation amongst the independent variables that are observed; sometimes there is only small variation in the levels of at least some of the independent variables, making it difficult to be sure about their effects on outcomes.

There are many approaches in the social sciences to the challenges presented by observational study, but this chapter focuses on approaches that are concerned with the analysis of spatially referenced quantitative data often collected over time from, for example: statistical surveys (e.g., a national census); routine data recordings by public and private agencies (e.g., recorded crime, public health, traffic flows, transaction data); questionnaire surveys and other primary fieldwork. The last twenty years have seen rapid growth in the volume of spatial and spatial-temporal data. In scientific research, hypotheses and theories have meaning only if they are capable of being empirically falsified (observation is the arbiter of theoretical speculation) and here models have an important role to play. This is because models are translations of theory into a form that makes it possible to subject theory to empirical testing. For the social sciences, as for many other areas of science, statistical models are a particularly important subclass of models.

Why are statistical models so important? First, multivariate statistical modelling allows the researcher to replace experimental control with statistical control, thereby allowing the observational scientist to acquire some of the rigour of the experimental scientist. Second, statistical models model a dependent variable as stochastically related to a set of independent variables, thereby incorporating some of the uncertainties associated with an observational science into the data modelling process. Bayesian hierarchical statistical modelling, in which probability models are specified in terms of a sequence of linked conditional models, offers a means of modelling complex systems in ways that quantify and take fuller account of the inherent uncertainties relating not only to the data and the specification of the model but also to model parameters.

This chapter will consider some of the ideas and hypotheses that are closely associated with "thinking spatially". For convenience but also because it is an established framework, in the next section we shall distinguish between geography as constituting a set of places and geography as constituting a set of spatial relationships between places that may be measured using many different metrics (Haining, 2003). In the succeeding section we will consider what the consequences are of these different hypotheses for statistical modelling – where data properties and data summaries are compared against what theory predicts. The aim is to show, with reference to the nature of spatial data, what it means to "think statistically" in relation to theories about how attributes vary in their distribution over space and time.

1. Thinking spatially

1.1 Geography as place

Consider a group of separate and distinct urban areas. We are interested in how rates of chronic respiratory disease are affected by exposure to different levels of an atmospheric pollutant (e.g., particulate matter, sulphur dioxide, nitrous oxide levels). The urban areas have been chosen because taken as a group they provide a range of levels of the atmospheric pollutant (Dockery *et al.* 1993). Each city can be thought of as constituting a natural experiment – that is, the

populations are considered to have, on average, been "treated" with different doses of the pollutant. We have the beginnings of a familiar, spatial epidemiological, dose-response analysis in which in order to assess the ecological effect of a population's exposure to different levels of the dose we also need to include measures such as the age composition of the urban areas and include confounders such as levels of poverty or deprivation and smoking rates because these are variables which are known to also impact on the incidence rates of respiratory disease. In the absence of detailed individual-level data including levels of exposure, ecological analysis provides a sensible and cost-effective way of carrying out a preliminary investigation into the link between environmental exposure and health status. In this example we can also anticipate some of the limitations of natural experiments: lack of control on the assignment of treatments; the effect of population movements (commuting patterns as well as differing periods of residence in the city) on exposure; and correlation between pollutant level and one or more of the confounders – for example, material deprivation.

Now consider a somewhat different problem at a different scale – a group of neighbourhoods that together partition a single large urban area. We are interested in how the level of violence varies across the city by neighbourhood for a period of time (say, twelve months). What are the variables that help to explain, statistically, this variation? Suppose we have aggregate counts by neighbourhood together with data on neighbourhood characteristics that include a range of social, economic and demographic variables and perhaps some land use variables. These represent the first steps in an ecological analysis in which each neighbourhood can be thought of as constituting, as in the first example, a replicate in a natural or quasi- experiment. We might use regression analysis to test our theory about why violence levels vary. Suppose, however, we also acquire detailed, individual-level data together with household data. With these different levels it becomes possible to separate individual- from household- from neighbourhood-level factors in explaining violence using multi-level or hierarchical models (Sampson, Raudenbush and Earls 1997).

These examples illustrate an additional set of points about the study of geographical variation. Differences between places (e.g., in terms of health outcomes or crime rates) may reflect differences in the composition of the population resident in the place. All other things being equal, an area with a larger proportion of older people will tend to show worse morbidity statistics than an area with a smaller proportion of older people. Differences may also reflect the influence of ecological or group effects associated with the population – the effect of different levels of social organization on crime rates (Bursik and Grasmick 1993). Differences may reflect "place effects" in the sense of environmental characteristics, which may be of long-term, even geological scale and duration (e.g., radon gas emissions) or shorter-term duration (e.g., air pollution associated with particular types of economic activity and technological states). But differences between places may be due to effects originating outside the areas themselves. Short-term changes in the geographical variation in unemployment rates by small area will reflect the geography of the commuting zones associated with those economic activities recently terminated. We turn to consider this aspect of spatial thinking next.

1.2 Places and their spatial relationships

Places do not exist in isolation; rather they exist within a spatial *context*. Imagine two areas that happen to be identical in terms of their attractiveness to burglars as well as offering the same opportunity for success (i.e., successfully breaking in and getting away without being seen or caught). That is, imagine two areas that offer motivated burglars identical risk-reward trade-offs. However, if one area is closer than the other to areas where motivated offenders live, then it is

likely to experience higher burglary rates because of the principle of least effort (Bernasco and Luykx 2003). Outcomes in an area (in this case, burglary rates) not only are a consequence of the intra-area or place characteristics of the areas but also depend on their relative location (in this case, to where burglars live). Two areas may have identical intra-area characteristics that affect their risk of experiencing antisocial behaviour. But if one area is closer to an area of entertainment (e.g., a group of pubs and night clubs), or the city centre, or a transport interchange, then it may experience more cases of antisocial behaviour. In these cases, *distance* from or *proximity* to relevant agents, are factors in the natural experiment.

Other relational properties associated with areas may be relevant. Two neighbourhoods might be identical in terms of attributes that are associated with poor health (similar levels of poverty, absence of fresh food in neighbourhood shops, lack of green space), but one neighbourhood may be adjacent to, or at least very close to, one or more neighbourhoods with better facilities. Two cities may have the same proportion of people who are defined as materially deprived, but in one city this element of the population lives in ghettoes and in the other it is dispersed. We might expect these contrasting circumstances to produce different social and economic consequences. Spatial *gradients* – that is, the scale of the differences between adjacent places in terms of their attributes – and spatial *configuration* – that is, how macro attributes of an area are geographically distributed – may influence the outcome of the natural experiment (Block 1979; Gatrell 1998).

Part of what is at issue in the preceding examples is the artificiality of the areas we are using and the artificiality of treating them as "containers" of the variables that determine the outcomes of the natural experiment. At a larger geographical scale, using larger geographical units to report data, some of these contextual influences are smoothed out, but in so doing we lose the relevant object of study – for example, individual neighbourhoods that are buried in aggregations of differing neighbourhoods. A process in space occupies space, and space may be an integral part of the playing out of that process. There are several generic classes of "spatial" process. There are *diffusion processes*, such as the geographical spread of an infectious disease through a fixed population, or the spread of a rumour or new idea. There are *dispersal processes*, such as the migration of people over shorter or longer timescales. There are *exchange and transfer processes*, such as trade flows and income flows between urban areas. There are *interaction processes*, such as competition between firms across spatially distributed retail and other markets (Haining 2003).

There are relational or contextual properties associated with not only *where* events occur that need to be recognized but also *when* events occur. The occurrence of a house burglary at a point in time may increase the likelihood of a repeat burglary soon in the immediate neighbourhood (Farrell, Phillips and Pease 1995). The occurrence of a case of an infectious disease at some point in time is likely to increase the likelihood of more cases in the same area in the near future. Unlike events in space, where the context is two-dimensional, in time the context is usually defined by what has happened in the past. How important that temporal context is will depend on the time period of the study. In the case of burglary, repeat victimization may be dissolved in analyses of, say, twelve months' or even three months' worth of data but not in the case of events reported weekly.

This section has given some examples of spatial thinking in terms of places and the spatial relationships and the spatial processes that are an inseparable part of what it means to think spatially. And time must also be a dimension of our thinking because events cannot occur in space without having a position in time too. In the next section we ask what the implications are of this way of thinking when we turn our attention to testing hypotheses – that is, when

we subject our theories about geographical distributions to empirical scrutiny using statistical models as our tools.

2. Thinking statistically

This section is principally divided into exploratory spatial data analysis(ESDA) and confirmatory spatial data analysis (CSDA). ESDA uses numerical, graphical and cartographical tools for the purpose of summarizing, looking for patterns in, identifying interesting features and possible errors in, and formulating hypotheses from sample data (Good 1983). Spatial data mining (SDM), which we will also consider briefly, shares some of the same objectives of ESDA, particularly pattern detection and identifying relationships. However, unlike ESDA, SDM is particularly concerned with the development of fast, efficient, automated methods that can be applied to large (and very large) spatial databases. ESDA, unlike SDM, tends to be followed by CSDA, which is concerned with statistically modelling the patterns identified and testing hypotheses in order to compare data against theories which offer an explanation of the geographical distribution. For readers interested in implementing ESDA and some areas of CSDA, GeoDa provides a number of very useful tools, is easy to use and currently free to download (see www.geodacenter.asu.edu). However, before considering these two areas, we review important properties of spatial data which influence the conduct of both ESDA and SDM, as well as CSDA.

2.1 Properties of spatial data

The spatial data matrix, a structure or framework we use for storing data in which rows refer to locations (e.g., census output areas) and columns refer to attributes measured at those locations, is the end stage of the transformational processes of conceptualization and representation (see, e.g., Haining 2009, pp. 6–7). As a result of these two processes the infinite complexity of the real world is compressed into a finite structure (the data matrix with n rows and k columns). The cells of the matrix are then populated through observation and measurement with the data collected on the k attributes across the n locations. There may, of course, be gaps in the data matrix (where data values are missing) so that some values may have to be interpolated (Haining 2003, pp.154–164); when combining data from different sources there may be several different reporting frameworks, so this incompatibility needs to be resolved somehow. Some data may have been collected in terms of an irregular set of polygons (e.g., census data), some in terms of a regular grid (e.g., remotely sensed data) and some may be point sample data (e.g., atmospheric pollution data) – see, for example, Best *et al.* (2001). In addition geo-references are needed for the n locations, together with data that specifies the spatial relationships between the locations (e.g., distance apart in the case of points; adjacencies in the case of areas). There are challenges to be faced when assigning a unique locational identifier (e.g., a residential address) when the object of interest is mobile.

Fundamental properties are those that are inherent to the nature of attributes as they are distributed across the earth's surface. Continuity is as fundamental to attributes observed across geographical space as it is to observations through time. Values of an attribute recorded at two locations close together tend to be similar, but as distance separation increases values tend to be less and less similar. It would be a strange world to inhabit were such continuity not to be present. The geographic information science (GISc) literature often refers to this as Tobler's First Law of Geography. Geographers, and others, quantify this property using spatial autocorrelation

statistics, of which there are several, including Moran's I, Geary's c and the Join-Count statistics (Cliff and Ord 1973, 1981), whilst geostatisticians use the empirical semi-variogram (Haining *et al.* 2010). From a statistical perspective what is important to note is that unless data points are sufficiently far apart they will not be statistically independent – and independence is a primary assumption in "classical" statistics. The extent to which this fundamental property is present in any given set of sample data is also dependent on the chosen representation (the second of the two transformational processes mentioned earlier) – for example, the size of the areas used to report attribute values or the density of sample points.

Data, especially in the social sciences, is often reported through areal aggregates for confidentiality reasons and to ensure anonymity for individuals, households and businesses who are the typical data providers. This has consequences. Data properties, data summaries and the results of analysis are frequently conditional on the scale and partition decisions that have been taken for the purpose of constructing the areal reporting framework (e.g., census reporting units). If an ecological attribute is calculated for a set of areas (such as area material deprivation or social cohesion) these values are conditional on how the areal aggregations have been defined. Choose a different areal framework (and there may be many equally plausible frameworks that could have been implemented) and statistical results are likely to be different. This is referred to by geographers as the modifiable areal unit problem or MAUP (Wong, 2009). The MAUP is one of the principal challenges associated with ecological inference, the others being how to link data collected on different and incompatible areal frameworks (Gotway and Young 2002) and how to link inference at the ecological level to the individual level whilst avoiding the ecological fallacy (Tranmer and Steel 1998).

Bundling data into areal aggregates has the effect of suppressing some of the underlying variation. Large areas (in the sense of areas with large populations) may contain intra-area heterogeneity which is lost to the database. For example, the mean value for household income in a large area may conceal considerable intra-area variation about the mean. Smaller areas generally suffer less from this problem. However, there are consequences of working with areas with small populations. Data errors or small random fluctuations in numbers (e.g., in the number of cases of a disease or number of burglaries) will likely have a big effect on calculated rates and ratios. The result is that sampling errors are larger (because they are a function of population size). The effect of this is that extreme rates or ratios are often associated with areas with small populations but differences between areas may not be statistically significant – that is, differences are due to sampling error. Statistical significance, on the other hand, tends to be found when comparing rates or ratios based on large populations. These underlying properties have implications when seeking out statistically significant crime or disease hotspots. The situation is further complicated if a region is partitioned into areas that vary in population size. Given the foregoing remarks, this implies each observation is drawn from a different distribution, each with its own sampling variance, and for this reason data values may not be directly comparable. This is the problem of inter-area heteroscedasticity (or non-constant variance). Two problems flow from this: first, maps of the attribute may contain misleading artefacts, particularly if there is a geography to the distribution of the areas with large and small populations; second, with reference again to the theory that underpins "classical" statistics, not only are data values not independent (as we have remarked) but also they are not drawn from the same probability distribution. Areal data are in general neither independent nor identically distributed.

This section has provided a brief overview of some of the important properties of spatial data, particularly aggregated data, which have an important influence on how we undertake statistical

analysis of spatial data. For more details see Haining (2009). Other properties will surface in the context of specific problems in the next two sections.

2.2 Exploratory spatial data analysis and spatial data mining

Advances in computer technology have made it possible to explore and interrogate spatial data in new and innovative ways. Visualization of spatial data linking graphs (e.g., bivariate scatterplots, Moran scatterplots, added variable plots, boxplots) to maps has helped the research scientist to detect patterns in geographical data. Questions such as "show me all the areas on the map which have attribute values above the upper quartile" or "show me all the areas on the map with positive residuals from my regression analysis" have become straightforward to implement. *Brushing* is the term used when the analyst highlights a subset of cases in one graph and sees them highlighted in another graph or on a map; *dynamic brushing* is brushing using a moving window that updates responses as the user moves over the graph or map (Monmonier 1989). As we have noted some caution needs to be exercised because area values may not be directly comparable even after controlling for population size differences, for example. Also physical size is not necessarily correlated with population size, so that on a map of an English county which consists of both urban and rural areas some of the census areas we may be most interested in and with the largest populations may be difficult to see because of their small physical sizes, and the overall visual impression may be skewed towards the rural areas. Geographers make use of cartograms to try to overcome this problem. For numerous examples of cartograms see, for example, www.worldmapper.org and www.sasi.group.shef.ac.uk/maps.

Another important element of ESDA is the detection of clusters – areas where more cases (of a disease, crime, unemployment) are observed than would be expected on the basis of chance alone. The presence of clusters is indicative of "local heterogeneity" – where the risk level is higher than elsewhere on the map due to localized circumstances. Kulldorff's scan test is often used to identify the locations of clusters wherever they may occur on a map consisting of point or area data (Kulldorff 1997). If the presence of a cluster is suspected near a putative source of some outbreak (such as a site of pollution) then "focused" tests may be used instead (e.g., Besag and Newell 1991; Stone 1988). Heterogeneity is a property of spatial data that is often encountered in spatial analysis when the study area is large. It may, for example, be present in the relationship between a dependent variable and the set of independent variables that explain its spatial variation. In this case the regression parameters are not assumed to be constant but rather are allowed to vary spatially. The same housing attribute (e.g., the presence and size of a garden or a basement) may attract a different price depending on location, which reflects consumer preferences in different geographically defined segments of the housing market. This type of argument underlies a class of regression models that includes the spatial expansion method (Jones and Casetti 1992), geographically weighted regression (Fotheringham, Brunsdon and Charlton 2000) and spatially varying coefficients modelling (Lloyd 2011, pp. 109–143).

SDM also has the challenge of recognizing spatial relationships as well as the special properties of spatial data whilst embedding tools into fast, efficient algorithms in order to interrogate large datasets. "Neighbour relations" need to be examined for many objects within the same analysis and the term "neighbour" interpreted in many different ways in order to carry out a thorough interrogation. Goodchild and Haining (2004) suggest that the link between SDM and geographic information systems (GISs) is one aspect of the "process of stimulus and convergence" between GIS and spatial data analysis which began in the 1960s: "it is more difficult to

analyse the vast amounts of (spatial) data available . . . and to test new theories and hypotheses without computational infrastructure; and the existence of such infrastructure opens possibilities for entirely new kinds of theories and models, and new kinds of data" (p. 382). For further discussion as well as numerous examples of SDM, see Miller and Han (2009).

2.3 Confirmatory spatial data analysis

Science begins with theory and tests theory against observation. Theory is an abstraction of the phenomena of interest, whilst a model takes that abstraction and translates it into a form that can be manipulated. Model building therefore is part of the scientific process in which we seek to falsify our theories through empirical observation. A statistical model is a mathematical expression in which at least one component in the expression is a random variable with an associated probability distribution. A statistical model is scientifically useful if it bears a sufficiently close relationship to the phenomena under study – that is, it captures our current theoretical understanding of the phenomena, thereby allowing us to test our ideas (test hypotheses, estimate parameters). Regression models are a particularly important class of statistical models, and in this section we look at why they are so useful in the context of geographical data and hypotheses about geographical distributions. We shall consider only global models and not the spatially varying, local, regression models referred to in Section 2.2. We shall consider some frequentist models and a Bayesian hierarchical model.

2.2.1 Frequentist spatial regression models

We start by considering the normal regression model, which we specify as

$$Y(i) = b_0 + b_1X_1(i) + \ldots\ldots\ldots + b_kX_k(i) + e(i) \qquad i = 1,\ldots,n \tag{1}$$

where Y is the dependent variable; b_0 is the intercept coefficient; $b_1,\ldots,b_k$ are the regression coefficients on the independent variables X_1 to X_k; $\{e(i)\}$ are independent and identically distributed (i.i.d) unobservable random errors from a normal distribution with a mean of zero and a constant variance σ^2 ($N(0, \sigma^2)$); n is the number of areas for which data have been collected. So, we are assuming that the dependent variable, the variable whose variation we wish to explain, (Y), is independently normally distributed with mean

$$E[Y(i)] = b_0 + b_1X_1(i) + \ldots\ldots + b_kX_k(i) \qquad i = 1,\ldots,n \tag{2}$$

and constant variance σ^2. For readers unfamiliar with this notation there is a fuller discussion of this model, including an explanation of terms and some of the methods of fitting it to data, in the chapter by Bao (Chapter 4.5, this volume). (Please be aware of standardizing notation. For example, here use e to refer to the errors in the model; Bao uses ε.)

However, given the discussion in Section 2.1, there may be concern that the two assumptions of independence and constant variance (homoskedasticity) in the errors may not be satisfied when analysing spatial data. The consequences if either or both of these assumptions are not met are discussed in, for example, Cliff and Ord (1981). The tests for both these assumptions are based on the estimates of the model errors – called the regression residuals: $\{\hat{e}(1)\}$. Tests for homoskedasticity include the Breusch-Pagan and Koenker-Basset tests. The test for spatial autocorrelation is usually Moran's I test.

If the residuals are spatially autocorrelated this may be due to model misspecification – for example, the omission of a significant independent variable which is itself spatially autocorrelated. That is, the spatial autocorrelation in the missing independent variable has been inherited by the residuals. If the missing variable can be identified and included in the model, this provides one possible solution to the problem of autocorrelated regression residuals. However, this situation does not seem to arise often in practice, and a more common solution is to acknowledge the presence of residual spatial autocorrelation and ensure valid inference on the model by fitting a spatial error model – that is, a regression model that assumes spatially autocorrelated errors defined as

$$\begin{aligned} &Y(i) = b_0 + b_1X_1(i) + \ldots\ldots + b_kX_k(i) + u(i) \\ &u(i) = \theta \sum_{j=1}^{n} w(i,j)\ u(j) + e(i) \qquad \sum_{j=1}^{n} w(i,j) = 1; \qquad i = 1,\ldots,n \end{aligned} \tag{3}$$

where the terms on the first line of (3) are as defined for (1) but where the {u(i)} are spatially autocorrelated. As in (1), these errors too are unobservable. The parameter θ is sometimes referred to as the spatial interaction parameter for the weighted average of the {u(i)} defined in the second line of (3). For any given site i, this weighted average takes in the values at sites neighbouring i but excluding site i (N(i)). Thus w(i,j) is greater than 0 if site j is a member of the neighbours of site i (N(i)). w(i,i)=0 for all i, which means a site is not a neighbour of itself.[1] The {e(i)} in (3) are as defined for (1). Spatial models specified in this way and in which the influence of neighbouring sites is usually stronger the closer they are to i; [w(i,j) is greater than w(i,k) if j is closer to i than k is to i] have become the staple of autocorrelation modelling in the social sciences. Often an area's "neighbours" are limited to those other areas that share with it a common boundary. For an extended discussion of so-called W $[=\{w(i,j)\}_{i\,=\,1,..,n;\,j\,=\,1,..,n}]$ or weights matrices and the different ways in which they can be constructed, see Dubin (2009) and the chapter by Matos (Chapter 4.6, this volume).

However, as discussed in Section 1.2, places exist in a spatial context and spatial processes may spill over the boundaries of our geographical units or involve interaction between locations. So, there may be circumstances where other sorts of spatial regression models come closer to describing our theoretical understanding. We shall consider two.

In the case of certain kinds of contagious, interaction or competition processes we may wish to introduce a lagged form of the dependent variable onto the right-hand side of the regression model:

$$Y(i) = b_0 + b_1X_1(i) + \ldots\ldots + b_kX_k(i) + \rho \sum_{j=1}^{n} w(i,j)\ Y(j) + e(i) \quad \sum_{j=1}^{n} w(i,j) = 1; \quad i = 1,\ldots,n \tag{4}$$

The terms in the expression are as for (1) but the parameter ρ is the spatial interaction parameter for the independent variable, which represents the weighted average of the dependent variable (Y(i)) at neighbouring locations.[2] The choice of the weights {w{i,j)} may be made to reflect our theoretical understanding of the structure of interaction in, for example, the competition process (note w(i,i) must equal 0 for all i). This model is often referred to as the spatial lag model, or the regression model with a spatially lagged dependent variable. It is hypothesizing that the variation in the dependent variable is not only a function of location-specific independent variables but also the value of itself at other, neighbouring locations. Tests of hypothesis on ρ provide a test of the significance of this component in the variation of Y.

Lagging may also be specified on one or more of the independent variables, as in, for example, the model:

$$Y(i) = b_0 + b_1X_1(i) + \ldots + b_kX_k(i) + b_{r;lag}\sum_{j=1}^{n} c(i,j)X_r(j) + e(i) \quad \sum_{j=1}^{n} c(i,j) = 1; \quad i = 1,\ldots,n \quad (5)$$

In this model all the terms are as defined in (1), except now the independent variable X_r is modelled to have an association with Y(i) as a function not only of X_r's value at i but also of its value at neighbouring locations.[3] (For this reason we use the notation c(i,j) (rather than w(i,j)) to distinguish the spatial averaging in (5) from that used in (3) and (4).)

At this point we leave the reader to follow up this class of models, which are further discussed together with applications and advice on fitting by Matos (this volume). There are now a number of texts and other sources that provide the interested reader with an extended discussion of all these models, including Anselin (1988, 2010), Cressie (1991) and Haining (1990, 2003). The reader should note, as does Matos, that spatial regression models (3) and (4) must not be fitted by ordinary least squares (OLS), as discussed by Bao (this volume) in respect of (1). For the beginner in this area of methodology, this author recommends the specialist package GeoDa, which implements maximum likelihood (ML) estimation and which also has the relevant diagnostics needed for fitting and assessing model fit. This package also allows the analyst to test for spatial autocorrelation in the residuals obtained from fitting (1) – sometimes a useful step prior to fitting either model (3) or model (4) – a test which currently standard statistical packages (e.g., SPSS and Minitab) cannot perform.

2.3.2 Bayesian hierarchical regression models

In Bayesian hierarchical modelling, instead of handling spatial dependency effects in the data model as in the examples of the last section, which for some discrete valued probability distributions precludes modelling positive spatial autocorrelation and in all cases complicates the likelihood function, thus making ML model fitting difficult (see Besag 1974), spatial effects can be handled through the prior distribution of a hierarchical model. Specifying probability models in terms of a sequence of linked conditional models offers a means of modelling complex systems (see, e.g., Cressie *et al.* 2009).

Spatial effects are typically handled through a spatially structured random effects term, as the following example illustrates. Suppose the researcher is modelling small area burglary counts where y(i) is the observed number of cases of burglary in area i. The data model (level 1) specifies y(i) as the realization of a Poisson random variable (Y(i)) with intensity parameter and expected value (E[Y(i)]) equal to $\lambda(i)=E(i)\phi(i)$, where E(i) is the number of cases expected in area i which is given by the population at risk (number of households) multiplied by the region wide risk rate and $\phi(i)$ is the area-specific relative risk in area i. This level of the hierarchical model expresses the uncertainty or variability in the data given the process model and its parameters. This uncertainty may be due to measurement or sampling error or to the natural variability associated with the process. At level 2 we define the process model that reflects our understanding of what determines area-level relative risk. For example, we may set

$$\text{Log}[\lambda(i)] = \text{Log}[E(i)] + b_0 + b_1X_1(i) + \ldots\ldots + b_kX_k(i) + e(i) + s(i) \quad i = 1,\ldots,n \quad (6)$$

where $X_1,\ldots,X_k$ define a set of k area-specific covariates with parameters b_1 to b_k that explain variation in relative risk. Under a rational choice theory of crime, the motivated offender selects

areas to attack (as opposed to specific houses) on the basis of three categories of area attributes: the likely rewards, the likely risks and proximity, which are measured typically using census or other data. The {e(i)} and{s(i)} are random effects. The {e(i)} are i.i.d. normal random effects and the {s(i)} are given an intrinsic conditional spatial autoregressive (ICAR) specification (Besag, York and Mollie 1991). These two terms model the scientific uncertainty in the process model specification as well as the effects of overdispersion and spatial autocorrelation in the spatial variation in relative risk and hence in the spatial distribution of the counts (Haining, Law and Griffith 2009). At level 3, for a fully Bayesian analysis, the parameters at level 2 are treated as random variables and given probability distributions. Again specialist software is needed to fit a model of this type, and currently many practitioners make use of WinBUGS, a software package that uses Markov chain Monte Carlo simulation for estimation and fitting (see www.winbugs-development.org.uk).

For further examples of this and other types of Bayesian spatial modelling in geography and regional science (including Bayesian versions of the models in section 2.3.1) see, for example, Law and Haining (2004); Haining, Law and Griffith (2009); Haining, Kerry and Oliver (2010); Le Sage (2000); Lu *et al.* (2007); Le Sage and Parent (2007). Lawson and Banerjee (2009) provide an introduction to Bayesian spatial analysis.

3. Final thoughts

Statistical theory provides the scientist with the methodology for developing and testing substantive theories. Statistics allows the observational scientist to deal with uncertainty rigorously, brings some of the control of the experimental scientist into data analysis and offers a way to model complex systems. Work on scientific questions where processes play out across geographic space and data are (of necessity) spatial raises some significant and distinctive challenges, some of which we have considered in this chapter.

The methods and models we have examined have been for purely spatial data, but processes are, by their nature, taking place over time as well as across space. As more data indexed by space and time become available, the challenge turns to "thinking spatio-temporally" and to thinking about the statistics needed to test substantive theories that deal with more than just the here and now of wider processes (Cressie and Wikle 2011). The understanding of how to handle spatial data, achieved by researchers in many fields and over many years, will help to inform these future developments.

Notes

1 In words, the error at site i (u(i)) is a weighted average of the errors at all the other sites, where the weights are defined by the w(i,j) values, which are typically chosen by the researcher according to some rule. Typically the only non-zero (positive) weights are those for sites that are in some sense "close to" i. The term "weighted average" can be used because, as shown, the sum of the weights for any site i is equal to 1. Such a W matrix is sometimes referred to as "row standardized" or "row normalized". Because errors at sites close together share common neighbours, the errors are spatially autocorrelated by construction. However, even if the weights are non-zero only for the immediate neighbours, spatial autocorrelation in the errors will extend beyond the near neighbours (to neighbours of neighbours, etc.) as the reader can check for his- or herself. Spatial autocorrelation weakens with distance separation and so, in a sense, may be thought of as a mathematical representation of Tobler's "First Law of Geography".

2 The reader can adapt the argument in footnote 1 to the dependent variable, Y. The reader will appreciate that if the analyst fits regression model (1) when (4) is the correct specification, then the residuals from (1) will inherit the spatial autocorrelation of the omitted term.

3 The argument will be familiar from footnotes 1 and 2. The reader will appreciate that if the analyst fits regression model (1) when (5) is the correct specification, then the residuals from (1) will inherit the omitted spatial structure in X_r that is needed to account for variation in Y.

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4.3
INDICATORS AND SPATIAL PLANNING
Methods and applications

Cecilia Wong

> Planning, like most other social reform movements over the last two centuries, has based its claim to political legitimacy upon possession of a special kind of knowledge – scientific knowledge – which can drastically transform the quality of public discourse.
> (Weaver, Jessop and Das, 1985: 145)

Planning, as coordinator, integrator and mediator of space, has continued to seek a knowledge-driven approach to assess the achievement of policy objectives and intervention. The comments made two decades ago by Weaver, Jessop and Das over the importance of scientific knowledge in planning are still applicable to contemporary thinking across international territories. The importance of indicators in programme monitoring and evaluation was made explicit by the European Commission (2000) when launching its New Programming period in 2000. Performance measures have also been widely used in North America. In Britain, central government has emphasised the importance of having robust indicators as part of performance management in the public sector (Audit Commission, 2000), including the 2004 spatial planning reforms (HM Government, 2004). This chapter focuses on examining the ways indicators are developed and highlighting the latest methodological developments and applications of indicators in the complex plan-making process.

Indicators: definitions, nature and methodological steps

Indicators can be defined as the operational definition of some abstract concepts (Carlisle, 1972), and they offer a guide showing how a particular issue is structured or is changing (Miles, 1985). As with other quantitative analytical methods, indicators tend to be perceived as part of the empiricist or positivist tradition. Bauer's (1966: 1) notion of indicators as a yardstick to measure progress and goal achievement adds a normative dimension to the empirical formula. The emphasis on value and goal setting – the presupposition of certain innate knowledge – to benchmark against the measured result shifts the epistemological basis closer to that of the rationalists. The US Department of Health, Education and Welfare (1969: 97) defined indicators as

'statistic(s) of direct normative interest . . . subject to interpretation', which suggests that value judgment would be involved in viewing some effects as better or worse. It also opens the argument of relativism, and stresses the importance of intersubjective communication and interpretation of meaning.

The exact nature of indicators is a complex blend of technical and normative rationality. This signals the underlying tension of indicators as policy instruments, which are subject to the politicisation of interpretation and the possibility of manipulation even at the measurement stage through the choice of indicators, data sources and methods. Indicators tend to be very good at picking up issues that can be best monitored through numbers (Wong, Baker and Kidd, 2006a), but less effective to ascertain issues that are less tangible. Indicators are also best used as traffic lights to send out signals when policies are not delivered, but may need to be reviewed to take into account changing situations (Innes and Booher, 2000).

Taking these early ideas on board, it is clear that the value of indicators as a form of knowledge is grounded on the methodological process of indicator development by moving from abstract concepts to more specific measures to yield policy intelligence. Different suggestions have been made over the process of developing indicators since the late 1960s. For example, Coombes and Wong (1994) put forward a four-step methodological framework (i.e., conceptual consolidation, analytical structuring, identification of indicators, creation of an index) and Wong (2006) revised the final step to 'synthesis of indicator values' to reflect the fact that there are both statistical and qualitative approaches to synthesising indicator values. Similarly, Zapf (1979) suggested a six-step indicator construction process. The different classifications, nonetheless, are often a variant of splitting or combining the methodological steps rather than offering any substantive new components. The pillars that form the backbone of most indicator frameworks are policy contexts, theoretical and analytical perspectives and methodological issues.

Indicators alone are idle information, which hardly convey any meaningful message for policymaking. It is the analysis of indicators against the wider context and policy objectives that provides the added value of converting information into intelligence. Most indicator frameworks start off by clarifying the basic concept which is to be represented by the analysis and the policy rationale against which the indicators are to be applied. Planning policy discourses tend to involve concepts such as 'sustainable development', 'quality of life' and 'social inclusion', which are subject to numerous interpretations. It is thus essential to clarify the content of any such concept to facilitate subsequent analysis and to avoid any attempt to create a haphazard choice of possibly related statistics without any theoretical basis.

The development of indicators has to be constructed upon a robust analytical framework to set out the structure and requirements upon which key components of the indicators will later be developed and assessed. This analytical framework can be seen as the blueprint or the operational plan that provides a platform to underpin the collation and analysis of statistics. Analytical principles such as tracking progress and change; benchmarking and cross-comparison; using soft indicators and qualitative information; exploration of covariations and interactive effects; consistency and comparability; and multiple spatial units of analysis (Wong *et al.*, 2004) can be specified upfront in the analytical framework.

After establishing the conceptual and analytical groundings, the methodological process involves a laborious search for a wide range of possible indicators to measure the issues identified in the analytical framework. The drawing up of a 'wish list' of indicators is usually based on an extensive review of related policy practice and academic literature. In most cases, numerous potential indicators can be identified for each key issue. This is less true once data availability issues have been taken into account. This means a comprehensive search of statistical sources in

the public domain, commercial databases and published directories will be required. This data searching process will allow the assessment of information gaps that affect the compilation of the dataset or a particular dimension of the dataset. Due to the polyvalence of many policy concepts, a single perfect indicator cannot usually be found to adequately represent each issue; the available data is more often in the form of proxy measures. This leads to a strategy of drawing upon a more broadly based set of measures in the analysis.

The final step in the development of indicators involves the synthesis of indicator values. One common practice is to develop a composite index by combining the proposed indicators, according to their relative importance, into a single measure which will be used for policy targeting. However, the approaches (such as data validation, standardisation and transformation procedures and different statistical and non-statistical weighting methods) used to develop composite indices tend to be either arbitrary or too complicated to be transparent (Wong, 2006). The reduction of an entire database into a single value will inevitably mask the tremendous analytical potential of the data. There has been an increasing trend of seeking other analytical and visualisation methods to simplify the structure of indicators by using headline indicators (DETR, 1998), tiered indicator structure (e.g., Innes and Booher, 2000), linking indicators in analytical bundles (e.g., Rae and Wong, 2012; Wong *et al.*, 2006), applying summary score systems (e.g., Copus and Crabtree, 1996) and using multidimensional presentation methods (e.g., Westfall and de Villa, 2001).

Challenges to monitoring spatial planning performance

Planning provides a framework to manage and resolve conflicts and to promote creative solutions to achieve the vision of sustainable development. While the objective of sustainable development is seen as a unifying, long-term concept, it is also too holistic and vague to be operational (Campbell, 1996). Spatial planning in the UK is seen as a place shaping and space mediating mechanism (RTPI, 2007). Davy (2008) also argues that spatial planning has to deal with boundaries in a flexible way by addressing 'polyrationality' and understanding how space is socially produced by a wide variety of actors and practices. The move towards spatial planning poses the question of how analytical instruments such as indicators can be used to meet its communicative, coordinative and frame-setting requirements (Alexander, 2000).

Since the goals of spatial planning and its impacts are broad, varied and complex, its delivery is heavily reliant upon the action of a plurality of actors and agencies across independent policy sectors. There are thus considerable variations in perceptions of the nature, scope and purpose of planning by different actors. This horizontal axis of interaction is then intersected by the vertical complexity of activities across different tiers of government. The implementation of the objectives contained within planning policy is highly dependent upon not only the coordinating role of central government but also local discretion over the interpretation of such policy guidance. The reality is that there remain complex relationships between policies, and even high-level policy outcomes may be contradictory. Since spatial planning does not operate in isolation from other public policies, even if we were to focus on the direct outcomes of planning policy, it is impossible to isolate its effects or to assess the counterfactual (policy-off) situation to establish a benchmark for comparison (Morrison and Pearce, 2000).

Most indicator models are developed on the basis of a causal chain of different types of indicators in the policymaking process (Carley, 1980) and tend to assume a direct, linear relationship between policy intervention and impact, which could be measured for different levels

of administrative area. The very nature of planning issues are 'wicked problems' (Rittel and Webber, 1973) which tend to be found in an evolving set of interlocking issues and cannot be resolved with traditional linear analytical approaches. Each attempt to create a solution may reveal another, more complex problem. Wicked problems tend to be embedded in a dynamic social context, which makes each problem unique. Alexander (2011), therefore, argues that planning evaluation has to be positive-contingent as the purposes of planning are related to a particular planning effort in a specific defined context. As there are many stakeholders interested in solving the problems, issues such as conflicts of value and different preferences and beliefs will arise (Simon, 1979). These all point to the importance of framing policy problems, setting goals and developing alternatives to improve problem formulation and policy analysis. These ideas are taken up in the policy evaluation community through a theory of change approach (Connell *et al.*, 1995; Fulbright-Anderson, Kubisch and Connell, 1998) that emphasises the articulation of both explicit and implicit assumptions that stakeholders make about how and why policies work. The importance of providing a communicative, learning perspective for more flexible problem solving is also advocated by Faludi (2000).

There is thus a need to develop alternative methodological approaches if indicators are to be an effective policy instrument for questioning the framing of spatial planning goals and strategies in a collaborative, learning perspective. Since spatial forces interact in very complex ways, any simple policy interventions are unlikely to be effective in correcting inefficiencies in spatial structures. It is the need to understand the complexities of spatial structures that poses challenging questions to policymakers and stakeholders to rethink and debate the principles of spatial organization and activities. To overcome the difficulties, indicators have to be analysed in ways that reflect 'spatiality' – that is, the interdependence between different types of indicators to account for differential patterns of spatial interaction and connection between places to inform the progress made and the framing of complex spatial planning policy.

Types of indicators and different stages of plan making

Different monitoring frameworks adopt slightly different terminologies to describe the functions and roles of different types of indicators in the decision-making process. There is thus a need to clarify the definition of different types of indicators used in monitoring spatial planning strategies.

A set of definitions that are widely used in monitoring sustainability indicators is based on the Pressure-State-Response (PSR) model. Some sustainability indicators aim to provide a simple description of the current state of development (state indicators); others are used to diagnose and gauge the process that will influence the state of progress towards sustainability (pressure, process or control indicators), or to assess the impact brought by policy changes (target, response or performance indicators). The sustainability indicator sets of the OECD and the United Nations are developed on the basis of a PSR link model. The PSR model provides a concise and logical way of conceptualising the chain effect of human activities on the changing state of our environment and the policy response to these pressures. While conceptually simple, the operation of the model is not straightforward. When preparing the indicators of sustainable development for the UK report (DoE, 1996), the working group abandoned the adoption of such a complex model (Cannell, Palutikof and Sparks, 1999). However, the linear relationship captured in the PSR model is seen by others (Briggs *et al.*, 1995; Dunn *et al.*, 1998) as oversimplifying the complexity of real life.

The operational monitoring framework put forward by the European Commission (2000: 8, 11) to assess structural assistance includes a rather comprehensive classification scheme that can easily be mapped onto the policymaking cycle. The framework includes the following:

- Contextual indicators: quantified description of current disparities, gaps and development potential for the regions concerned.
- Baselines: referring to the initial value against which a context or impact indicators are subsequently measured.
- Input indicators: means or resources (e.g., financial, human, technical or organizational).
- Output indicators: a series of physical outputs (e.g., kilometres of road built), which demonstrates the progress made in implementing the programme measure.
- Result indicators: the immediate effects on the direct beneficiaries of the actions (e.g., reduced journey times, transport costs).
- Impact indicators: achieving the programme's global or specific objectives.

The indicator architecture developed for the British government's Annual Monitoring Report (ODPM, 2005b) of spatial planning strategies incorporated the previous objectives-targets-indicators approach (ODPM, 2002) by emphasising the linkage of key objectives, policies, targets and output indicators (ODPM, 2004a: para. 1.7). Process delivery indicators and targets were used to gauge the implementation of planning policies. In addition, contextual indicators were used to help measure outcomes and in assisting the understanding of the evolving context in which the planning strategy operates. This framework, however, suffers from a lack of clear guidance of what outcomes mean and how they should be measured. Policy focus on output measures (such as hectares of derelict land improved, number of new houses built) rather than the impact and effectiveness of policy (Burton and Boddy, 1995; National Audit Office, 1990) has long been criticised. The missing link between inputs, outputs and outcomes/impacts (the outcomes for different groups and different areas) of policy performance also causes concern. There was, however, a shift in the Labour government's monitoring guidelines to place more emphasis on the longer-term horizon of outcome and impact measurement (HM Government, 2006, 2007).

A review of policy and academic literature by Wong *et al.* (2008) shows that a comprehensive indicator framework for monitoring spatial planning policy should include indicators on: contextual issues; input factors of capacity; process issues of efficiency, participation, monitoring and competency in plan making and implementation; policy outputs; immediate effect of planning policy; and outcomes of longer-term changes towards achieving sustainable development. Despite the fact that most indicator models assume that there is a causal chain of different types of indicators in the policymaking process, the complexity and interrelations between different socio-economic issues mean that in practice it is rather difficult to untangle the web of inputs, outputs and outcomes (Wong, 2011).

Indicators and spatial planning monitoring

The monitoring and evaluation of planning systems in Britain tend to be more about inputs and processes than about outcomes and effectiveness (Jackson and Watkins, 2007); planning systems are commonly evaluated in terms of administrative efficiency, numerical returns and cost implications (Pieda, 1995). Local planning authorities had been required to compile performance indicators since 1992, but they tended to measure performance in terms of the processing speed

of planning applications. This partly reflects the wider auditing culture of Britain (Kemp, 1979), which has been criticised as focusing too much on inputs, outputs and financial information (Burton and Boddy, 1995), but rarely capturing the effectiveness and equity dimensions of policy performance (Pollitt, 1990).

The wholesale reform of the British planning system in autumn 2004 by the Labour government marked a new era of developing 'spatial' rather than purely 'land use' plans. The new system aimed to provide a spatial framework to integrate policies for the development and use of land with other policies and programmes which influence the function of places (ODPM, 2004b). Interestingly, there was also a much heightened emphasis on the importance of evidence-based policymaking and the formal arrangements for monitoring (ODPM, 2004b: para. 1.3). While the government's issued guidance strongly promoted the importance of using and interpreting different types of evidence, the agenda had been dominated by the use of quantitative indicators to monitor policy progress (OPDM, 2005b).

Such an information-intensive, knowledge-based approach to spatial planning had already been taking place at the pan-European level through the establishment of the European Spatial Planning Observation Network (ESPON) Programme in May 1999 (van Gestel and Faludi, 2005). ESPON aims to address the gaps in comparative, quantified and geo-referenced data and to provide a research and intelligence function to serve the Commission's spatial policies. The development of territorial indicators and typologies assisted the setting of European priorities for a balanced and polycentric enlarged European territory and provided some integrated tools and instruments (databases, indicators, methodologies for territorial impact analysis and systematic spatial analyses) to improve the spatial coordination of sector policies. As van Gestel and Faludi (2005) commented, the original observatory has evolved into a dynamic research network, though there have been tensions between the technical-rationality of policymaking and the reality of selective use of data to justify political decisions. This highlights the fact that the Commission desires to have scientific evidence to inform funding allocation and policy decisions, but is keen to retain control at the same time.

The proliferation of indicator sets for monitoring local and regional planning practice has also been noticeable in North America over the last decade (Hoernig and Seasons, 2004; Swain and Hollar, 2003). The call for suitable 'indicators of sustainability' to provide a solid base for decision making at all levels was explicitly stated in Agenda 21 (UNCED, 1992) of the 1992 Rio Earth Summit. The 1996 Habitat II conference in Istanbul further reinforced the importance of community-based indicator projects to guide and track the progress towards achieving sustainability. This new environmental agenda has not only brought with it a need to employ indicators as a key mechanism for assessing environmental impact and capacity, but also spurred local action and broadened concern to encompass wider community-based issues. Since then, indicators have been developed under different banners, such as 'sustainability indicators', 'quality of life indicators' and 'performance indicators' (Innes and Booher, 2000; Swain and Hollar, 2003). Some of the well-publicised community indicators projects include Sustainable Seattle and the Jacksonville Community Indicator Projects in the US.

This brave new world of evidence-based plan making is indeed not that unfamiliar to the planning profession. There has been a long tradition of applying Geddesian 'survey before plan' principles (Mercer, 1997; Muller, 1992) to land use planning. Nevertheless, resource constraints and a lack of recognition of its value at a strategic level have often resulted in ad hoc approaches to land use monitoring, with planning authorities operating piecemeal monitoring systems (Batty, 1989). Previous experience so far also suggests that monitoring has often been regarded as an error-correcting mechanism to bring land use plans back on track by addressing negative

feedback. The use of indicators to monitor spatial planning policy is even more challenging than applying indicators to evaluate, for example, an area-based policy initiative, due to some inherent conceptual and methodological difficulties:

- lack of consistent and relevant information across the board;
- complexity of multiple influences: since the delivery of spatial planning is heavily reliant upon other actors and agencies across different policy sectors, it is not easy to isolate its pure impact;
- difficulties in ascertaining indirect impacts: while planning policy can indirectly influence the attitude and behaviour of different actors, it is difficult to quantify such indirect impacts (not possible to establish the counterfactual situation); and
- choice of suitable timescale: different aspects of the planning system may require different lead-in times to take effect – for instance, the procedural aspects of change will take place earlier than the actual policy outcomes.

When developing indicators to monitor and evaluate spatial planning policies, the 'spatial' dimension tends to be neglected. In spatial planning terms, the meaning of indicators is closely related to the geographical scale of analysis. A perpetual tension lies in the mismatch between administrative geographies and the appropriate functional spatial scale for measuring a particular phenomenon. This means that the selection of certain boundaries could potentially produce distorted analysis and misleading conclusions (Rae and Wong, 2012). More importantly, certain functional areas may change over time, possibly in response to the operation of the spatial planning system itself. For example, if spatial planning seeks to influence the location of future housing provision, this will in turn have an impact on the shape and extent of the functional housing market area. It is also important to point out that the adoption of the multi-scalar approach overrides the issue of dealing with specific spatial scales, such as 'urban', 'subregional' and 'regional' planning, as these are all encapsulated under the aegis of 'spatial' planning.

Measuring spatial planning outcomes: an integrative approach

The measurement of the effectiveness and outcomes of spatial planning has long been seen as a daunting task. The Royal Town Planning Institute and the Department for Communities and Local Government commissioned a research study (Wong *et al.*, 2008) to examine the possibility of identifying a coherent and integrated set of indicators for measuring spatial planning outcomes in England. The research stipulates six key principles to underpin the spatial planning outcome (SPO) indicator framework:

1 The proposed set of indicators would serve to provide a strong platform for stakeholders to develop their own indicator framework;
2 The framework should be transferable across the UK and form a strong backbone to link up with other sectoral policy monitoring within the regions;
3 Analysis should no longer focus on single indicator values, but more on how to flexibly combine indicators to yield meaningful policy intelligence;
4 Analysis should include 'spatiality' by emphasising the importance of functional areas, spatial linkages and connections;

5 Indicators should be used to help planners and key stakeholders question the values, assumptions and core strategies that led to the policy actions in the first place, which will then be able to modify policy and actions to address any newly identified issues;
6 The framework should help to provide a communicative and iterative learning approach to monitoring and embed monitoring right at the heart of the policymaking process.

Recognising that spatial planning is about how individual places change, after consulting a wide range of stakeholders, it was agreed that the outcomes of spatial planning policies could be effectively measured and interpreted only if the indicators are plan-derived. Outcomes must be viewed as the combined effects on socio-economic and environmental characteristics brought about by the planning system and other forces that seek to achieve sustainable development in specific locations. Indicators are typically proxy measures of broad and complex concepts, and we rarely find a single perfect indicator to capture the essence of individual phenomena.

A domain approach, the key areas that are deemed as important in measuring a particular concept, was adopted to guide the selection of indicators. The spatial planning objectives of *Planning Policy Statement 1* (ODPM, 2005b) were used as the domains to ensure that the outcome indicators cover the key objectives of planning, though these domains do not dictate how the indicators should be analysed in the later stage. These five domains include: (1) making suitable land available and its efficient use for development; (2) sustainable economic development; (3) protecting and enhancing the natural and historic environment; (4) high-quality development and efficient use of resources; and (5) inclusive and liveable communities.

Given the interrelated nature of spatial planning, the recommended measurement framework is not a traditional indicator-based approach. Rather, it is an attempt to capture the complexity of cross-cutting spatial planning outcomes by the inclusion of a group of interrelated indicators based on individual domains. This 'bundle of indicators' approach includes not only the outcome indicators themselves but also a wider set of input and output indicators, as well as other relevant contextual information. The choice of potential outcome indicators is steered by a number of important principles:

1 Outcome indicators need to be 'plan-derived' and 'objectives-derived' in a plan-led system.
2 Capture inputs (e.g., capacity) and processes (e.g., competence) are highly influential to outcome delivery.
3 Outcomes have to be interpreted in the light of the wider context.
4 Reflect spatial planning's contribution towards integrating key sectoral policies in different parts of the region.
5 Different indicators are best measured at the most relevant spatial levels of concern, functional areas and targeted/critical areas within the region to reflect the complex meshing of different spatial and sectoral policy outcomes.
6 Use attitudinal assessment survey to ascertain 'invisible' and 'softer' outcomes.
7 Outputs can be used as proxy measures of outcomes when the outputs have been embedded to become outcomes over a substantial period of time and large spatial extent.
8 Choose the most appropriate time frame to gauge the longer-term effect of spatial planning policies.
9 Include a more focused set of outcome indicators to form effective analytical indicator bundles to reflect the multidimensional nature of spatial planning objectives.

These guiding principles set out the quality of the outcome indicators in terms of their conceptual relevance (principles 1–2), policy integration (principles 3–5) and technical robustness (principles 6–8), with the final principle capturing all three aspects. The final principle forms the backbone of the framework; by combining the wider set of indicators into bundles, one can tease out the key issues that emerge from the analysis to ascertain complex spatial planning outcomes. Individual indicators are not intended for use in an isolated fashion, but rather within an *integrative* framework which views them as parts of a whole, rather than separate entities. Similarly, the framework views individual locations as parts of a wider spatial context rather than isolated locations.

Although the use of indicators to spatial planning monitoring is closely associated with the underlying ethos of governance and policymaking in Britain, the proposed integrative measurement approach should be easily transferred and adapted in other plan-making contexts. This approach urges local and regional planning authorities to take the lead in developing their own spatial planning outcome monitoring framework with other stakeholders for their region, which reflects the flexibility of this framework to apply to different planning contexts to address the positive-contingency issue raised by Alexander (2011). The millstone of adopting this approach in certain international contexts will be the lack of robust data, especially georeferenced data, for the development of a truly spatial approach of monitoring. As the framework focuses on learning and feedback loops, the level of integration and spatiality of measurement could be developed incrementally through capacity building among stakeholders to monitor the common vision of plan making.

Conclusion

This chapter clarifies the nature and purpose of indicator research and the conceptual and methodological challenges of using indicators to ascertain spatial planning performance and outcomes. The discussion also addresses the thorny question of whether we can develop a robust and reliable approach to evaluate the performance of spatial planning with a set of indicators. The central premise is to shift away from the mechanistic, linear policy evaluation model (which is epitomised by the stipulation of specific performance indicators by government) to a more analytical and collaborative framework that allows key stakeholders to express their vision in the policy formulation process as well as providing a feedback loop to frame policy problems.

In research terms, there is still scope to further develop and improve the methodology. The need to monitor issues at different spatial levels within a coherent framework is constrained by the use of convenient administrative boundaries. Administrative boundaries do not necessarily reflect functional areas in terms of social, economic and environmental linkages. This is particularly true in cases of cross-boundary linkage, where there will be added benefits if authorities and other key partners work together in information gathering and in developing a shared evidence base when assessing policy outcomes. There is a need to build up the monitoring capability to organize, analyse and display data at varying spatial scales. It is also important to explore how best to include attitudinal survey data to develop 'qualitative' indicators to measure some intangible issues of planning. The reliability of such data is highly influenced by the design of the surveys and the sampling methodology used. Such survey-oriented data can be used effectively only if concerted effort is made to develop robust sampling methodologies and to identify valid questions to improve the quality and spatial coverage of such surveys.

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4.4
MEASURING SPACE
A review of spatial metrics for urban growth and shrinkage

José P. Reis, Elisabete A. Silva and Paulo Pinho

1. Introduction

> Just as settlements are diverse and complex, so there are many ways to describe and understand them.
>
> (Kropf, 2009; p. 105)

A changing and increasing diversity of trajectories in the evolution of cities associated with growing concerns about sustainable development is fostering a renewed interest in the study of the physical dimension of urban form (Beauregard, 2009; Dieleman and Wegener, 2004; Huang *et al.*, 2007; Kabisch and Haase, 2011). Urban processes and patterns tend to produce very different cities with the added complexity that nowadays processes of growth and shrinkage often occur simultaneously (Banzhaf *et al.*, 2006; Oswalt and Rieniets, 2006; Pallagst, 2005).

Understanding how cities develop, including the driving forces of land use change and the configuration of its spatial patterns, has been one of the key research agendas of planners. Urban planning theories and tools should be prepared to deal with both these processes. Nevertheless, urban change is so complex that there are still problems with the in-depth understanding of what growth and shrinkage really mean.

And yet urban growth has always been one of the most prominent topics of planning. Urban sprawl is by far the most studied growth pattern and has been the subject of a quite contentious debate over the past decades (Ewing, 1997; Gordon and Richardson, 1997; Torrens, 2008), mostly regarding issues such as compact cities, urban growth boundaries or scattered growth. Urban shrinkage has been present through urban history (mostly associated with population decline (Rink and Kabisch, 2009; Sousa, 2010); nevertheless its study has been neglected by researchers and practitioners, particularly with regard to its spatial patterns. As a consequence, theory, policy, practice and methodologies have been mainly developed in order to answer to that pro-growth context.

This chapter addresses the quantitative analysis of urban form, presenting a literature review on spatial metrics used to characterize urban patterns. Most of these metrics are more than just

a descriptive tool. Results of analyses using urban metrics are often used to inform policy decisions to allocate financial resources to urban programmes and/or to support local authorities' development control practices and site and master plans' preparation processes. It is therefore of utmost importance to clarify which metrics have been used to date to describe particular urban patterns. With this chapter we intend to offer a comprehensive portfolio of metrics that can be selected by students and researchers according to the types of research questions, urban processes and spatial measurements under consideration.

We focus on metrics that describe the physical expression of growth and shrinkage in cities (the analysis of the urban form). With this goal we surveyed papers published in the Web of Knowledge throughout the past fifteen years in order identify the key metrics being adopted in research and practice. Only metrics used in empirical applications were considered and, although we considered metrics using a broad range of scales (regional, urban, neighbourhood), metrics appropriate to the building scale were left out.

This review builds on previous work of Reis, Silva and Pinho (2012, 2013; forthcoming and expands it to include a higher number of growth and shrinkage metrics. We discuss some examples where these metrics have been applied and the advantages or disadvantages of using a particular type of metrics.

2. Spatial metrics

In order to cover as many metrics as possible, a comprehensive review of the literature was carried out independently of the subject area or methodology used and, therefore, a broad definition of spatial metrics was adopted. Spatial metrics is defined in this study as *the quantitative measures used to assess the spatial characteristics of urban settlements and structures*.

Given the large number and the wide diversity of the metrics found, they were assembled into four groups, based on the specific area of knowledge and methodological approach to urban form in which the metrics were developed. These groups ('types of metrics') are:

1 landscape metrics;
2 geo-spatial metrics;
3 spatial statistics;
4 accessibility metrics.

It is important to notice that these groups do not intend to constitute a thorough classification or a typology of metrics. Their main purpose is to facilitate the analysis, grouping metrics with regard to their disciplinary background and the broad methodological approach they convey. Moreover, some of the metrics from different groups are based on similar principles, their study objects sometimes overlap and some metrics were even developed based on (or influenced by) metrics from a different group.

As mentioned earlier, this study concerns the analysis of spatial patterns of urban change, with a particular focus on the processes of urban growth and urban shrinkage. We include, however, metrics from studies not focusing explicitly on growth or shrinkage because some of these metrics assess spatial features of urban areas that may also be characteristic of these two processes, and therefore can be useful for the present research.

In this review we found 160 metrics in 126 empirical studies (110 in empirical studies of urban growth, while only 16 metrics were applied in studies of urban shrinkage). Overall, these include forty landscape metrics, ninety-nine geo-spatial metrics, eleven spatial statistics and ten

accessibility metrics. The following sections present a list of all the metrics found in each of these groups and discuss their characteristics and usefulness to study particular urban patterns, providing some interesting examples. This chapter shows only a summary of the metrics found; a more complete description of these metrics, including their calculation methods and the sources of their empirical applications, can be found in Reis *et al.* (forthcoming).

2.1 Landscape metrics

Landscape metrics have been used since the 1980s in landscape ecology to quantify the shape and pattern of vegetation (Clifton *et al.*, 2008; Herold *et al.*, 2005). Landscape ecologists are primarily concerned with environmental protection and resource conservation, with the main focus on undeveloped natural areas and on the spatial implications of ecological processes in these landscapes, and therefore landscape metrics have traditionally been used to quantify several aspects of landscape configuration and composition, focusing primarily on types of land cover rather than land use.

However, landscape metrics have been increasingly used to study urban patterns, in part due to the belief that approaches combining urban planning and land conservation perspectives are essential for a sustainable interaction between human settlements and nature (Forman, 2008). In addition, several authors highlight the usefulness of spatial metrics adapted from landscape ecology to represent particular spatial urban characteristics (Aguilera *et al.*, 2011; Herold *et al.*, 2005; Schneider and Woodcock, 2008; Schwarz, 2010), to link economic processes to land use patterns (Parker *et al.*, 2001, cited in Herold *et al.*, 2005) and also in combination with urban growth models.

According to Clifton *et al.* (2008), spatial metrics adapted from landscape ecology differ from other urban form indicators in two main respects: they often rely on data derived from aerial photography and satellite remote sensing, and they use 'patches' (i.e., polygons with homogeneous characteristics for a specific landscape property) as the basic unit of analysis.

In our review, forty different landscape metrics were found; thirty-nine applied in empirical studies of urban growth and three in studies of shrinkage (two metrics were used in both contexts). All these include quite different types of metrics, from simple geometrical measures (e.g., *total urban area*, *patch area*) to more complex indicators based on perimeter-area ratios (e.g., *fractal dimension, shape index*) or on statistical measures (e.g., *Shannon's diversity and evenness indexes*).

These metrics also aim at analysing very different morphological characteristics of the urban landscape. Taking this into account and building upon previous classifications by several authors (Aguilera *et al.*, 2011; Frenkel and Ashkenazi, 2008; Huang *et al.*, 2007; McGarigal and Marks, 1995; Schneider and Woodcock, 2008; Seto and Fragkias, 2005), these metrics can be divided into the following four categories: shape irregularity, fragmentation, diversity and other (Table 4.4.1).

Shape irregularity includes the metrics assessing whether the physical form of an urban settlement has a regular shape or a complex shape with a ragged edge. They can be used to characterize a single patch (e.g., *fractal dimension*[1] or *shape index*) or a complex landscape (e.g., *landscape shape index, edge density or area-weighted mean patch fractal dimension*). The metrics most often used to analyse shape irregularity are *area-weighted mean patch (AWMP) fractal dimension, edge density, area-weighted mean (AWM) shape index* and *landscape shape index*.

Fragmentation metrics measure the extent to which urban settlements – or patches – are close together (aggregated) or dispersed (fragmented). These metrics are used at the landscape level. A fragmented landscape is normally characterized by a higher number of patches, with

Table 4.4.1 Landscape metrics organized by categories (the values in brackets correspond to the number of empirical papers using that metric)

Category	*Meaning*	*Metrics*
Shape irregularity  	Measures whether an urban settlement has a regular shape or a complex shape with a ragged edge	AWMP Fractal dimension (10) Edge density (8) AWM Shape index (4) Landscape shape index (5) Fractal dimension (4) Comp. index of the largest patch (3) Shape index (1) Mean shape index (1) Square pixel (1) Mean perimeter-area ratio (1) Mean radius of gyration (1) Edge to interior ratio (1)
Fragmentation  	Measures the extent to which urban settlements (or patches) are close together (aggregated) or dispersed (fragmented). These metrics are used at the landscape level.	Mean patch size (12) Number of patches (9) Patch density (7) Contagion index (7) Mean nearest neighbour distance (4) Landscape expansion index (1) Mean landscape expansion index (1) AWM Landscape expansion index (1) Mean nearest neighbour distance standard deviation (1)
Diversity  	Measures the relative distribution of different urban characteristics (e.g. land uses). More focused on the composition of the urban landscape.	Shannon's diversity index (4) Shannon's evenness index (3) Patch size standard deviation (3) Patch size coefficient variation (2) Relative patch richness (1) Patch richness (1) Contrasting edge ratio (1) Contrasting edge proportion (1) Mean dispersion (1) Diversity index (1) Simpson's diversity index (1) Leaf area index (1)
	Measures both complexity and fragmentation	Compactness index (3)
	Relative importance of the largest patch	Largest patch index (5)
Other	Measures the physical connectivity of a patch type	Patch cohesion index (1)
	Area metrics	Total urban area Patch area

a smaller average size and located further away from each other. The metrics mostly used to measure fragmentation are *mean patch size, number of patches, patch density* and *contagion index*. The *landscape expansion index* (as well as its average and area-weighted mean values) has the interesting characteristic of being especially appropriate for spatial-temporal analyses, by considering the position of new urban patches relative to the existing urban area.

These two categories of metrics are particularly relevant for studies of urban sprawl. Although the definitions of sprawl and compactness are not yet entirely clear and unanimous, there is a general belief that urban sprawl is characterized by a fragmented and irregular urban pattern, while the compact city shape is more regular and aggregated. Considering the importance of the recurrent urban development debate on 'compact vs. sprawl', it is not surprising that these two categories present not only the highest number of metrics but also the most used ones. It is also important to notice the compaction index (Huang *et al.*, 2007; Li and Yeh, 2004; Schwarz, 2010), which measures the compactness of an urban landscape considering both fragmentation and complexity. For this reason it was included in the category 'other'.

Diversity metrics focus on the composition of the urban landscape rather than on its shape. The most used metrics are *Shannon's diversity* and *evenness indexes*, which measure the distribution of different patch types (e.g., land use types) throughout the urban area. *Patch size standard deviation* measures whether the size of the patches varies considerably across the urban area. It may be considered a diversity measure, although it focuses on spatial configuration.

Other metrics include the *largest patch index*, measuring the relative importance of the largest patch (which may be useful to study, for instance, the importance of the urban centre), and the *compactness index*, which uses a concept of compactness based on both fragmentation and shape irregularity.

2.2 Geo-spatial metrics

This group includes spatial metrics mostly used by urban planners and geographers and normally developed specifically to measure urban spatial patterns. These metrics are very diverse regarding both their complexity (from basic statistical measurements to more complex indicators) and the specific feature of the urban built environment they aim to measure. An important difference between these metrics and landscape ecology metrics is that while the latter include a set of metrics that have been largely applied and tested in different case studies and by different authors, the former normally consist of indicators developed and applied in specific case studies.

A set of ninety-nine different metrics were found in empirical studies (sixty-five in urban growth studies, thirteen in urban shrinkage studies and thirty-one in papers not focusing on any of these processes in particular). Table 4.4.2 also shows eight categories of geo-spatial metrics considering the urban morphological features they intend to measure.

A large part of these metrics have been used to study urban sprawl (Crawford, 2007; Frenkel and Ashkenazi, 2008; Galster *et al.*, 2001; Hasse and Lathrop, 2003; Knaap *et al.*, 2007; Song and Knaap, 2004; Torrens, 2008) and, as such, they were designed to measure the most well-known physical patterns of the sprawl phenomenon. For that reason, the categories fragmentation, density, land use diversity, centrality and connectivity (related to accessibility) come as no surprise. The remaining categories are policentricity, spatial network analysis and other.

Fragmentation metrics assess the extent to which urban settlements are more continuous and compact or more scattered across the territory. They take into account different characteristics of the urban areas, such as the ratio between built-up and vacant areas (e.g., *ratio of open space,*

Table 4.4.2 Geo-spatial metrics, organized by categories (the values in brackets correspond to the number of empirical papers using that metric)

Category	*Meaning*	*Metrics*	
Fragmentation	Considers the relation between built-up settlements or blocks and open areas. Measures the extent to which urban settlements are more continuous and concentrated or more scattered (fragmented).	Fractal dimension (6) Ratio of open space (2) Leapfrog index (2) Gross leapfrog index (1) Net leapfrog index (1) Land consumption index (I) (1) Coefficient of variation (1) Delta index (1)	Continuity (1) Clustering (1) Dispersion index (1) H indicator (1) Hrel indicator (1) Area index (1) Cluster index (1) Shape index (R) (1) Compactness (1)
Density	Measures the density of built-up development or the intensity of particular land uses in an urban area unit.	Lot size (1) Single family dwellings density (1) Urban density index (1)	Residential density (1) Clark's density gradient (1) Floor space (1)
Land use diversity	Measures the relative distribution of different land uses.	Segregated land use (2) Land use diversity (1) Land consumption index (II) (1) Commercial pedestrian access (1) Land use diversity index (1)	Mixed actual (1) Mix zoned (1) Commercial distance (1) Park distance (1) Mixed uses (1)
Centrality/ proximity	Measures the relative position of settlements in relation to the whole urban area.	Centrality index (2) Index of remoteness (1) Spatial isolation index (1) Centralization index (1) Proximity (same LU type) (1) Proximity (different LU type) (1)	Distance to CBD (1) Distance to CBD (II) (1) Weighted average proximity (1) Community node inaccessibility (1)
Connectivity	Measures the connectivity between different places in an urban community	Internal connectivity (2) External connectivity (2) Blocks perimeter (1)	Blocks (1) Length cul-de-sacs (1)

Spatial network analysis	Policentricity	Measures whether the urban area is dominated by the city centre or by different sub-centres (polycentric).	Median contour policentricity (1) Mean contour	Policentricity (1) Peak ratio (1)
	Syntax of space	Measures developed in space syntax or in related methods.	Integration (10) Connectivity (9) Mean depth (6) Synergy (5) Intelligibility (5) Mean axial lines length (4) Number of axial lines (4)	Control (3) Grid axiality (2) Axial ringiness (2) Real relative asymmetry (1) Choice (1)
	Different dual graph approach	Also uses dual graph (streets are nodes, intersections are edges), but with a different method for the construction of the axial map.	Number of nodes (1) Average degree (1) Characteristic path length (1)	Clustering coefficient (1) Efficiency (1)
	Multiple centrality assessment	Uses a primal graph (streets are edges, intersections are nodes), more common in other spatial network analysis approaches.	Closeness centrality (4) Betweenness centrality (4) Straightness centrality (4) Information centrality (3)	
	Other	Metrics that quantify particular features of urban areas, not included in the other categories.	Index of clustering (3) Highway strip index (2) Road network density (1) Fraction of impervious surface (1) $\text{Index}^{\text{image}}$ (1) $\text{Index}^{\text{combined}}$ (1)	Transit pedestrian access (1) Bus distance (1) Nuclearity (1) Orientation index (1) B-ratio (1) A-ratio (1)

gross leapfrog index), or the geographic position of new built-up areas in relation to existing ones (e.g., *leapfrog, continuity, clustering*).

This category also includes the fractal dimension, which is concerned with the physical shape of the built structures and with the way they fill the urban space. This eminently morphological approach relies on the idea that although built-up structures grow into very complex and irregular patterns, these patterns tend to repeat themselves at different hierarchy levels and spatial scales, resembling fractals. Fractal structures, although apparently chaotic, follow a well-defined spatial organization principle that can be quantified (Batty and Longley, 1994; Frankhauser, 1998). The chapter by Chaolin (Chapter 4.11, this volume) discusses this fractal dimension, presenting examples for further clarification.

The fractal dimension measures the extent to which built areas fill the two-dimensional space, varying between 1 – the Euclidean dimension of a line, with length but no width – and 2 – the dimension of a plane, with length and width. Because urban patterns are not, of course, perfect fractals, these fractal dimensions are always calculated through estimation methods that are able to verify if an observed pattern follows fractal logic (for more on these calculation methods, see, e.g., Batty and Longley, 1994; De Keersmaecker *et al.*, 2003).

Density metrics measure the density of built-up development or the intensity of particular land uses in an urban area or in different sub-areas, using, normally, ratios of population, number of activities or residential units per sub-area of development

Land use diversity metrics measure whether an urban settlement is more mixed or monofunctional, normally counting the number of different land uses present (e.g., *mix actual, mix zoned, segregated land use* and *land use diversity*) or focusing on the spatial distribution of different uses and their respective accessibility (e.g., *commercial distance, park distance*). There are, however, metrics using different and more complex methods, notably the *land use diversity index*, which evaluates the evenness of the distribution of land uses based on the concept of entropy (Knaap *et al.*, 2007).

The category centrality/proximity includes ten metrics. Some measure centrality as the degree to which urban development occurs close to the central business district, assuming implicitly a monocentric pattern of urban structure (e.g., *distance to CBD, distance to CBD (II), centrality index*); while others focus on proximity between land uses (LU) in an urban area (e.g., *proximity [same LU type], proximity [different LU type]* and *weighted average proximity*).

Connectivity metrics were designed based on the notion that sprawled patterns often contain winding streets, *cul-de-sacs* and excessively large blocks, which reduce the connectivity between different places in an urban community (Song and Knaap, 2004). Five metrics were found in this category, focusing on the number and size of blocks in a neighbourhood (e.g., *blocks perimeter*), the number of street intersections (*internal connectivity*) and dead end streets (*length of cul-de-sacs*).

Policentricity metrics assess whether the urban structure is dominated by a single centre (monocentric) or by several sub-centres (polycentric). This review found three policentricity measures, and although the concept of Polycentrism has multiple interpretations, it is often related to a particular pattern of urban growth and, thus, these metrics must not be disregarded.

The category spatial network analysis (a topic also addressed by Haining, Chapter 4.2, and Chaolin, Chapter 4.11, this volume) includes three different subcategories corresponding to different methods: space syntax (Hillier *et al.*, 1976), multiple centrality assessment (Porta *et al.*, 2006b) and other dual graph approaches. Network analysis has been used in geography for a long time (Volchenkov and Blanchard, 2008) with a wide range of research in urban studies since the sixties (Porta *et al.*, 2006a). It consists in representing cities as networks, in which identifiable urban elements (e.g., settlements, locations, intersections) are regarded as nodes in a planar graph and the connections between pairs of nodes (e.g., roads, transport lines) are

represented as edges. After the construction of a graph, it can then be studied using several tools and measures of graph analysis.

A set of metrics – mainly topological centrality measures – can then be extracted from the graph in order to quantify the relative accessibility of each space in the system. In this review, twenty-one spatial network analysis metrics were found in empirical studies. The most commonly used metrics are *connectivity*, *integration*, *intelligibility* and *synergy*, all belonging to space syntax, which is a result of the widespread popularity of this method among planners and urban designers. Further details on spatial network analysis methods can be found in Volchenkov and Blanchard (2008), Porta *et al.* (2006a, 2006b) or Hillier (1996), among others.

The category 'other' includes metrics that cannot be included in any of the four other aforementioned categories. As a result, this category comprises very diverse indicators, from accessibility measures (*bus distance, transit pedestrian access*) to a measure of the proportion of urban development along major roads (*highway strip*), or a metric assessing the degree of monocentricity/policentricity on an urban area (*nuclearity*).

2.3 Spatial statistics

The field of spatial statistics is concerned with the mathematical and statistical descriptors of spatial structures, focusing on the nature of spatial data (Getis *et al.*, 2004). In other words, spatial statistics are metrics based on statistical tools used to assess the distribution of events across space. These metrics are often used in combination with regression analyses and spatial econometric models, but are also used to characterize particular spatial patterns of urban settlements, such as diversity or fragmentation. This literature review found eleven spatial statistics used in empirical studies (six in studies of urban growth and five in other studies focusing on neither growth nor shrinkage), which we divided in four categories (Table 4.4.3).

Regression metrics normally correspond to *density gradients* used to determine the spatial profile of land use change through time, and are often calculated by regressing density against distance from the city centre, using the ordinary least-squares (OLS) method (Torrens, 2008).

The concept of spatial autocorrelation (or spatial dependence) relates to the idea that data from near locations are more likely to be similar than data from more distant locations (Haining *et al.*, 2010; O'Sullivan and Unwin, 2010) (in this volume, Matos (4.6), Bao (4.5) and Haining (4.2)

Table 4.4.3 Spatial statistics metrics organized by categories (the values in brackets correspond to the number of empirical papers using that metric)

Category	*Meaning*	*Metrics*
Regression metrics	Based on regression methods.	Density gradient by OLS regression (1)
Spatial autocorrelation	Measure whether certain attributes are evenly (or randomly) distributed across the urban area or clustered.	Moran's 1 (4) Local Moran (li) (2) Geary coefficient (1) Getis-OrdGi(l) Getis-0rdGi★(1)
Evenness of distribution	Measure the inequality of an attribute distribution.	Gini coefficient (1) Locational Gini coefficient (1) Location quotient (1)
Spatial fragmentation/clustering	Fragmentation of an attribute across different locations	Number of fragments (1) Spatial index (1)

introduce the topic of spatial correlation, which is illustrated in different case studies). Spatial autocorrelation metrics are useful to measure, for instance, urban decentralization patterns – whether certain types of areas (e.g., density, land use types, activities) are evenly (or randomly) distributed across the urban area or clustered – and have been used to study urban sprawl (Torrens, 2008; Tsai, 2005). The *Moran's coefficient (I)* and *Local Moran coefficient (I_i)* were the two most used autocorrelation measures according to the present review. The latter is a local statistic (i.e., descriptive statistics associated with a spatial dataset whose value varies from place to place), which measures data homogeneity and diversity: it is positive where either low or high values of an attribute are near each other, and negative in areas presenting low and high values of an attribute (Anselin, 1995; O'Sullivan and Unwin, 2010).

Evenness of distribution metrics measures the inequality of an attribute distribution (e.g., population or employment) by spatial units in a metropolitan area. For instance, high values of the *Gini coefficient* (i.e., close to 1) mean that population or employment density is extremely high in fewer sub-areas, whereas values close to 0 indicate that these attributes are evenly distributed across the urban area. This metric, however, does not take into account the spatial location of these attributes, contrarily to metrics based on spatial autocorrelation.

Two other metrics were found – *number of fragments* and *spatial index* – that measure the extent to which an attribute (e.g., activity type) is fragmented across different locations. It is important to notice that other metrics and methods of spatial data analysis can be found in the literature on spatial statistics and econometrics (for such review see, e.g., Getis *et al.*, 2004; Haining *et al.*, 2010; O'Sullivan and Unwin, 2010). However, these metrics are, clearly, beyond the nature and remit of this review.

2.4 Accessibility measures

Accessibility still is a very elusive concept, used in many different fields and taking a variety of different meanings. Accordingly, accessibility is operationalized in many different ways, and a wide and diverse set of accessibility measures has been developed throughout the last decades, using different perspectives and methods (Amante *et al.*, 2012; Cerda, 2009; Curtis and Scheurer, 2010; Geurs and Van Eck, 2003).

In this review we found ten different accessibility metrics used in empirical studies, which are spatial-explicit, and therefore relate to urban spatial patterns. Interestingly, all of these were found in studies not directly related to growth or shrinkage. Based on the work of several authors (such as Amante *et al.*, 2012; Geurs and Van Eck, 2003), we divided spatial-explicit accessibility measures in two groups: infrastructure-based measures and activity-based, location-based measures. A third category gathers other accessibility metrics not included in the two mentioned groups (Table 4.4. 4).

Infrastructure-based (or spatial separation) measures evaluate the travel impediment between origin and destination, considering the infrastructures and the transport systems available. These include metrics as simple as the distance between two points, which can be measured using the linear (Euclidian) distance or the real distance across the available network.

Activity-based measures describe the level of access to activities distributed through space. The most used are the *gravity measure* and the *cumulative opportunities measure*. The latter (also called *contour measure* or *isochronic measure*) counts the number of opportunities reachable within a given travel time or distance. The *gravity measure* (or *potential accessibility measure*, as defined by Geurs and Van Eck 2003) proposes a balance between the utility of a destination and its travel

Table 4.4.4 Accessibility measures used in other studies of urban patterns, organized by categories

Category	*Meaning*	*Metrics*
Infrastructure-based measures	Measure the travel impediment between origin and destination	Euclidian distance (5) Network distance (3)
Activity-based location-based measures	Measure the level of access to activities distributed through space, focusing on particular locations	Gravity measures (10) Cumulative opportunities (7) Place rank measure (3) Competition measures (1) Inverse balancing factors (1)
Other		Accessibility index (1) Facility accessibility (1) Comprehensive access, scores (1)

impedance from a given origin, weighting destinations according to their proximity to the point of origin (Cerda, 2009; Curtis and Scheurer, 2010; Geurs and Van Eck, 2003).

It is important to mention that the measures of these two categories can be considered 'types of metrics' rather than metrics *per se*, since each of them can be calculated using several different methods (similarly to the case of the *fractal dimension*, described before).

The category 'other' encompasses other accessibility metrics that consider particular aspects of accessibility, often related to specific case studies. Authors like Curtis and Scheurer (2010) also consider another type of accessibility metrics that they call 'network measures'. In this category they include some of the spatial network analysis metrics presented in previous sections, particularly those defined in the Multiple Centrality Assessment methodology (Porta *et al.*, 2006b).

As emphasized before, it is important to notice that this review did not intend to carry out a thorough assessment of accessibility metrics. Many other methods and measures of accessibility can be found in the more specialized literature, including those focusing on travel behaviour or on socioeconomic characteristics rather than on urban form, and that may also be relevant for urban planning purposes. More comprehensive reviews of this subject can be found in Curtis and Scheurer (2010), Cerda (2009) or Bhat *et al.* (2002), just to name a few.

3. Concluding remarks

The main purpose of this chapter was to carry out a multidisciplinary review of the spatial metrics used for quantitative analysis of urban form. We have divided spatial metrics into four different types: landscape metrics, initially developed by landscape ecologists but increasingly used in urban analysis; geo-spatial metrics, a very diverse set of metrics that have been developed specifically for urban studies; spatial statistics, which were mostly developed for spatial data analysis by statisticians and geographers but are also used in studies of urban growth; and, finally, accessibility metrics, widely used by planners and transport engineers.

Landscape metrics are quite developed in the literature, with a strong and well-documented body of research using these metrics to quantify urban patterns, especially patterns of growth or urbanization. These metrics have been widely applied and tested on different situations and used in a large number of cities around the world (Aguilera *et al.*, 2011; Herold *et al.*, 2005; Huang *et al.*, 2007; Schneider and Woodcock, 2008; Schwarz, 2010; Wu *et al.*, 2011). Their results have

been broadly discussed and their methods are quite standardized, facilitating empirical applications and the comparison of different case studies.

Geo-spatial metrics are by far the most widespread and diverse of the four types of spatial metrics considered here, although a great part of the metrics *per se* are not very developed or widely tested. These include metrics created by many different authors and sometimes specifically designed for a particular case study. These metrics have been normally applied to only one or two case studies, making the comparison of different cities or different contexts more difficult. However, some of these metrics present quite interesting measures of urban patterns, and have the advantage of having been mostly developed specifically for urban studies. Two groups of geo-spatial metrics – metrics from space syntax and from fractal geometry – are somewhat distinct to the extent that, on the contrary, they have been widely applied.

Spatial statistics is a field of study developed mainly by geographers and econometricians that encompasses a great number of methods of spatial data analysis (Getis *et al.*, 2004), and whose thorough literature review was not carried out in this research. Instead we presented a few metrics that have been used in the study of urban patterns (mainly patterns of growth). These metrics were proven to be useful particularly to characterize the evenness/inequality of the distribution of a particular attribute, and to find patterns of spatial clustering or fragmentation of these attributes across an urban area. It is also important to highlight the contribution of spatial statistics as well as of fractal geometry to inspire and provide a theoretical basis for the development of other landscape and geo-spatial metrics widely used by planners and geographers.

Finally, accessibility metrics come from a widely studied research field that covers different issues, from planning-related questions about urban mobility and accessibility to transport and infrastructure-related problems. A thorough literature review on accessibility metrics was also not carried out here, but only an assessment of metrics with an explicit spatial focus. Some of the metrics found in this review appear to be useful to characterize patterns of urban form, notably activity-based measures, which evaluate the spatial distribution of different activities and opportunities across the urban space.

To conclude, this chapter offered a fairly comprehensive overview of spatial metrics applied to the study of urban change, considering both growth and shrinkage contexts. The wide range of metrics already available should be further explored and tested in case studies covering different scales, from metropolitan areas to neighbourhoods, and different purposes, from analysis and diagnosis to planning and urban management.

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Note

1 The fractal dimension in landscape ecology is not the same metric used in applications of fractal geometry (described in the next section). Although these fractal dimensions are based on principles from fractal geometry, the calculation method is quite different.

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4.5
REGRESSION ANALYSIS IN PLANNING RESEARCH

Helen Bao

1. Introduction

Regression techniques are used to model causal relationship between an outcome variable and one or several of its determining factors. When applied to planning research, it can be a useful tool to study a wide range of topics. A quick survey of some recent publications in key planning journals shows that regression methods have been used to investigate the effectiveness of planning policies (e.g., Chellman & Ellen, 2011; Delang & Lung, 2010; Greasley *et al.*, 2011; and Stagoll *et al.*, 2010), the pattern of urban growth (e.g., Deng *et al.*, 2009; and Joseph & Wang, 2010), residential choice behaviours (e.g., Gao & Asami, 2011; Hoshino, 2011; and Kahn & Morris, 2009), trends in urban designs (e.g., Dumbaugh & Li, 2010; and Ryan & Weber, 2007), and environmental issues (e.g., Drummond, 2010; Lubell, *et al.*, 2009; and Schweitzer & Zhou, 2010), to name a few.

Regression techniques work well when relationships are reasonably well defined (either in theory or based on empirical evidences), and data are of good quality and quantity. From a practical point of view, a deep empirical literature or an existing theoretical framework on the subject matter will help researchers specify their regression models correctly. All else being equal, a large dataset always gives researchers better chances to model planning issues accurately. In the appendix a list of planning publications using regression techniques is given for 2010 and 2011. A notable pattern is that most of these studies have a large number of observations and variables in their final models, regardless of the country and planning issues involved.

The basic relationship modelled using regression methods in planning research can be described using equation (1).

$$\textit{Planning Outcome} = f(\textit{Planning Factors, Control Variables}) \quad (1)$$

More specifically, in equation (1) *Planning Outcome* is specified as a function of *Planning Factors* and *Control Variables* (i.e., *Planning Outcome* is determined by both *Planning Factors* and *Control Variables*). For example, to study the effectiveness of a primary school subsidy programme by local governments, the *Planning Outcome* variable could be a school performance score. The *Planning Factor* variable could be an indicator of whether the corresponding school received the

subsidy. *Control Variables* will include all other important determinants of school performance, such as teacher-pupil ratio. Regression methods can be used to estimate equation (1) in order to determine whether and how planning outcome is affected by planning factors, holding other control variables constant. When used appropriately, it is a powerful tool to isolate the net effect of planning policies.

The popularity of the method roots in its sound theoretical foundation and its flexibility in applications. Hence it is important to understand the technical background of regression methods, the procedures of performing a regression analysis, and some practical issues facing researchers in planning studies. The objective of this chapter is to provide a concise overview of key technical details of regression analysis, and a practical guideline on how to apply regression techniques in planning research. For brevity, this chapter will focus on linear regression analysis only. Other types of regression methods, such as non-linear regression, logistic regression, and panel regression, are extensions of standard linear regression techniques. These advanced topics will be left to the readers to explore when linear regression techniques are inadequate or inappropriate for their analysis.

The rest of the chapter is organized as follows. Section 2 covers the concept of linear regression and the estimation of linear regression models using the ordinary least squares (OLS) method. Some practical issues with regard to the application of linear regression methods in planning research are discussed in Section 3. Section 4 concludes.

2. Linear regression models and ordinary least squares (OLS)

2.1 OLS explained

Linear regression models reveal a causal relationship between a *dependent variable* (*Y*) and *independent variables* (*X*s). The dependent variable is the effect, and is placed in the left-hand side of the model. Independent variables are the causes, which show up in the right-hand side of the model. In linear regression models the rate of changes of Y in response to one unit change in *X* remains constant (i.e., a linear relationship). For example, a researcher would like to study the relationship between planning policy effectiveness and local government's fiscal capacity. The following linear regression model was established.

$$PEI = 20 + 0.04HI \tag{2}$$

where *PEI* is a policy effectiveness index that takes a value from 1 to 100, and *HI* is the average monthly household income in pounds (serving as an indirect measurement of local fiscal capacity). In this example *PEI* is the dependent variable and *HI* is the independent variable.

According to the model, when average monthly household income increases by one pound, the policy effectiveness index will increase by 0.04 points. More specifically, when *HI* increases from 1,000 pounds to 1,001 pounds or from 1 pound to 2 pounds, the changes in *PEI* will be the same. The relationship is illustrated in Figure 4.5.1. Note that the relationship resembles a straight line (i.e., a linear relationship).

If, however, the researcher suspects that in the higher income range *PEI* will be less responsive to changes in *HI*, equation (2) will not be appropriate. Consequently, the first question to ask before establishing a linear regression model is 'Are the two variable linearly related?' If the answer is 'no', either alternative approaches (non-linear regression, for example) should be adopted, or variables should be transformed. Non-linear regression is beyond the scope of this chapter. Discussions on variable transformations can be found in Section 2.4.

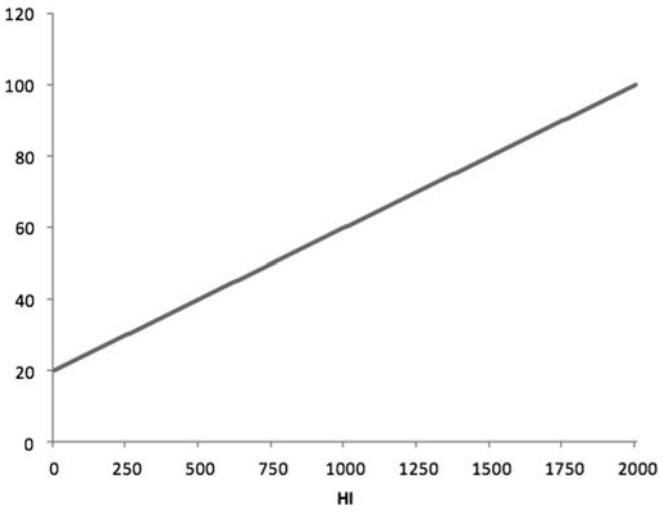

Figure 4.5.1 Relationship between PEI and HI.

A linear regression model is found by minimizing the average differences between the predicted values by the regression model and the observed value of *Y*. Suppose we want to estimate a regression model of *Y* using two independent variables X_1 and X_1. The unknown regression model is

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \varepsilon \tag{3}$$

where β_0 is the value of *Y* when all independent variables equal zero, β_1 and β_2 are coefficients to be estimated, and ε accounts for the variability in *Y* that cannot be explained by the linear relationship between *X*s and *Y*.

Equation (3) can be used to reveal the relationship, if any, between *Y* and each of the two explanatory variables, and to forecast the value of *Y* given the value of X_1 and X_2. β_i determine the relationship between *Y* and X_i(i =1 or 2 in this example), after the effect of other independent variables is controlled for – for example, if β_1=0X_1 and *Y* have no linear relationship because *Y* does not change when X_1changes. If β_1>0 (< 0), X_1 and *Y* are positively (negatively) related because the two variables change in the same (opposite) direction, net of the effect of X_2. In other words, β_1 captures the 'net' effect between X_1 and *Y*, because the impact from X_2 is reflected in β_2. If X_2 is omitted from (3), the estimated value of β_1 could be misleading as it may contain the combined effect of $X_1$and X_2.

Based on the foregoing discussion, it is important to include all of the determinants of *Y* in a linear regression model in order to correctly identify the effect of *each* included independent variable. Choosing the right set of variables is a challenging task, and some selection algorisms will be helpful. This is discussed in the 'Variable selection' section in the later part of this chapter.

We need to find the estimates of β_0, β_1, and β_2 so that the relationship between Y and its determinants can be identified, and a prediction can be made. The estimated model

$$\hat{Y} = b_0 + b_1 X_1 + b_2 X_2$$

should have the smallest *Sum Squared Residuals* (*SSR*) as measured by the following formula.

$$SSR = \sum_{i=1}^{n}\left(Y_i - \hat{Y}_i\right)^2 = \sum_{i=1}^{n}\left(Y_i - b_0 - b_1\ X_{1i} - b_2\ X_{2i}\right)^2$$

The value of b_0, b_1, and b_2 can be found by minimizing *SSR*. The technique is called the ordinary least squares (OLS) method. All statistical software packages have procedures for OLS estimation. The information reported is fairly standard. The student *t* test (or *t* test in short) is the statistical tool to detect linear relationships between *Y* and each of the *X*s. The *null hypothesis*[1] of a *t* test is 'the corresponding independent variable is not linearly related to *Y*'. In a statistical test, the null hypothesis is the 'default state' that can be either accepted or rejected. If the *p-value* of a *t* test is smaller than the selected significance level, the null hypothesis should be rejected, and the corresponding variable should be kept in the model.[2] The procedures of *t* test are described in Figure 4.5.2.

The following example gives a standard regression output using Excel, and the procedures to interpret coefficient estimates.

To estimate the implicit value of buildings' energy performance, the following regression models were estimated using house prices (*PRICE*) as the dependent variable, and an energy performance rating (*EP*) as the independent variable. In this example *EP* takes a value from 0 to 100, with 100 as the best energy performance rating. The model to be estimated is given as equation (4).

$$PRICE = \beta_0 + \beta_1 EP + \varepsilon \tag{4}$$

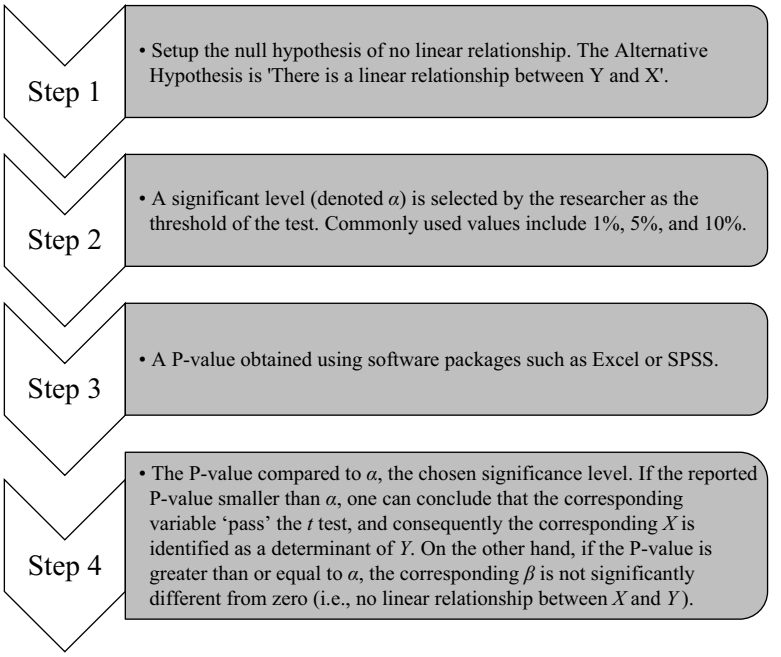

Figure 4.5.2 Procedures of the Student t test.

Table 4.5.1 Excel output for equation (4)

Regression Statistics					
Multiple R	0.21				
R Square	0.05				
Adjusted R Square	0.04				
Standard Error	277,934.42				
Observations	219.00				
ANOVA					
	df	*SS*	*MS*	*F*	*Significance F*
Regression	1.00	802,698,659,607.90	802,698,659,607.90	10.39	<0.01
Residual	217.00	16,762,716,754,206.70	77,247,542,646.11		
Total	218.00	17,565,415,413,814.60			
	Coefficients	*Standard Error*	*t Stat*	*P-value*	
Intercept	–760,044.83	353,877.75	–2.15	0.03	
EP	12,223.27	3,791.87	3.22	<0.01	

Using Excel Data Analysis Add-ins (Regression), the regression model was estimated and the output is given in Table 4.5.1. The value of β_0 and β_1 are -760,044.83 and 12,223.27 respectively (in the column labelled 'Coefficients'). The *P-value* of the *t* test for *EP* is less than 0.01. At the significance level of 5 per cent, the variable passed the *t* test. Therefore one can conclude that a significant linear relationship between *PRICE* and *EP* is identified. When energy performance rating increases by one point house prices will increase by 12,223.27 pounds on average. Note that if the *P-value* is greater than or equal to 5 per cent in this example, the conclusion would be that *EP* has no impact on house prices, or homebuyers are not willing to pay extra for houses with better energy performance.

2.2 Model evaluation

Regression models need to be evaluated before putting them into use. Poorly estimated models can provide misleading information for decision makers. The first step in model evaluation is to check the overall model fitting (i.e., whether the model provides a reasonably good estimation and prediction). The following tools are commonly used for this purpose.

1 *R Square*

R Square measures how much variation in *Y* can be explained by *X*s using the estimated regression model. Its value is between 0 and 1, with 1 indicating a perfect model, and 0 for a completely useless model. The acceptable range of *R* Square varies across areas. One should always consult relevant literature and/or experts in the field for appropriate benchmarks.

2 *Adjusted R Square*

R Square has an inherent shortcoming – it always increases when new variables are added to the regression model, even if those variables do not add any values to the estimation. Hence if *R* Square is used to compare models with different sets of independent variables, models with

more variables are often selected. But those models are not necessarily the best ones. To solve this problem, Adjusted *R* Square is introduced by taking into account of the number of independent variables. Adjust *R* Square will increase only if the added variables make significant contributions to the model estimation. It is useful when comparing several regression models.

3 *F test*

The null hypothesis of an a*F* test is that all coefficient estimates equal zero (i.e., none of the independent variables has a linear relationship with *Y*). *F* test is used to answer the question 'is the model is completely useless?' It is equivalent to a test of 'R Squares is zero'. When the p-value of the test is smaller than the selected significance level, the aforementioned null hypothesis can be rejected, and one can conclude that the model is useful.

If a model passed its *F* test, it means that at least one of the included independent variables has a linear relationship with *Y*. But *F* tests cannot tell which one it is. We need to use the student *t* test to identify the determinants of *Y*. More often than not, not all variables in the data set are important in determining the value of *Y*. These 'useless' variables can cause problems and should be removed from the model. Hence selecting the correct set of independent variables is an important step in regression analysis.

2.3 Variable selection

In practice researchers often have more than one independent variable at their disposal. Appropriate statistical tools and selection algorisms should be adopted to decide the correct set of independent variables to be included. The presence of unimportant (i.e., statistically insignificant) variables or absence of important variables may cause misleading coefficient estimates. The following example illustrates the aforementioned problems.

Using the economic prices of good energy performance rating examples again, the researcher obtained additional variables to construct two more regression models. The specification of the three regression models are given here.

$$\text{Model 1}: PRICE = \beta_0 + \beta_1\ EP + \varepsilon$$
$$\text{Model 2}: PRICE = \beta_0 + \beta_1\ EP + \beta_2\ SIZE + \varepsilon$$
$$\text{Model 3}: PRICE = \beta_0 + \beta_1\ EP + \beta_2\ SIZE + \beta_3 NEW + \beta_4\ FAST + \beta_5 DIST + \varepsilon$$

where *SIZE* is the floor space of the property in squared metres, *NEW* equals one if the property is a new build, *FAST* equals one if the property is near a fast train link, and *DIST* is the distance to the nearest primary school in metres.

The regression outputs are summarized in Table 4.5.2. In Model 1 the *R* square is merely 0.05, which indicates a poor fit of the data. *EP* explained only 5 per cent of the variation in *PRICE*. One cannot put much faith into this model for either predicting housing prices or for estimating the marginal price of buildings' energy performance. Once *SIZE* is added to the regression model, the regression output is changed significantly. First of all, *R* square is improved by more than 85 per cent. This is not surprising as house size is an important determining factor of house prices. It is reasonable that *SIZE* is able to explain about 85 per cent of the variation in *PRICE*. Secondly, *EP* is insignificant at the 5 per cent significance level now (i.e., *P-value*=5%). This is because by omitting *SIZE*, Model 1 is mis-specified, and the coefficient

Table 4.5.2 Regression using PRICE as the dependent variable

	Model 1		*Model 2*		*Model 3*	
	Coefficients	*P-value*	*Coefficients*	*P-value*	*Coefficients*	*P-value*
Intercept	–760,044.80	0.03	–259,704.70	0.02	–186,727.30	0.12
EP	12,223.27	<0.01	2,375.48	0.05	1,492.33	0.25
SIZE	—	—	4,762.12	<0.01	4,746.35	<0.01
NEW	—	—	—	—	26,545.81	0.20
FAST	—	—	—	—	4,088.92	0.73
DIST	—	—	—	—	5.72	0.60
R Square	0.05		0.91		0.92	
Adjusted R Square	0.04		0.90		0.89	
F test statistic	10.39		1,038.22		464.12	
F test P-value	<0.01		<0.01		<0.01	

estimate is misleading. Model 1 indicates that *EP* is an important variable in determining the value of *PRICE*. However, based on Model 2, which is more reliable given a much higher *R* square, the linear relationship between *EP* and *PRICE* cannot be established. In Model 3, the researcher added three more independent variables. However, none of these variables passed the *t* test at the 5 per cent level. If we use R Squares to compare Model 2 and Model 3, we will select Model 3 because its *R* Square is larger. However, the Adjusted *R* Square of Model 3 is smaller. This is because some useless variables are added to the model. Variables *NEW, FAST*, and *DIST* cannot pass their *t* tests, and hence should not be included in the regression model. This is a good example of problems associated with including unnecessary variables in regression models.

Of course, one should not remove all insignificant variables at once (e.g., remove *EP*, *NEW*, *FAST*, and *DIST* in one step). This is because the calculation of *p-values* uses information of all variables included in the regression model. If one variable is removed, values of *p-value* of the remaining variables will be affected, and some of them may turn out to be significant. However, finding the best model by checking variables one at a time can be a fairly tedious procedure, especially when a large number of independent variables are involved. Almost all statistical software packages have procedures to perform these tasks automatically. Excel, unfortunately, does not have this feature so far. Figure 4.5.3 summarizes the three most commonly used variable selections algorithms. The backward elimination method starts with a full model (i.e., a model with all variables available), and removes one insignificant variable at a time. The forward selection method works in just the opposite way. Both methods adopt a 'one-way only' approach, meaning that once a variable is removed (added), it will never be added in (removed from) the model. Consequently the final models resulting from these algorithms may contain insignificant variables (if forward selection is used), or overlook some important factors (if backward elimination is used). The stepwise regression method, on the other hand, addresses these drawbacks by allowing variables to re-enter or exit the model at any stage of the selection process. Consequently this is the most popular method among the three.

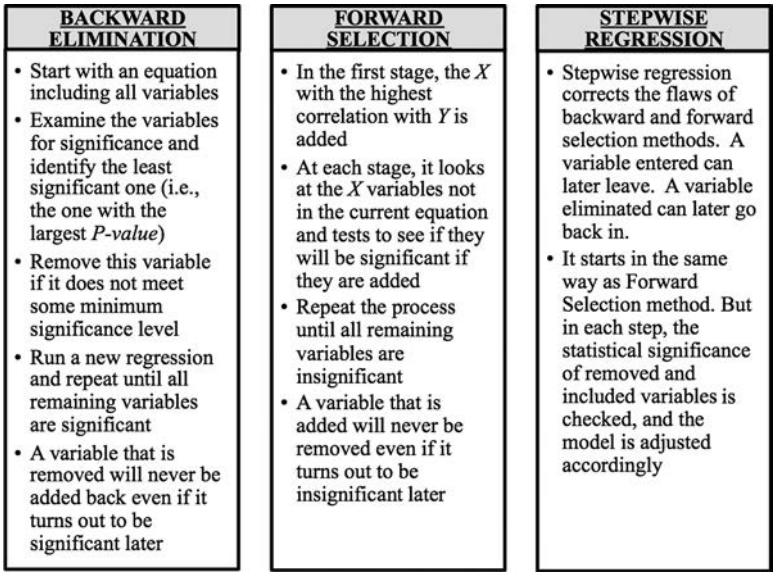

Figure 4.5.3 Variable selection algorithms in linear regression analysis.

2.4 Data transformation

As mentioned in the first session of this chapter, linear regression analysis starts with an assumption that the relationship between Y and its determinants is linear. This does not limit the application of the linear regression method when non-linear relationships are involved. By transforming the original variables, the non-linear relationship can be modelled. This is because the linear regression method requires only '*linear in parameters*', not '*linear in variables*'.[3] For example, in equation (5) *Y* and *X* are not linear in variables (i.e., they are not linearly related). But *Ln*(*Y*) and *X* are linearly related and the corresponding parameter can be estimated by the linear regression method. Hence *Y* and *X* are linear in parameters.

$$\ln(Y) = \beta_1 + \beta_1 X + \varepsilon \tag{5}$$

An examination of the scatter plot between *Y* and each of the independent variables may be helpful in determining whether transformation is needed. Figure 4.5.4 gives some useful function forms with transformations and examples of their corresponding scatter plots. Note that all patterns except for the first plot show a non-linear relationship between *Y* and *X*. However, the models for all six cases are in linear form, and can be estimated using the OLS method. When used properly, linear regression models can be used to model a wide range of non-linear relationships. Figure 4.5.4 gives only a fraction of all the possible cases.

It's worth noting that when coefficients take different values, patterns can look rather different from the ones shown in Figure 4.5.4. Moreover, when *Y* is affected by more than one independent variable, scatter plots between *Y* and only one independent variable are unlikely to be informative. In practice, the determination of transformation needed is often an empirical issue. Researchers try several functional forms with different transformations, and choose the one that fits the data the best.

In planning research, natural log transformation and quadratic transformation have the widest application. For example, in Chellman *et al.* (2011), the school enrolment variable was log

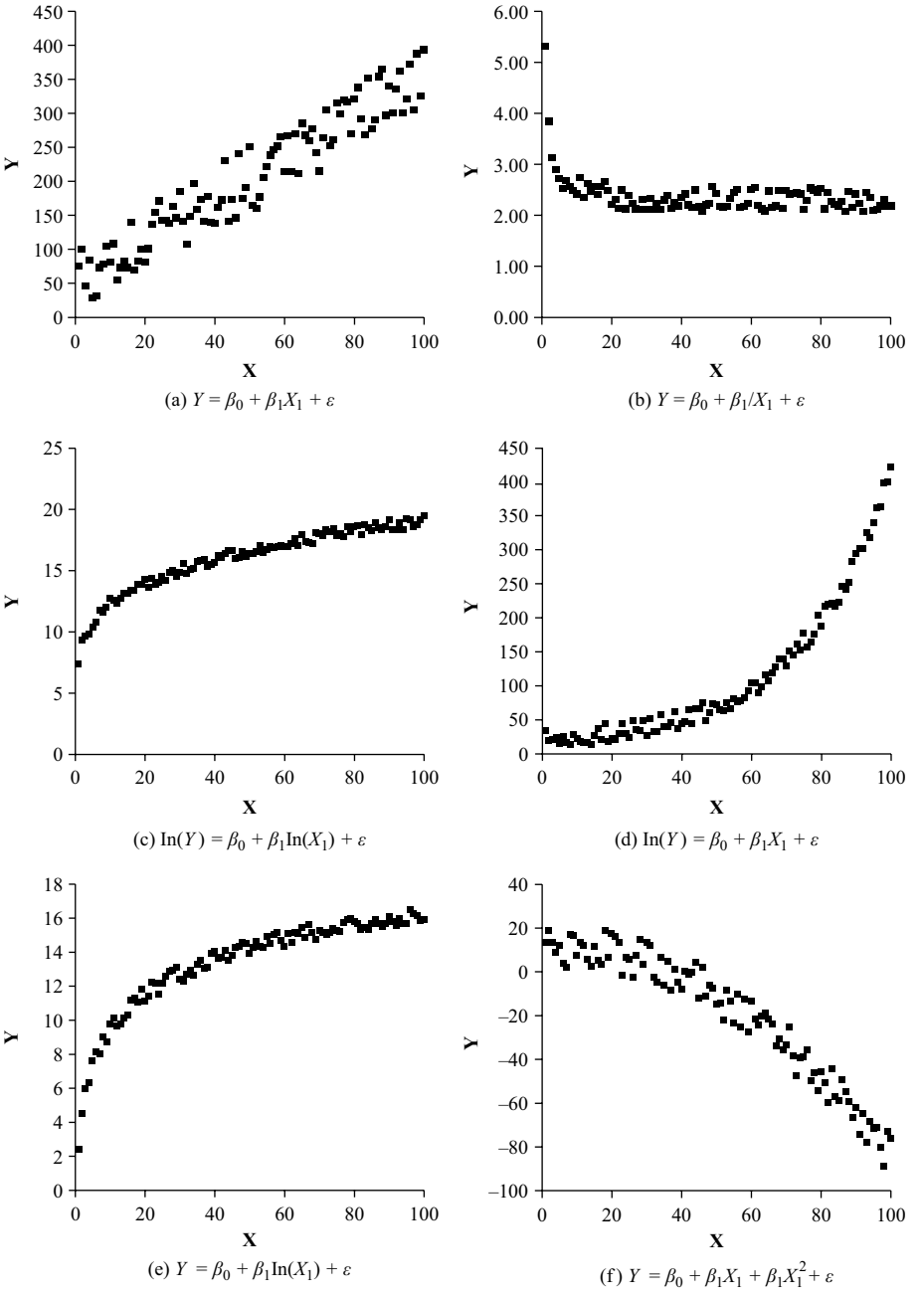

Figure 4.5.4 Useful transformations.

transformed. When natural log transformation is used, the transformed variable (dependent or independent) is viewed as a percentage change measurement of the original variable. The interpretation is changed accordingly. Table 4.5.3 gives examples of coefficient interpretation of different types of log transformations.

Table 4.5.3 Coefficient interpretation in regression models using natural log transformation

Functional Form	*Interpretation*	*Example*
$\ln(Y) = \beta_0 + \beta_1 X_1 + \varepsilon$	When X changes by one unit, Y changes by $100 \times \beta_1$ per cent.	• $\ln(Y) = 10.21 + 0.007X$ • When X increases by one unit, Y increases by 0.7 per cent.
$Y = \beta_0 + \beta_1 \ln(X_1) + \varepsilon$	When X changes by 1 per cent, Y changes by $\frac{\beta_1}{100}$ unit.	• $Y = 54.7 + 712 \ln(X)$ • When X increases by 1 per cent, Y increases by 7.12 units.
$\ln(Y) = \beta_0 + \beta_1 \ln(X_1) + \varepsilon$	When X changes by one per cent, Y changes by β_1 per cent.	• $\ln(Y) = 56.71 + 3.34\ln(X)$ • When X increases by 1 per cent, Y increases by 3.34 per cent.

Natural log transformation is necessary when the variation of *Y* gets larger as the value of *X* increases. It is also useful when a variable has a fat right tail in its distribution (e.g., there are some large outliers). Therefore, by constructing scatter plots between *Y* and each of the independent variables or histograms, one can decide whether a natural log transformation is needed. Natural log transformation is done by using function LN() in Excel. Note that we use only natural log transformation in linear regression analysis. Log transformations using other bases do not give the same coefficient interpretation in Table 4.5.3.

Quadratic transformation is the creation of the second-order term (i.e., the squared values) of a variable. This type of transformation is routinely used to model a non-linear relationship or in trend analysis, which is a standard way of looking at long-term trends in data. A general quadratic model is

$$Y = \beta_0 + \beta_1 X + \beta_2 X^2 + \varepsilon \tag{6}$$

When *X* is a time index (e.g., *X*=1 in the first period, and so on), equation (6) is a trend model. By varying the values of β_1 and β_2 different types of trend patterns evolve, as shown in Table 4.5.4. This allows a wide range of non-linear patterns to be modelled using linear regression models.

Using the energy performance example again, this application of natural logarithm and quadratic transformations is illustrated here.

A scatter plot between *PRICE* and EP, and histograms of the two variables are given in Figure 4.5.5. In the scatter plot *PRICE* initially increases as *EP* improves, but then decreases after *EP* goes beyond 94. This is similar to case (e) in Table 4.5.4. A quadratic transformation of *EP* could be useful in this case. The histogram of *PRICE* indicates a natural log transformation may be helpful, as there are some outliers present. Based on the analysis of these charts, we can try a natural log transformation on *PRICE* and quadratic transformation on *EP*.

For comparison purposes, two regression models were estimated as follows.

$$\text{Model 4}: LNPRICE = \beta_0 + \beta_1\ EP + \beta_2\ SIZE + \beta_3 NEW + \beta_4\ FAST + \beta_5 DIST + \varepsilon$$

$$\text{Model 5}: LNPRICE = \beta_0 + \beta_1\ EP + \beta_2 EP^2 + \beta_3 SIZE + \beta_4 NEW + \beta_5 FAST + \beta_6 DIST + \varepsilon$$

Table 4.5.4 Types of trend models

Case	β_1	β_2	*Trend*
a	0	0	No trend
b	+	0	Straight-line long-run growth
c	–	0	Straight-line long-run decline
d	+	+	Non-linear, growth at an increasing rate
e	+	–	Non-linear, growth at a decreasing rate
f	–	+	Non-linear, decline at a decreasing rate
g	–	–	Non-linear, decline at an increasing rate

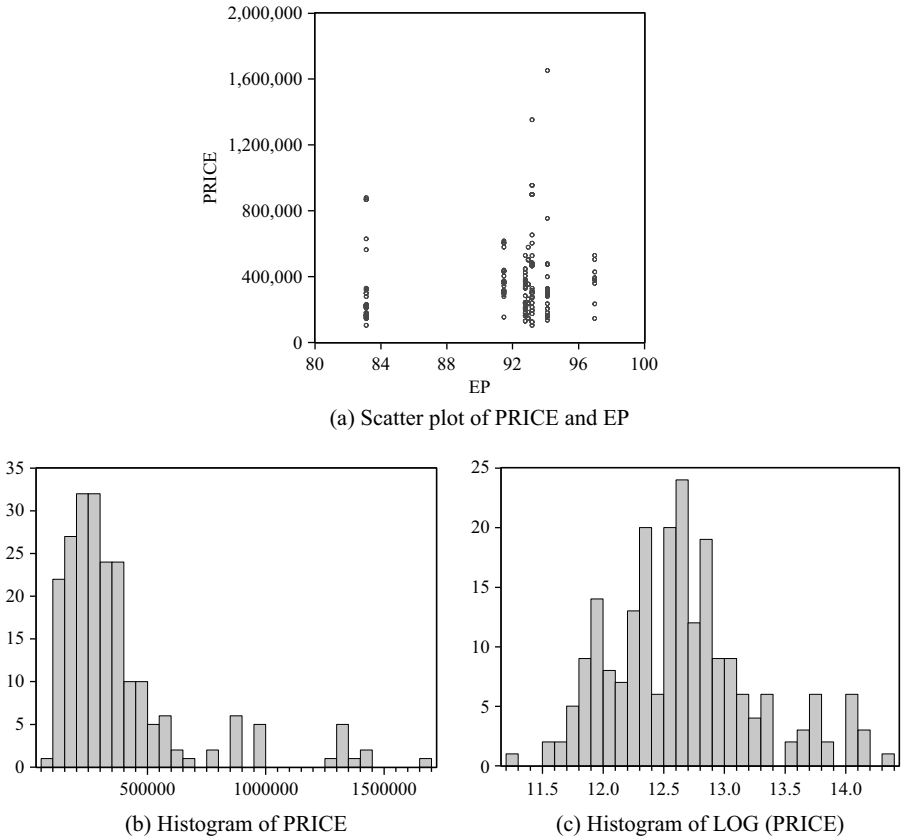

Figure 4.5.5 Scatter plot and histograms of PRICE and EP.

Model 4 has an *R* square of 83.55 per cent. This is a good fit of the data. Nevertheless, it is not appropriate to compare the *R* squares between Model 3 and Model 4. This is because the dependent variables in the two models are different. Hence it is incorrect to say that Model 4 is outperformed by Model 3 by 9 per cent (i.e., 92 per cent – 83 per cent).[4]

Table 4.5.5 Regression using LN(PRICE) as a dependent variable

	Model 4		*Model 5*	
	Coefficients	*P-value*	*Coefficients*	*P-value*
Intercept	11.5710	0.0000	–0.3975	0.9317
EP	0.0021	0.5579	0.2652	0.0097
EP2	–	–	–0.0014	0.0103
SIZE	0.0096	<0.0001	0.0096	<0.0001
NEW	–0.0529	0.3616	–0.0042	0.9444
FAST	0.0643	0.0567	0.0647	0.0520
DIST	0.000028	0.3631	0.000038	0.2088
R Square	0.8355		0.8406	
Adjusted R Square	0.8316		0.8360	
F test statistic	216.38		186.27	
F test P-value	<0.001		<0.001	

The coefficient estimates are different in Model 4. This is because the natural log transformation of *PRICE* changes the meaning of these coefficients. For example, the coefficient estimate of *SIZE* is 0.0096 now. It indicates that for each squared metre increase in size, house prices will increase by 0.95 per cent on average. This is a non-linear relationship between *PRICE* and *SIZE*, because the same percentage of changes in *PRICE* is different across the value range of *PRICE*. More specifically, for larger houses an increase of size by one squared meter will cause house prices to increase more in absolute value (albeit by same percentage). This type relationship is illustrated in case (d) in Figure 4.5.4.

In Model 5, it is assumed that as energy performance score increases the percentage changes in *PRICE* will increase, but at a decreasing rate. Results are given in the last two columns of Table 4.5.5.

Model 5 offers improvement over Model 4, as evident from the increased *R* Square and significant *t* test results for the second-order term of *EP*. The results also support our assumption. House prices appreciate as *EP* increases (i.e., the coefficient estimate of *EP* is positive) but the rate of change slows down (i.e., the coefficient estimate of squared *EP* is negative).

2.5 Diagnostics tests

The simplicity of OLS comes with a price. There are some strong assumptions on the error term ε in OLS estimations. If any of these assumptions is violated, the OLS results could be misleading. The solution is to put the model through a series of tests to check if these assumptions hold. It is also the convention to check if the model suffers from *mis-specification* (e.g., a non-linear relationship is not accounted for) and *multicollinearity* (e.g., independent variables are highly correlated) issues. Commonly used diagnostics tests for OLS models are summarized in Table 4.5.6. Most statistical software packages can perform these tests. For statistical properties of the tests Wooldridge (2009) is a good textbook to consult. A good example of applications of these tests can be found in Greasley (2011).

Table 4.5.6 Diagnostics tests

Assumptions/issues	*Corresponding statistical test or statistics*
Error terms are not serially correlated	DW test, LM test
Error terms have constant variance	White heteroscedasticity[1] test, Breusch-Pagan-Godfrey test
Error terms are normally distributed	Normal probability plot, Jarque-Bera test
Misspecification	Ramsey RESET test, Chow's Breakpoint Test
Multicollinearity	Variance Inflation Factors (VIFs) statistics

[1] Heteroscedasticity means that error terms do not have constant variance

3. Practical issues

Planning outcomes can be measured directly or indirectly. For example, a local government introduced a congestion charge in certain parts of the city to reduce traffic and air pollution in the city centre. The effect of this policy can be measured directly by observing the changes in traffic and air quality in affected areas, or indirectly by testing if property prices in the city centre increased after the implementation of the restriction. In the latter case, the assumption is that properties away from the city centre will be sold at a discount to compensate the congestion charge generated by driving to the city centre, all else being equal.

When planning outcomes are measured directly, regression techniques are often used to identify the net policy impact. Considering the congestion charge example again, a researcher can obtain air quality changes after the policy comes into force. However, during the sample period other factors affecting air quality are not likely to remain constant. If their values change as well, the observed air quality changes contain more than policy effects. By regressing the planning outcome variable (i.e., air quality changes) on both the policy factor (e.g., a variable equals one for areas affected by the charges, and zero otherwise) and other control variables (e.g., wind speed, temperature), the effect of congestion charge will be estimated accurately.

When direct measurement is not available, changes in property or land prices are often used as a proxy of planning outcomes. Regression analysis using property or land prices as dependent variables is also called hedonic price modelling (HPM). The theoretical underpinnings of HPM were first established by Rosen (1974), by which the prices of durable goods are associated with economic values of individual attributes. There is a sizable literature of planning studies using HPM. For example, Bartholomew and Ewing (2011) critically evaluated hedonic price studies on the values of pedestrian- and transit-designed development; Machin (2011) surveyed the literature of hedonic valuation of good schooling.

There are several issues facing planning researchers with respect to HPM.

3.1 Omitted variable bias

Properties are complex goods, whose values are determined by a myriad of attributes. If any one of these price determinants is missing from the hedonic price model, planning policy effect estimation could be biased. This is called omitted variable bias. The magnitude and the direction of omitted variable bias depend on the covariance between omitted variables and planning factors included in the model, and the coefficient of omitted variables. Hence it is not straightforward to estimate or adjust omitted variable bias.

When omitted variable bias is suspected, a review of empirical literature is always helpful to identify any important variables missing from the model. If information on one important variable is unavailable in the dataset, the planning factor's coefficient estimate may still be unbiased as long as the omitted variable is not significantly correlated with the included planning factor. For instance, if *SIZE* is missing from Model 5, the coefficient estimate of environmental performance rating variables will not be affected if *SIZE* and *EP* are not correlated. If, however, there are empirical evidences showing that larger houses tend to have poorer energy performance scores, *EP* and EP^2's coefficient estimates may be biased, and should be interpreted with caution. The researcher should either collect data for the missing variable or use proxies. If no new information is available, readers should be warned that the regression results may be misleading.

3.2 *Mis-specification*

Linear relationship is only one of many possible relationships between planning outcomes and their determining factors. For example, it is established that property prices are non-linearly related to size and age. The convention is to include the second-order terms of these variables to capture any non-linear patterns. The relationship regarding other factors, however, is not as well established. When a variable enters the model with a wrong functional form (e.g., a quadratic term is missing), mis-specification bias may present. The HPM will produce unreliable coefficient estimates and test results.

The *Ramsey RESET test*[5] is commonly used to detect mis-specification problems. If the test results turn out to be significant, the model needs to be adjusted. This is often an empirical issue. Planning researchers need to run several plausible data transformations (e.g., square, logarithms) before the best functional form can be determined.

3.3 *Multicollinearity*

Housing attributes are often correlated. For example, house size largely determines the number of bedrooms and bathrooms. When the correlation among independent variables is significant (e.g., sufficiently large), both coefficient estimates and hypothesis testing results are adversely affected. More specifically, the regression technique is not capable to separate the effects of correlated variables, and the standard error of coefficient estimates will be inflated. In some extreme cases, a model may have a significant *F* test result, which means at least one independent variable is useful, but with insignificant *t* test results for all independent variables. The contradictory findings are a classic sign of multicollinearity problems. When multicollinearity is serious, some coefficient estimates may have signs that are opposite to what is suggested in theories or empirical literature. This will cause confusion and difficulties in results interpretation.

To detect multicollinearity problems, variance inflation factors (VIFs) are often calculated for each independent variable. VIF is a measurement of multiple correlation between an independent variable and all other regressors. The rule of thumb is that if a variable's VIF is greater than 5 there is potentially a harmful multicollinearity problem.

If a variable is found to be highly correlated to other independent variables, it should be replaced with a different measurement of the same housing attribute, but with lower correlation with the rest of the regressors. If such a variable is not available, the solution is usually to simply drop the problematic variable from the model.

4. Summary

The multiple linear regression method is a useful tool to identify linear relationships between a variable and a group of factors affecting its values. In this chapter we introduced the OLS method for linear regression estimation and its applications in planning research. Some practical issues regarding hedonic price modelling of planning issues were also discussed. The procedures of a standard linear regression analysis are summarized in Figure 4.5.6.

A final note to be made is the analysis of time series data. It is worth noting that the OLS method should be used for cross-sectional data. When applied to time series data, some OLS assumptions, such as zero serial autocorrelation, are often violated. Time series data are often not stationary (i.e., the mean, variance, and covariance are not constant over time). This will give rise to spurious regression results when OLS is used. The rule of thumb is if a model's R square is greater than its DW test statistic, there are potentially spurious regression problems. Some standard tools, such as the Unit Root test, can be used to check the stationarity of the data. The OLS method can be used if time series are stationary or co-integrated. Planning researchers should be aware of the limitations of linear regression techniques in time series analysis. The test of stationarity and time series analysis techniques are beyond the scope of this chapter. Interested readers can find some less maths-intensive materials on this topic in Wooldridge (2009).

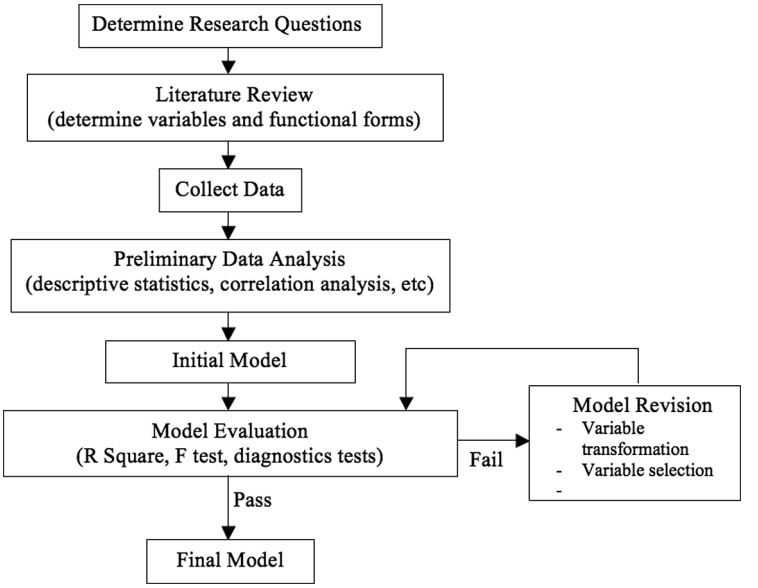

Figure 4.5.6 Suggested steps for regression analysis.

Appendix

Table 4.5.A1 Selected publications in planning research that used regression techniques (2010–2011)

Paper	*Journal*	*Country*	*Sample size*	*Number of variables in final model*	*Planning issues studied*
Chellman *et al.* (2011)	Journal of the American Planning Association	USA	5592	16	Subsidized Housing
Delang & Lung (2010)	Urban Studies	HK	174	12	Public Housing Policy
Dumbaugh & Li (2010)	Journal of the American Planning Association	USA	938	10	Urban Design - Safety
Gao & Asami (2011)	Habitat International	China	264	12	Urban Design - Preference
Greasley *et al.* (2010)	Urban Studies	UK	53	9	Urban Outcome and Local Government
Hoshino (2010)	Urban Studies	Japan	341	6	Urban Design - Preference
Joseph & Wang (2010)	Cities	Haiti	670	8	Urban Structure - Population Density Patterns
Lewis & Baldassare (2010)	Journal of the American Planning Association	USA	3023	21	Urban Design - Density
Stagoll *et al.* (2010)	Landscape and Urban Planning	Australia	80	6	Urban Design - Conservation
Yusof &Shafiei (2011)	Housing Studies	Malaysia	118	4	Urban Design - Innovation

Notes

1 A statistical test always has two hypotheses – a null hypothesis and an alternative hypothesis. These two hypotheses are collectively exhaustive and mutually exclusive. For example, a test has a null hypothesis of $\beta = 5$ and an alternative hypothesis of $\beta \neq 5$. The two hypotheses do not have anything in common (mutually exclusive), but include all possible values for β (collectively exhaustive). This ensures a conclusion can be drawn (i.e., whether β equals five or not) at the end of test. Therefore it is important to make one of the hypotheses exactly what one wants to test so that the research question can be answered by the end of hypothesis testing.
2 The definition and calculation of *p-value* requires some statistical background. Interested students are advised to read relevant chapters in statistical textbooks. In a nutshell, *p-value* is calculated based on the assumption that the null hypothesis is true. If *p-value* is too small, one can conclude that the assumption is not valid, and consequently reject the null hypothesis.
3 Linear in variables means original variables (without being transformed in any way) are linearly related, and linear in parameters means the transformed variables are linearly related.
4 *R* square measures the percentage of variation in Y captured by all independent variables in a regression model. If the dependent variable is different in two models, their variance (i.e., the variation) will be different too. This makes the comparison of *R* square based on 'unlevelled ground'.
5 This test is designed to identify any missing non-linear relationship in the model (e.g., a missing second-order term). The null hypothesis in a RESET test is that the model is correctly specified. If the null hypothesis is rejected, it is often helpful to check if any higher-order term or cross-terms (i.e., product of two independent variables) are missing from the model.

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4.6
SPATIAL ECONOMETRICS IN PRACTICE

Pedro Pires de Matos

Space in econometrics

Space is a fundamental dimension of planning. Most of the subjects that planners work with are geographically bounded or exhibit some degree of interaction that has spatial ramifications, from the larger units such as countries and regions down to the micro-level of firms, households and individuals. In a similar fashion, these subjects are also temporally bounded, in that they are embedded in a timeline that defines past, present and future. Researchers working in the fields of economic growth, labour economics and finance, to name only a few, have long since incorporated the effects of serial correlation (or autocorrelation, i.e. observations being correlated with themselves over specific time intervals) in their theoretical and empirical models.[1] They do so because it is logical to assume that past events and actions often influence current and future behaviour. Some of the mechanisms driving serial correlation include persistence, cyclical patterns and path dependency (i.e. current decisions being constrained by past decisions, or "history matters"). In short, many agents have memory, so that their past behaviour helps to understand their current actions and informs about their likely future decisions.

To an extent, spatial econometrics is the space equivalent of time series econometrics. It is concerned with modelling the interactions that take place across space much in the same way as time series methods model the interactions that take place over time. It consists of a collection of methods that acknowledges the relevance of spatial interaction between agents in causality models.[2] Time series provides a set of tools to deal with models that violate the assumption of independence of observations due to serial correlation. Spatial econometrics performs an equivalent task with respect to models that violate the assumption of independence due to spatial patterns. Spatial patterns can be decomposed into spatial structure (i.e. spatial heterogeneity), whereby groups arise when units share some common characteristics (e.g. municipalities in a country being clustered by larger administrative regions), and spatial dependence (i.e. spatial autocorrelation), characterising the strength of association between units as a function of relative location.[3] Units are very rarely homogeneously distributed across space. First and foremost, location has been strongly associated with landscape and resources, which are unevenly distributed. This irregularity gives rise to particular occupation patterns, which in turn lead to the creation of poles, channels and other location phenomena exhibiting varying intensities of interaction

among its subjects. Furthermore, overcoming distance is still a non-trivial affair, so that proximity continues to play a major role in many socioeconomic phenomena, irrespective of increasing globalisation. Commuting is an example of a spatial dynamic that creates strong links between units such as regions. This dynamic is bounded by what is deemed an acceptable daily travelling distance, time or cost. Finally, even if space is assumed regular and distance is overlooked, different individual idiosyncrasies lead to different patterns of association, which in turn materialise into spatial dependence patterns. Production linkages are an example of relationship networks that bind locations together. It is, therefore, reasonable to assume that relative position in space matters.

From a theoretical standpoint it is logical to model these spatial interactions explicitly. After all, who my neighbours are is likely to affect who I am, and what my neighbours do is likely to affect what I do. Agent-based models (i.e. models that assess the impact on complex systems of the behaviour of their constituent autonomous agents) and hedonic pricing models (i.e. revealed preference models whereby the characteristics of a good or service determine its value or demand) are prime examples of contexts where responses in one location are likely to be influenced by and influence responses in other locations (e.g. housing prices in one location are pushed up by high housing prices in the neighbourhood given demand spillovers by high-income families looking to move to the "selective" area). From an empirical standpoint, it is also wise to account for spatial interaction in causality models to decrease bias and improve efficiency.

There are two primary sources of bias that make their way into models if spatial dynamics are ignored. The first source of bias is caused by correlation between included (i.e. observed) and omitted variables that exhibit strong spatial patterns. Externalities (i.e. third-party effects that arise in the production and consumption of goods and services for which no appropriate compensation is paid) are an example of typically omitted variables that are generally spatially bounded. Technological externalities, such as knowledge spillovers, are in fact very hard to capture due to their relatively immaterial nature. This below-cost dissemination of ideas arises from inter-firm mobility, face-to-face meetings and other social interactions, for which limited or no data are available. Therefore, it will usually be absent from the conventional economic growth models or microeconomic models of agent behaviour. Nevertheless, they are a significant feature of technopoles, business parks and other urban clusters and should be an integral part of land-use planning. The second common source of bias in research that involves spatially bounded units of observation is measurement error. This is particularly prevalent in empirical research dealing with regions or other sub-national units. Data at this level are usually collected based on administrative or statistical boundaries, which often do not reflect the underlying functional or biophysical reality (e.g. air and noise pollution). These units become incomplete fragments of a wider spatial entity that is lost in the data structure, and regional planning is hindered by the loss of this added layer of information.

These spatial patterns are usually modelled with the help of spatial weights (W) matrices. These weighting schemes determine the relative position of the units of observation in the spatial plane, much in the same way as the timeline helps to determine the order of units in the time continuum. The spatial plane does not necessarily mean that relative positions are equivalent to geographic distances in two dimensional spaces. Criteria such as the intensity of trade flows or commuting can be used to determine the strength of these associations. It merely portrays a situation where relationships are not unidirectional. Therefore, unlike serial correlation, each unit can have more than two neighbours at the same relative distance and the association will

usually run both ways between each pair, creating a richer and more complex mosaic of interdependence. It is this very same complexity that distinguishes spatial econometrics from time series econometrics. The simultaneity and feedback implied by spatial interactions usually lead to endogeneity and complex non-spherical error structures, which require particular estimation strategies.

Spatial econometrics in research

When conducting research with spatially bounded or networked units, the first decision the researcher faces is whether to adjust the models to incorporate spatial dependence. As a rule of thumb, empirical work that deals with units that exhibit stable relative positions will usually require or benefit from formally adjusting the models to account for spatial dependence. This is generally the case when dealing with units that have fixed geographic location, such as countries, regions or real estate properties. Even micro-level data such as firms and households can be located in space (e.g. via addresses, post codes or census tracts) or can be placed in relational networks (e.g. defining neighbourhood as kinship, based on characteristics such as the size of the household or the total yearly output of the firm). When there is no a priori expectation or theoretical grounding to choose among non-spatial and spatial alternatives, a more substantive approach involves testing different competing specifications. A range of tools are available, including Lagrange multiplier, Wald and Likelihood Ratio tests (Anselin *et al.*, 1996; Anselin, 1988a, 1988b, 1990; Burridge, 1980). Perhaps the most prominent test used as a diagnostic tool is the Moran's I test (Cliff and Ord, 1972; Moran, 1950). Its benefits rest on the fact that no spatial models need to be run as the test is performed on the residuals of the estimation under the null hypothesis, which in most cases is obtained via a computationally simple ordinary least squares (OLS).[4]

In order to test for spatial independence or use estimators from the spatial econometrics toolkit, the researcher is usually required to make assumptions about the patterns of association that link the units together. In short, the researcher needs to choose one or a set of W matrices that will be used to transform the model to adjust for spatial dependence. This is hardly a trivial task on two accounts. Firstly, the W matrices chosen need to be exogenous. If the variables used to assess the strength of association are in fact features that belong in the model, this leads to identification problems. This might happen when variables such as trade or commuting flows are used to portray regional interdependencies, as it is likely that these are legitimate explanatory variables in their own right. Fortunately, geographic distances are usually appropriate alternatives, as they often reflect or are on the basis of the observed spatial patterns, they are exogenous and they are readily available. However, this leads to the second challenge: the particular choice of W. There are a number of popular options available. The two main categories are based on contiguity and inverse distances. The former relies on shared borders according to

$$W = \begin{cases} W_{ij} = 0 & \text{if } i = j \\ W_{ij} = 1 & \text{if } i \text{ shares a border with } j \\ W_{ij} = 0 & \text{if } i \text{ does not share a border with } j \end{cases} \quad (1)$$

and leads to a sparse selection matrix that identifies units' closest neighbours. The latter leads to gravitational models, so that proximity and mass (e.g. population or GDP) affect the attraction

between two units (akin to Isaac Newton's Law of Gravity). These models assign different weights to neighbours based on decay functions of distance. Its general form is determined as

$$W = \begin{cases} W_{ij} = 0 & \text{if } i = j \\ W_{ij} = f(d_{ij}) & \text{if } d_{ij} \leq D \\ W_{ij} = 0 & \text{if } d_{ij} > D \end{cases} \tag{2}$$

with d_{ij} representing the distance between the focal points of the two units i and j (e.g. the units' centroids), D representing a cut-off distance, and f(.) being a decaying function of distance. Some of the more commonly used decay functions are the inverse of the squared distance or the negative exponential, which assign considerably less weight to units as you move away from the origin. This essentially leads to quasi-sparse matrices, in that spatial interaction becomes negligible beyond a certain threshold. The choice of W is crucial because the results of the tests and the models are conditional on that particular spatial arrangement pattern. This choice, or rather its apparent arbitrariness, is one of the main criticisms directed at spatial econometrics.[5]

If the inclusion of spatial dynamics is desirable or required (e.g. given the results of the tests), spatial econometrics offers the researcher a set of models that attempts to capture some of the effects of relative position in space.[6] The researcher is once again faced with a decision between two main approaches (or a combination thereof). On the one hand, spatial dependence might be a substantive phenomenon that needs to be modelled explicitly. This would reflect the cases where dependent variables in one location are affected by dependent variables in other locations. This is often the case with imperfectly competitive markets, where price changes by certain suppliers trigger responses from neighbouring suppliers, or in policymaking when actions by certain agents trigger similar or response actions in nearby locations.

On the other hand, spatial dependence might be considered a nuisance parameter that the researcher wishes to incorporate in the model in order to improve the efficiency of the estimators. This is often the case in hedonic real estate price models, where biophysical characteristics such as noise and air pollution are incompletely or imperfectly collected at the property or local statistical level. Likewise, regional growth models are intertwined with spillover effects that are both spatially structured and difficult to capture. The added information conveyed by these spatial patterns leads to improved (i.e. more efficient) estimates of the key observable parameters.

If the researcher chooses the first approach and wishes to model spatial dependence explicitly as substantive parameters, the most common tool adopted is the spatial lag model (SLM), also known as the mixed regressive spatial autoregressive model (Upton and Fingleton, 1985; Cliff and Ord, 1981). This model includes a spatial lag of the dependent variable among the set of right-hand side (RHS) variables and can be expressed in vector form as

$$y = \alpha \iota_N + X\beta + \rho W y + \varepsilon \tag{3}$$

where α is the intercept parameter, ι_N is a vector of ones (i.e. constant term) of dimension N, X is the matrix of k regressors, β is the vector of corresponding k parameters and ε is the "well-behaved" (i.e. spherical) disturbance term i.i.d.$(0, \sigma_\varepsilon^2)$. In this specification, the added term is composed of a spatially weighted dependent variable (Wy) and a spatial coefficient ρ. The spatial lag of the dependent variable is essentially a weighted average of the dependent variable registered at neighbouring units. Therefore, a statistically significant coefficient estimate of ρ reflects a co-movement of the response variable in spatially related clusters.

There are two relevant implications when adopting this model. The first implication is that the estimator needs to be adjusted to deal with endogeneity caused by the correlation between the error term and the spatial lag of the dependent variable. The second implication pertains to the interpretation of the coefficient estimates on the RHS variables. Unlike temporal dynamics, spatial dynamics are bi-directional and usually "immediate". This leads to contemporaneous feedback: units being impacted by their own actions via their impacts on neighbours (i.e. they are neighbours of their neighbours), all taking place within the same observable time period. Some simple manipulation of the SLM model leads to an infinite moving average series with higher-order W matrices featuring non-zero diagonals. This leads to higher-order spatial dependence effects, a situation where impacts reverberate in space, so that an initial impact of one unit on a neighbouring unit leads to a set of exchanges of impacts of decreasing strength between the two neighbours. Under these circumstances, the implementation of a typical OLS estimator would lead to bias and inconsistency.

There are two main estimators available to deal with endogeneity in the context of the SLM. The most widely used tool is the maximum likelihood estimator (ML) (Anselin, 1988b; Cliff and Ord, 1981; Ord, 1975). This estimator has strong data requirements and underlying assumptions. It requires the assumption of normally distributed errors. Furthermore, the estimation depends on the existence of a log-likelihood function for the parameter space, its continuous differentiability in the neighbourhood of the true parameter space, and a set of regularity conditions on several quadratic forms (e.g. nonsingularity of the covariance matrix). Furthermore, the row and column sums of the W matrix used must be uniformly bounded in absolute value as N tends to infinity (i.e. the matrix is spatially stationary). This is often the case in causality models with continuous dependent variables and sparse normalised W matrices.[7] An alternative tool is a two-stage least squares (2SLS) estimator that instruments the spatial lag (Anselin, 1980). The instruments used are usually spatial lags of the remaining exogenous regressors, as it is often difficult to find alternative appropriate instruments that fulfil the main conditions of instrumental variables (i.e. to be highly correlated with the endogenous variables and, simultaneously, not to be correlated with the disturbance).

The second implication of adopting the SLM is that the interpretation of the coefficient estimates on the remaining independent variables is no longer straightforward. Given spatial dependence, a marginal change in one regressor on a given unit has the potential to also affect its neighbours via the spatial lag of the dependent variable. This means that coefficients entail the traditional direct effects on their units, further indirect effects on their neighbours and feedback effects (LeSage and Pace, 2009; Kelejian *et al.*, 2006).

If the researcher chooses the second approach and wishes to adjust the error term using available information on spatial association, the traditional tool used is the spatial error model (SEM), also known as the spatial autoregressive model (Cliff and Ord, 1973). In the SEM, unobserved spatial dependence is modelled via spatially autocorrelated disturbances so that the vector of disturbances (ε) is expressed in vector form as

$$\varepsilon = \lambda W \varepsilon + \upsilon \, . \tag{4}$$

W is the previously mentioned N × N matrix of spatial weights describing the strength of association between units, λ is the spatial autoregressive coefficient and υ is the usual vector of innovations i.i.d.$(0, \sigma\upsilon^2)$. This error structure has significant implications in terms of the pattern of spatial interaction and shock propagation across space. Notice that the spatial autoregressive process can be re-expressed as

$$\varepsilon = (I_N - \lambda W)^{-1}\upsilon \tag{5}$$

Similarly to autoregressive processes in time series contexts, equation (5) can be written as an infinite spatial moving average process of the type

$$\varepsilon = I_N\upsilon + \lambda W\upsilon + \lambda^2 W^2\upsilon + \ldots = \sum_{i=0}^{\infty} \lambda^i W^i \upsilon \tag{6}$$

with $W^0=I_N$ and provided that the elements of the spatial matrix W are smaller than one and $|\lambda| < 1$, two facts that should follow from normalising W. Similarly to the simultaneity and feedback effects observed in SLM, a shock to any unit will impact all other units and itself. This is called the spatial multiplier effect or global effect (Anselin, 2003). It can be more accurately defined looking at the variance-covariance matrix associated with ε, which is a full matrix, so that every unit in the set features some degree of association with all other units and itself.[8] One of the more popular alternatives to the global shocks imposed by the spatial autoregressive error process is the spatial moving average process (Fingleton, 2008c; Anselin and Bera, 1998). This structure is defined as

$$\varepsilon = (I_N - \lambda W)\upsilon \tag{7}$$

which means that shocks are local rather that global, and bounded by the specific arrangement in W (i.e. its non-zero elements).

In the SEM case, although OLS remains unbiased, it is no longer efficient. There are two main alternative estimators available for the SEM that make use of the additional information contained in the error structure. The most widely used is again a ML estimator. This is based on an iterative procedure that moves between a concentrated log-likelihood function of the spatial autoregressive parameter λ and a subsequent Cochrane-Orcutt transformation typical of generalised least squares. A more recent alternative has been proposed by Kelejian and Prucha (1998, 1999) that does not require the same strong distributional assumptions imposed by ML. This is a feasible generalised least squares estimator, in the sense that a Cochrane-Orcutt–type transformation is needed prior to the estimation of the relevant parameters (i.e. the β). In this case, the structure of the variance-covariance matrix of the error term in SEM depends on the unknown spatial parameter λ, which requires estimation. It is the estimation of λ that gives the estimator its generalised moments designation (GM). The GM estimator of the spatial autoregressive parameter is based on three moment equations comparing the expectations on the disturbance with their sample counterparts.

A subsidiary model of the SLM is the spatial Durbin model (SDM) (Burridge, 1981). This model adds spatial lags of some or all of the independent variables to the RHS set, along with the spatial lag of the dependent variable. This is a less parsimonious model, but it has been gaining increasing visibility as it has been shown to perform better than its SEM and SLM counterparts (McMillen, 2003; Fingleton and López-Bazo, 2006; Pace and LeSage, 2008; LeSage and Pace, 2009). The aforementioned models are special cases of more general specifications that include spatial dependence in all components simultaneously (i.e. dependent variable, independent variables and residuals).

Applications

The last decade has been witness to a marked growth in theoretical and applied spatial econometrics (Anselin, 2010). The field expanded to tackle new issues, applications were extended to a variety of disciplines both within and outside the social sciences, and new tools were developed to aid with empirical research. The increasing availability of panel data drove a substantial portion of these developments. With the consequently more complex spatial patterns and time-space interactions, models were required to handle various degrees of spatial dependence, heterogeneity and heteroskedasticity simultaneously. Some examples include the spatial heteroskedasticity and autocorrelation consistent (HAC) estimator (Fingleton and Le Gallo, 2008; Kelejian and Prucha, 2007a) and generalised moments estimators for error components (Kelejian and Prucha, 2010; Fingleton, 2008c; Kapoor *et al.*, 2007).[9] Similarly, nested and non-nested tests have been developed to analyse the several restrictions and alternative specifications that arise out of this added data dimensionality (López *et al.*, 2011; Burridge and Fingleton, 2010; Kelejian, 2008; Baltagi, Song *et al.*, 2007). Stationarity in the presence of spatial dependence has also been investigated with new panel unit root tests (Baltagi, Bresson *et al.*, 2007). Furthermore, with panel data came forecasting in the context of spatial dependence (see, e.g., Baltagi and Li, 2006). It has been shown that predictors for spatial panels produce the smallest root mean squared prediction errors when the true underlying data generation mechanism entails some degree of spatial association (Baltagi *et al.*, 2010; Kelejian and Prucha, 2007b). Other developments include the extension to the cases of limited dependent variables when cross-sectional units exhibit association (Robertson *et al.*, 2009; Fleming, 2004), Bayesian estimation (LeSage and Pace, 2009; Berger *et al.*, 2001; Best *et al.*, 1999; LeSage, 1997) and nonparametric estimation (McMillen, 2010, 2012).

Developments in theory have been accompanied by a crescendo of applied work in both quantity and variety. Empirical work now spans most fields of applied research, in the social sciences and beyond. Economic growth and converge studies are some of the earliest and most profuse incursions into spatial econometrics.[10] Other examples include the impact of agglomeration and market size on productivity and wages (Fingleton, 2008a, 2003) and the analysis of the effects of increasing returns to scale in manufacturing (Angeriz *et al.*, 2011; Fingleton and López-Bazo, 2003). Of particular interest to the field of planning are applications in land-use dynamics and real estate development. Chakir and Parent (2009) analyse the factors driving land allocation using a spatial multinomial probit approach, and Wang and Kockelman (2009) use spatial ordered probit models to predict future land development patterns. Hedonic real estate pricing models have been extended to include the effects of spatial spillovers (Fingleton, 2008b) such as air quality (Anselin and Lozano-Gracia, 2008; Anselin and Le Gallo, 2006) and noise (Cohen and Coughlin, 2008). Other subsidiary topics include studies of transportation networks (Paul Lesage and Polasek, 2008), crime incidence (Zhu *et al.*, 2006), knowledge diffusion (Autant-Bernard and LeSage, 2011; Fischer and Griffith, 2008) and vegetation modelling (Miller *et al.*, 2007).

To an extent, the ascending trend in applied research has been made possible by a surge in software applications. In broad terms, spatial econometrics requires three main sets of tools: mapping tools, spatial data analysis tools and econometric tools. Mapping tools are used to collect and organize location (or more generally, relational) information that will be on the basis of the spatial patterns used in estimation. Spatial data analysis packages provide a range

of tools to identify spatial patterns. Among other things, they are often used to produce the W matrices that will be integrated into the estimable equations. There are a range of commercial and freeware applications that perform these two tasks. Geographic information systems (GIS) are chief among them. The commercial software by ESRI®, ArcGIS®, is a powerful package that also features a useful Spatial Statistics toolbox that allows the researcher to model spatial relationships, produce W matrices and perform some basic statistical analysis (e.g. geographically weighted regression). GeoDa is a free stand-alone application (Anselin *et al.*, 2006) that was specifically designed to perform exploratory spatial data analysis (ESDA). This software also provides some tools for regression analysis using spatial estimators. The new release of SPSS® (20) and STATA®'s user-contributed routine spmap (Pisati, 2004) add mapping and visualisation capabilities to these two commercial packages.

More comprehensive and advanced software options to carry out estimation are still somewhat limited. For the most part, the more popular statistical packages still lack functionalities to deal with spatial econometrics. The majority of applications available are provided by open-source projects or are contributions by users in the form of functions and routines that are based on existing commercial and non-commercial programming languages. Some of these comprehensive packages include the outdated SpaceStat (Anselin, 1992) and commercial S+Spatialstats (Kaluzny *et al.*, 1998). However, it is the user-contributed routines that make up the bulk of the more advanced tools available for spatial regression, which include, among others, R's spdep (Bivand *et al.*, 2008; Bivand, 2006) and spatstat (Baddeley and Turner, 2006) packages, STATA®'s sppack (Drukker *et al.*, 2011) and the various MATLAB routines by LeSage (1999), Pace (2003) and Elhorst (2010b).[11]

With such a rich and comprehensive set of theoretical and applied tools, it is easy to understand why spatial econometrics has moved from the periphery into the mainstream of econometrics. It will soon become the norm rather than the exception to test for and adjust one's models to account for spatial dependence, much in the same way as researchers have done so in the past with regards to other classical model assumption violations, such as heteroskedasticity and serial correlation.

Notes

1 For an overview of time series methods and applications, see, for example, Enders (2009).
2 This is a narrower definition that separates spatial econometrics from the larger field of spatial data analysis. Anselin (1988b, 2006) proposes similar definitions that also stress the role of spatial dynamics in regression analysis.
3 Spatial econometrics is more closely related with spatial dependence, which requires special models and estimation tools given the simultaneity and feedback of the interactions. Spatial heterogeneity on its own has been dealt with using "traditional" panel data methods, such as fixed and random effects models.
4 For further tests and testing strategies, see, for example, Elhorst (2010a) and Baltagi, Song *et al.* (2007).
5 For further discussion on the requirements imposed on W matrices, see, for example, Corrado and Fingleton (2012), Harris *et al.* (2011) and Anselin (1988b).
6 For a taxonomy of spatial models, see, for example, Anselin and Bera (1998), Anselin *et al.* (2008) and Elhorst (2010a).
7 Normalisation in the context of empirical work usually entails row-standardisation (i.e. dividing each observation by its respective row total). In this context, spatial association is expressed as a weighted sum of the variable registered at the several neighbouring locations that interact with the unit.
8 For a good review of the properties of different spatial stochastic processes, see Anselin (2006) and Anselin and Bera (1998).
9 For an overview, see, for example, Baltagi and Pirotte (2010) and Lee and Yu (2010).

10 For good surveys of work on economic growth featuring models with spatial interdependence, see Abreu *et al*. (2005) and Rey and Janikas (2005).
11 Rey and Anselin (2006) provide a good overview of (relatively) recent developments in spatial data and econometrics software, and the page http://en.wikipedia.org/wiki/List_of_spatial_analysis_software provides a list of spatial analysis software.

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4.7
PLANNING SUPPORT SYSTEMS (PSS) AS RESEARCH INSTRUMENTS

Stan Geertman

1. Introduction

Planning support systems (PSS) are geo-information-technology–based instruments that are dedicated to supporting those involved in planning in the performance of their specific planning tasks (Batty 1995; Klosterman 1997). The notion of PSS entered the planning scene around the mid-1980s, thanks to its progenitor, Britton Harris, although the concept of building instruments dedicated to planning support dates back much further. In a sense, it can be argued that PSS are related to geographic information systems (GIS) – insofar as any given PSS is usually based on a GIS – but while GIS are general-purpose tools that are applicable for many different spatial problems, PSS are distinctive in their specific focus on supporting specific planning tasks. Although PSS are also related to so-called spatial decision support systems (SDSS), the two types of systems differ in that PSS generally pay particular attention to long-range problems and strategic issues whereas SDSS are generally designed to support shorter-term policymaking by isolated individuals or by business organizations (Clarke 1990). Or stated differently, SDSS aims to support operational decision making rather than strategic planning activities, a notable focus of PSS. Given this function, a typical PSS will integrate into a single framework planning-related theory, data, information, knowledge, methods, and instruments, all with a shared interface (Geertman & Stillwell 2003).

Until recently, attitudes towards PSS tended to be negative. Dick Klosterman (1998, p. 35) complained that 'instruments for planning support are no better developed now than they were ten years ago', and he was equally pessimistic about the adoption of new instruments and computer applications in planning practice in the near future. Britton Harris (1999, p. 7) noticed that 'planners and designers have remained at best distrustful, or at worst downright antagonistic, toward computer-based models of support.' With the turn of the century, however, the attitude towards instruments for planning support seems to have changed remarkably. At present, much more *positive* attention is being focused on planning support and its technological instruments than has been the case in the past several decades – a trend evident from the sheer volume of studies being undertaken, the dedicated conferences now taking place, and the diversity of papers and books that take PSS as their primary focus (e.g., Brail & Klosterman 2001; Geertman

and Stillwell 2003; Brail 2008; Geertman and Stillwell 2009; Geertman *et al.* 2011; 2013). Many leading academic authors consider PSS to be a valuable support tool that will better enable planners to handle the complexity of planning processes, leading in turn to plans of higher quality and savings in terms of both planning time and money.

Despite positive attitudes and numerous papers that have strongly supported PSS, actual planning practice continues to lag far behind. A range of studies (e.g., Geertman 2006; Vonk 2006; Vonk *et al.* 2007a, 2007b; Brommelstroet & Schrijnen 2010; Geertman 2013) have indicated the discrepancy between the intended and actual planning support by PSS, which is particularly worrisome in light of the ever-increasing complexity of planning tasks. The primary purpose of this chapter is both to shed more light on this discrepancy and to offer more insight into the (potential) application of PSS for research.

The outline of the chapter is roughly as follows: a discussion of spatial planning and the challenge of planning support (Section 2), followed by a description, in Section 3, of how PSS developed as a special category of geo-information technology and how it fills a support role vis-à-vis planning practice. Despite a long, confused, and often disappointing history, the future of PSS in planning practice looks bright, albeit fragile, at the turn of the millennium. Section 4 takes a closer look at the recent development of PSS and its application in practice. This will result in a range of recommendations for PSS research in Section 5.

2. Planning support

What is meant by the notions of 'planning' and 'planning support'? Planning, or more precisely the field of urban and regional planning or spatial planning or land-use planning (in this chapter, taken identically), concerns the design and organization of urban physical and socio-economic space and its encompassing activities in order to solve existing problems and/or to anticipate future challenges (e.g., see Alexander 1987; Healey 2005). Although this is a nice description of the field of spatial planning, it doesn't say anything about its functioning in reality. A more practice-oriented definition is provided by Couclelis (2006b): 'Land-use planning involves actions taken by some to affect the use of land controlled by others, following decisions taken by third parties based on values not shared by all concerned, regarding issues no-one fully comprehends, in an optimistic attempt to guide events and processes that very likely will not unfold in the time, place and manner anticipated.' It is precisely this discrepancy between intention and practice that needs some further elaboration to understand the need for and the complexity of the notion of 'planning support'.

The discrepancy between planning intention and planning practice can be attuned to at least four different but interconnected complexities that can be associated with present-day planning activity – notably, the multidimensionality of many present-day spatial planning issues; the association of planning with people's behaviour; the growing involvement in planning of a wide variety of people and organizations; and the transition from a modernist to a so-called post-modern planning. Given the purpose of this chapter, each of these complexities will be touched upon just slightly; for a more elaborated treatment, please see the references.

First, there is the multidimensionality of many present-day spatial planning issues, driven by the recognition that the layered and cross-cutting nature of many spatial problems requires integrated policies concerning *inter alia* spatial, social, economic, and environmental issues (Goedman & Zonneveld, 2007). A concrete example of this multidimensionality is the planning goal of 'sustainability' and its translation into planning concepts such as 'smart growth' or 'eco-city'.

Second, planning is very much associated with people's behaviour. People possess potentials, restrictions, and desires; therefore, they act on and react to rules, trends, and each other's (spatial) behaviour. As Soja (1980, p. 208) has already pointed out, there is 'a continuous two-way process, a socio-spatial dialectic, in which people create and modify urban spaces while at the same time being conditioned in various ways by the spaces in which they live and work' (see also Lefebvre 1991, 1996). Following Couclelis (2006a), activities in post-industrial society are moving from being 'place-based' (occurring at fixed times and places) to 'person-based' (occurring at dynamic times and places). As a consequence, the resulting increase in flexibility and variability of people's behaviour in space lessens the predictability of intended policy measurements in space.

A third contributor to increasing complexity in planning is the growing involvement of a wide variety of persons and organizations with associated interests, sometimes referred to as 'collaborative' or 'participative' planning (e.g., see Healey, 2007). The notion of 'governance' is a relevant one here, implying that in addition to governmental organizations, there are also associated institutions, stakeholders, the wider public, and so forth, all of whom will want to have a say in spatial policymaking and who will try to influence the decisions at stake. While different actors will have divergent and often conflicting views of the issues at hand, at the same time there is no actor with sufficient power to steer unilaterally the entire decision-making process. As a consequence, a firm foundation for collective action is lacking and must be continually re-established, which contributes to the mentioned complexity once more.

A fourth contributor to planning complexity concerns the transition from modernist planning to so-called postmodern planning, which requires a serious rethinking of both planning activity and the role of knowledge in planning. In brief, while according to the modernist viewpoint the planner as expert will reveal the truth by empirical investigation of the facts, in the postmodern view knowledge is no longer an objective entity to be generated by experts in distinct institutions, but instead is constructed through social processes and active engagement with material reality, in which neutrality is not necessarily ensured (e.g., Alexander 2008; Rydin 2007, 2008). This perspective has in turn led to the principle that local policy practice should draw on the knowledge embedded in local relationships, where it can guide the contextualization of scientific knowledge. As a consequence, it is acknowledged that knowledge is inherently multidimensional (e.g., lay, local, experiential, intuitive), with multiple claims to represent reality and multiple ways of knowing (Rydin 2007).

Taken together, each of these four factors contributes to an increase in the complexity of the planning activity. Likewise, the notion of 'planning support' to overcome in the sense of mitigation of and/or adaptation to these complexities can be seen as a huge challenge, and has received quite a bit of attention for the last decades. In the next paragraph we will move on to the instruments intended to fulfil this planning support role.

3. Instruments for planning support

System developers, especially from universities and other research institutes, have sought to help planners cope with complexities in planning through the introduction of new instruments for planning support. The origins of these instruments for planning support can be traced back to the 1960s and should be linked to one of its main progenitors, Britton Harris (1915–2005), who was already pleading fifty years ago for the application of models in spatial planning, despite problems of technology (hardware), data, and computation (software). Specifically, he called for 'models [that] are considered as theories which, in part, serve as substitutes for experiment, and which are designed to answer questions about how the real world will react to changes in

conditions and policies' (Harris 1960, p. 272). His plea coincided with the emergence of the so-called systems view of planning, in fact an example of the transition from 'planning as design' towards 'planning as applied science' (Klosterman 1997). At that time, new academic fields such as operations research and regional science were just entering the scene, and there was a widespread faith in the efficacy of science and technology, supported by the upcoming generation of mainframe computers. By contrast, the seventies saw growing disillusionment with computer-based planning and, in parallel, increasing criticism of associated rational planning. Mathematical programming and large-scale urban models failed to provide support for spatial planning, the underlying reasons for which were laid bare masterfully in an article by Douglas Lee (1973) concerning the seven sins of large-scale modelling. Lee pointed out, *inter alia,* the 'black-box' character of most urban models, the comprehensiveness of the problems these models intended to tackle, their extreme data-hungriness, and their over-complicatedness.

It was only in the eighties and nineties, with the introduction of desktop computers and 'off-the-shelf' geographical information systems (GIS), that planners returned to computers for support. In the beginning of the eighties the term spatial decision support systems (SDSS) entered the scene as a spatial successor of so-called decision support systems (DSS) that were introduced already in the beginning of the seventies. These SDSS are computer-based systems that combine and extend the geographic storage, search, and retrieval capabilities of GIS with the decision models and optimizing algorithms used to support decision making about spatial problems (e.g., Densham 1991; Nyerges and Jankowski 2010; Sugumaran and DeGroote 2011). At the end of the eighties Harris (1989) introduced the term planning support systems (PSS) for the first time in print. As mentioned before, these PSS differ from GIS in that they are distinctive in their specific focus on supporting specific planning tasks, while GIS are general-purpose systems applicable for many different spatial problems. Moreover, these PSS differ from SDSS in that they generally pay particular attention to long-range problems and strategic issues, whereas SDSS are generally designed to support shorter-term policymaking by isolated individuals or by business organizations. Notwithstanding the introduction of these computer-based systems (GIS, SDSS, PSS) in the eighties, their planning support role in spatial planning remained quite restricted for a long time. Even GIS application remained typically restricted to routine operations, such as data management and thematic mapping, and was hardly used for more advanced and specific planning applications, such as forecasting, spatial analysis, and scenario design and evaluation.

This restricted application is clearly expressed in a number of statements made during the 1990s. Harris and Batty (1993), for example, conclude that the 1990s' generation of GIS failed to incorporate the kinds of functions that planning actually requires, such as analytical and design functions. And Klosterman (1998) suggested that instruments for planning support were no better developed than they had been ten years earlier and he was equally pessimistic about the adoption of new instruments and computer applications in planning practice in the near future. Likewise, Harris (1999) pointed to the distrust of planners – their antagonistic attitude – towards computer-based models of support. In general, just a very few planners at that time considered planning support instruments to be intrinsic to and indispensable for performing their job properly (as financial experts would consider the use of spreadsheet software, for instance, or medical specialists regard electrocardiogram technology) (Geertman and Stillwell 2003). Among the reasons for that negative attitude and restricted use were the time-bounded limitations of the technology (costly and user-unfriendly hardware and software), the restrictions on data availability and attainability, the ongoing shortage of planners educated with sufficient GIS knowledge, and, last but surely not least, evolving changes in the interrelationship of planning and information

technology. In general, the reasons for the limited usage of planning support instruments in planning practice were related to the fact that the supporting instruments did not readily fit the changing needs of the planning profession – existing systems were far too generic, complex, inflexible, and incompatible with the 'wicked' nature of most planning tasks. Moreover, supporting instruments for planning were often geared towards technology rather than problems and were incompatible with more unstructured, less formal information needs, and too focused on strict rationality (Couclelis 1989; Ottens 1990; Scholten & Stillwell 1990; Klosterman 1994, 1997, 1999, 2001; Worrall 1994; Bishop 1998; Nedovic-Budic 1998; Geertman 1999).

4. Research application of PSS

With the turn of the century it seems that interest in instruments for planning support and especially in planning support systems (PSS) has increased substantially. Lots of scientific articles, editorial volumes, special issues, doctoral theses, and so forth entered the scene. Contemporaneously, worldwide a range of planning support instruments was introduced to the market. At the start of the millennium, it was widely believed that a comprehensive picture of the extent of PSS developments was lacking (Harris 1999; Stillwell *et al.* 1999a; 1999b). This resulted in a range of inventories of PSS and their application (e.g., see Stillwell *et al.* 1999a; Brail & Klosterman 2001; Geertman & Stillwell 2003; Brail 2008; Geertman & Stillwell 2009; Geertman *et al.* 2011; 2013).

From these inventories, a diversity of interesting findings can be concluded (for a more in-depth elaboration, please refer to the original sources mentioned).

First, with regards to the systems, in terms of sheer numbers, the amount of PSS appeared to be increasing worldwide, quite some of them still immature and in an experimental or prototype stage of development. Only a small number of systems had actually matured to the stage at which they found professional application. Moreover, the systems showed a wide diversity in their aims (from facilitating participation to handling building permits), capabilities (from modelling to design), content (just tools or, for instance, data or meta-information too), structure (fully integrated systems or just loosely coupled toolbox concept), and technological basis (from stand-alone to Internet-based). This diversity of systems and approaches can be seen as an indicator of the lack of consensus as to how PSS should be defined, or even a tacit agreement to use it as an umbrella term encompassing several broad descriptions. Moreover, it shows that present dynamics in PSS are developing in distinctive directions. In a functional sense, some PSS are attuned to support complex tasks, such as land-use modelling (e.g., UrbanSim (www.urbansim.org/Main/WebHome), Environment Explorer (www.lumos.info/environmentexplorer.php)), while other PSS strive to fulfil the market question for much simpler, although certainly not simplistic, analysis and models (e.g., Index (www.planningtoolexchange.org/tool/index)). Likewise, one can identify two divergent directions in the technological development of PSS: on the one hand into generic, 'off-the-shelf' systems and on the other hand into custom-built, evolutionary modelling systems. The first category can be bought on the market and applied in a variety of circumstances (product orientation) (e.g., What-If (www.whatifinc.biz/)), CommunityViz (http://placeways.com/communityviz/)), while the latter represents a category of PSS which is required to be custom-built, attuned to the specific question at stake, and crafted in close cooperation with the intended users of the system ('service-oriented') (e.g., LEAM (www.leamgroup.com/technology/planning-decision-support-tools)). Another divergence in the technological developments of PSS relates to the openness of systems: 'open-source' systems, like UrbanSim (www.urbansim.org/Main/WebHome) versus systems with protected source codes, like Urban Strategy (www.tno.nl/urbanstrategy).

Second, with regards to the research applications of PSS, in recent years a wide diversity of applications has been performed. In particular, PSS applications in the field of information management and scenario design, modelling, and analysis have received a great deal of attention (e.g., Hopkins & Zapata 2007; Nijs 2009; Geertman and Stillwell 2009; Geertman *et al.* 2011; 2013). Nevertheless, it has to be concluded that the factual research application of PSS in actual planning practice is still quite limited. The PSS applications seem to be confined foremost to experimental case studies, such as training sessions with professional planners or educational meetings with students. Besides, some trends can be identified in present-day PSS application. One trend is the upcoming category of so-called participatory PSS, in which the role of participation takes prominent although diverse forms (e.g., Geertman 2002;Voss *et al.* 2004; Geertman and Stillwell 2009). In such situations, a PSS may be used to collect information and to integrate stakeholders and/or public opinions, preferences, values, attitudes, and so on, in the development of, for instance, a land-use plan (e.g., Chin 2009; Delden & Hagen-Zanker, 2009; Bailey *et al.* 2011). Recent studies show that the role of technology in participation should be viewed essentially as an enhancement to rather than a replacement for more traditional participation efforts (see Slotterback 2011). Related to this is the increasing attention to so-called 'soft' data, a category comprising data which are, for instance, qualitative in nature and based on residents' experiences and behaviour (e.g., http://opus.tkk.fi/softgis/). Associated is the trend to more explicit intermingling of human/social and physical factors. In short, in all these participatory PSS applications, the support of communication processes, in addition to the imperatives of information presentation and sometimes spatial analysis, is taken prominence.

Third, as stated before, the overall challenge of achieving planning support with help of dedicated instruments like PSS has long remained unmet (see Batty 1979; Lee 1973, 1994; Openshaw 1979; Croswell 1991; Innes & Simpson 1993; Stillwell *et al.* 1999a). From recent studies

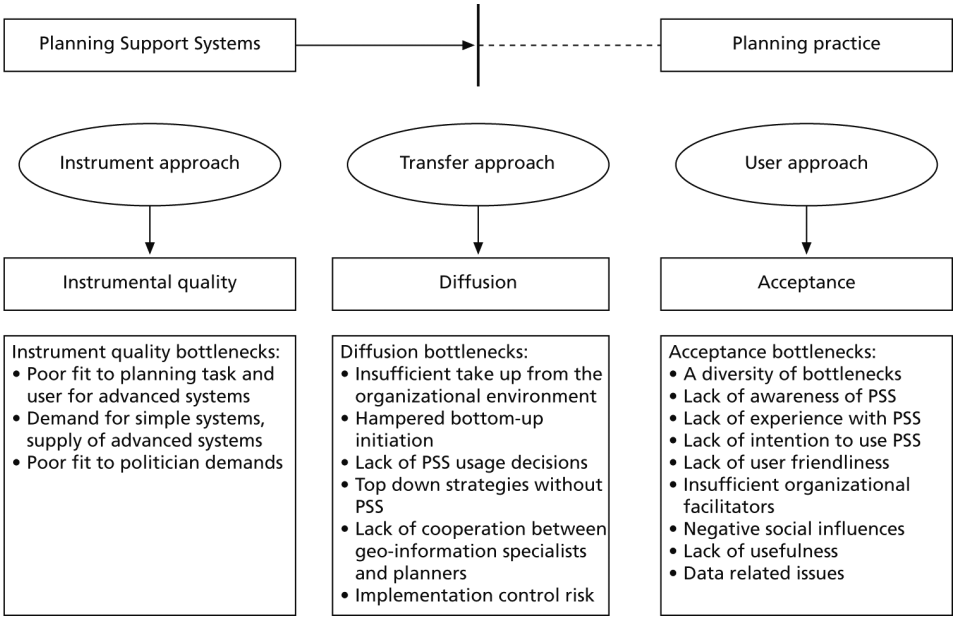

Figure 4.7.1 Bottlenecks in planning support.
Sources: Based on Vonk *et al.* 2005, 2007a, 2007b.

it was found that three categories of factors were blocking the more widespread application of PSS in planning practice, involving the *systems*, the *users*, and the *organizational transfer* (see Vonk *et al.* 2005, 2007a, 2007b; Epp 2012).

Regarding the *systems* it was found that a major dichotomy exists between the PSS demanded by potential users and the ones supplied by system developers. In brief, while practitioners demand rather simple PSS for exploratory tasks such as making an inventory of spatial conditions of a potential developmental area, the majority of PSS focus on much more complicated analytical tasks, especially spatial modelling. As an outcome, obviously, it can be recommended to increase the quality of the instruments, and especially their fine-tuning to the needs of users. Moreover, regarding the *users* it was found that a variety of bottlenecks are blocking more widespread acceptance of PSS in planning practice. The major bottlenecks are the lack of awareness of the existence of PSS and the purposes for which they can be used; the dearth of experience with PSS, which leaves users unaware of potential benefits and the conditions under which PSS can be used; and an overall lack of interest in starting to use PSS. A proposed recommendation is to encourage experimentation with the application of PSS in planning practice by potential users and to ensure that the word of these experiences spreads much more widely. A related trend is the cry for attention on the human factor in arriving at successful PSS applications (e.g., Moore 2008). Appropriate training in PSS and its application is very much needed and still appears to be at least insufficient at quite some higher education institutes (e.g., Epp 2012). In addition, regarding the *organizational transfer* of PSS it was found that successful diffusion of PSS in planning organizations is more likely to be initiated from the bottom up rather than come from the top down – PSS specialists are more likely to notice and embrace emerging PSS-related developments than managers. Nonetheless, a lack of opportunity to innovate and introduce individual initiatives within an organization – for example, due to insufficient organizational capacity – often means that these specialists at the bottom of the hierarchy are unable to bring advances of outside developments to the attention of management at the top. From this it is recommended to more frequently use intermediate persons/organizations like consultancy firms and 'internal gatekeepers' and to adopt the management paradigms of 'learning organization' (e.g., Senge 1990) and 'knowledge management' (e.g., Nonaka & Takeuchi 1995).

Fourth, out of the mentioned inventories three main application orientations for PSS can be distilled, with some systems designed to fulfil predominantly the task of '*information provision*' (e.g., web portals), others meant primarily to support '*communication processes*' (e.g., map-based touch tables), and still others intended to accomplish '*analysis functions*', such as land-use modelling (e.g., agent-based modelling). With regards to *information provision*, which can be described as one-sided communication from sender to recipient, examples can be found in thousands of websites that provide information on spatial plans and developments. Other PSS focus on the support of two-sided *communication processes* – for example, public participation PSS (see for instance Geertman and Stillwell 2009, pp. 295-448). In addition to the more well-known map-based touch tables (for example, www.studiosophisti.nl/wordpress/en/maps-on-table/) there are also websites that support *communication processes* between citizens and local government, the so-called e-governance PSS (e.g., http://downloads2.esri.com/campus/uploads/library/pdfs/55425.pdf). Other PSS are dedicated to support *analytical manipulations*, including scenario-building and land-use modelling (e.g., Environment Explorer (www.lumos.info/environmentexplorer.php), UrbanSim (www.urbansim.org/Main/WebHome)), although the application in real-world planning practice for this last category lags far behind the two other categories (see Vonk *et al.* 2007b; Epp 2012). Of particular interest are the growing number of PSS that link *communication* and *analytical* tools (for an example, see Johnson & Sieber 2011), where the former are intended to overcome

some inherent shortcomings of the latter. Furthermore worth mentioning is an assessment study by Wassen *et al.* (2011) that demonstrates the positive correlation between the acceptability of modelling studies (analytical PSS) and a participatory approach (communicative PSS).

5. Recommendations for PSS research

Based on previous inventories, several recommendations for strengthening the research role of PSS in planning practice can be given.

First of all, it is a point of fundamental importance to change focus in present-day PSS research. Current PSS research is focused primarily on the instruments (= means) and their development and application, instead of on its central support role in planning practice (= goals). In this respect, the intended support role of PSS is presumed to resemble the actual support role of the instruments. Although this may be acceptable in an emerging field of technological innovation, the present, more maturing stage of PSS development should allow for much greater attention to be paid to the actual support role of PSS in practice and to its systematic measurement and monitoring. Therein, the question 'which PSS system is best' is no longer valid and should be replaced by the revised question of 'which PSS system fits best' for the problem at hand. This last question emerges from practice demand instead of from PSS supply, and several of the recommendations discussed ahead are associated with this fundamental change in perspective (Geertman 2013).

Second, there is still a need to improve the technology itself, given the prototypical state of quite a few of the instruments. In particular, there is a need for PSS tool development to occur in close cooperation with practice, all the way from relatively early stages of development on to their subsequent application. This demands so-called Integrated Communities of PSS Research and Practice (after Wenger 1998), in which the instrumental development and planning application of PSS will be driven by developers and potential users in an interactive, incremental, and iterative process (e.g., Deal & Pallathucheril 2009). Consultants/experts can play the role of intermediaries to ensure that supply and demand are both clearly articulated in a common language (see also Brommelstroet *et al.* 2014).

Third, research in the field of PSS should be expanded to include much more explicitly the context in which planning support takes place (see also Geertman 2006). This context sensitivity is important because it will influence the way in which and the degree to which planning support will be attained. Related to this is the need to move on from a 'case study' approach to 'real-world planning' application. Case studies, by abstracting a situation from many external factors, constitute an oversimplification of reality (quasi-reality) and thus provide insufficient insight into the level of transferability of the outcomes of studies into real-world planning practice.

Fourth, much more attention needs to be paid to the 'best' way(s) in which PSS could/should be applied in actual planning practice, which demands specific methodology-oriented research. This is of primary importance for planning practice, because the methodology used in the application of PSS will influence the planning process, the support function of the instrument, and the content and appropriateness of the outcomes of the PSS research. For a first conceptual elaboration on a PSS-related methodological approach, please refer to Steinitz (2012). However, given the previous discussion regarding context sensitivity, in planning practice there cannot simply be a single 'best' PSS methodology, but instead 'appropriate' PSS methodologies, dedicated to the problem at hand and attuned to the relevant context. The most important contextual factors influencing the appropriateness of the PSS application can be found

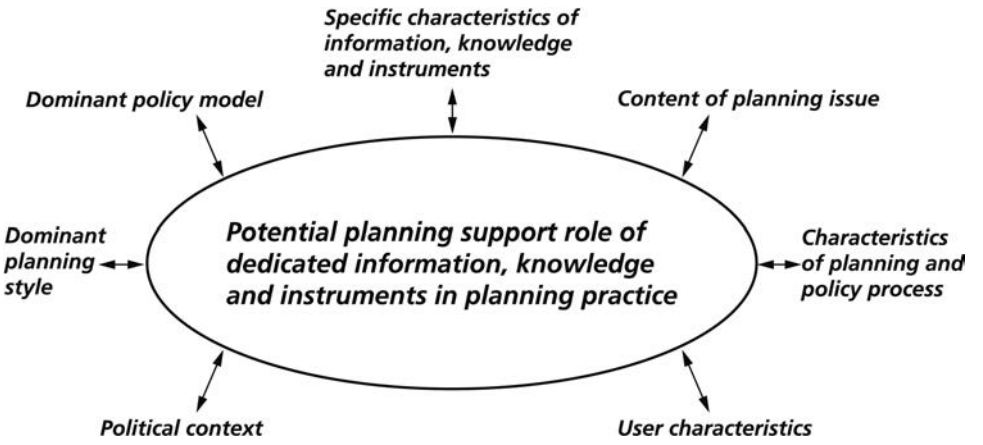

Figure 4.7.2 Contextual factors influencing planning support.
Source: Geertman 2006.

in Geertman (2006), where it is suggested that PSS application should be fit explicitly to the application-specific characteristics of the content of the planning issue; the user characteristics; the characteristics of planning and policy process; the political context; the specific characteristics of information, knowledge, and instruments; and the dominant planning style and policy model (see Figure 4.7.2).

For example, planning practice shows that specific categories of research-oriented planners are much more willing to adopt analytical PSS instruments (e.g., land-use modelling tools) and accept their outcomes (forecasted land-use maps) than design-oriented planners (see Pelzer *et al.* 2014a). However, the question of how to deal with this diversity of contextual variables in different practices still requires lots of additional PSS research. Such studies, in turn, will need appropriate research designs, strategies (e.g., real-world gaming), and research methods and techniques (e.g., comparative analysis). In other words, only the development of a more systematic research design, focused on these methodological issues, will enable us to prove the ultimate added value of our efforts to improve actual planning practice by support of PSS.

Fifth, and in connection with research on methodology, there is currently very little directly usable knowledge concerning the notion of planning support – what it is, how to initiate or monitor it, under what conditions it should or would take a certain form, how we can make sure that we are proceeding in the right direction, and so on. One example of a research question related to planning and also indicated before as planning complexity (see Section 2) is how the transformation from 'government' into 'governance' influences PSS instrumental development and application. For a first elaboration on such a question, please refer to Pelzer *et al.* (2014b). Therein, it should be acknowledged that the role of scientific information (as an outcome of PSS application) is limited, given that the policy process is influenced by many other factors, such as traditions, the experiences of laypeople, power relations, and so forth (e.g., Lindblom & Cohen 1979; Forester 1989; Rydin 2007). Additional research into these kinds of cross-cutting questions about planning support is urgently needed. What is called for is interdisciplinary research on the notion of 'planning support' that in its own turn expresses the need for a common language, for familiarization with the methodologies of different disciplines, and for the development of an understanding of any trade-offs required between them.

Finally, what remains is the question of the role of planning education, especially at planning schools. Much more dedicated research into planning support is needed to provide planning practice with directives and recommendations on how to make the best use out of PSS entering the market. Planning schools have their own role to play in this. They can and should make sure that their graduates are familiar with at least the basics of instruments like GIS and SDSS, in terms of both theory and practice, and are familiar with the potentials of PSS in particular (e.g., Gö?men & Ventura 2010). In an era in which geographical information is everywhere all the time, one may expect a spatial planner to be familiar with the methods, technologies, and methodologies in order to extract real knowledge out of all this geographical information. Moreover, planning schools can function as test beds, in which ideas concerning PSS development, application, methodology and so forth can be experimented with in a student context before going 'into the wild' of planning practice. Furthermore, planning students can take up the challenges described earlier and ensure that the science of PSS – or what I have called PSScience elsewhere (see Geertman 2013) – will proceed in the right direction.

In general, it is to be hoped that scientists, planners, technicians, students, and professors will take up at least some of these recommendations and start figuring out how to enhance the role of planning support in relieving the increasing complexity of present-day planning tasks by making use of PSS as research instruments.

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Notes

1 www.urbansim.org/Main/WebHome.
2 www.lumos.info/environmentexplorer.php.
3 www.hd.gov/HDdotGov/detail.jsp?ContentID=590.
4 www.whatifinc.biz.
5 www.simcenter.org/Projects/CommunityViz/communityviz.html.
6 www.leam.illinois.edu/kr_yesan.
7 http://opus.tkk.fi/softgis.
8 See, for instance, www.baasopzuid.nl.
9 See, for instance, www.mapsup.nl/index/1/maptable.html.
10 See, for instance, http://intelcities.iti.gr/intelcities.
11 www.lumos.info/environmentexplorer.php.
12 www.urbansim.org/Main/WebHome.

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4.8

GEOPROCESSING AND SPATIAL PLANNING

Some concepts and applications

Jorge Xavier da Silva, Tiago Badre Marino and Maria Hilde de Barros Goes

Introduction

The recent development of geotechnologies has brought many advances to environmental studies. Geoprocessing techniques have increasingly being used in rural and urban planning and management as an integrative procedure dealing directly and simultaneously with both the spatial and the taxonomic research dimensions. They contribute to the creation of reasonable theoretical and practical assemblages, not only of data but also of knowledge concerning environmental problems. Although centred in geoprocessing and in previous works developed by the authors, this chapter discusses concepts, methods and techniques applied to varied research fields which deal with spatial data generation and analysis, such as digital cartography, global positioning systems (GPS), remote sensing and, hopefully, spatial planning. This chapter begins by illustrating why there is a growing interest in environmental research in the "geo" procedures and problems (Xavier-da-Silva and Marino, 2010, 2011). In a second stage, we clarify several terms, such as geodiversity (Xavier-da-Silva *et al.*, 2001, p. 304), an expression described as a representation of the variability of environmental characteristics; geotopology (Xavier-da-Silva and Zaidan, 2007, p. 20), which considers proximities and types of dispersion; and geoinclusion (Xavier-da-Silva and Marino, 2011), which may refer, for example, to the insertion of data about the population and its activities into their geographical – physical, biotic and socio-economic – context. These concepts pervade the application of methods and techniques applied in the following examples described in this chapter: (1) survey and management of water resources' location for fire emergencies and (2) the creation of an analytical structure to work with the digital maps (spatial management tree) – the mapping of evaluated positive and negative environmental conditions.

1. The environment at the centre of geoprocessing

A simple and effective approach to face environmental problems is a much sought-after dream. Such a task necessarily involves an adequate combination of concepts, methods and techniques, so that a convergent, integrated and useful data assemblage – that is, an operational environmental

model – is generated. Geoprocessing is an integrative procedure dealing simultaneously with a double-faced subject, both spatial and taxonomic. It is able to contribute to the creation of reasonable theoretical and practical assemblages, not only of data but also of knowledge concerning environmental problems.

There is a growing interest in environmental research in the "geo" procedures and problems (Xavier-da-Silva and Marino, 2010, 2011). Several terms have been coined, such as geodiversity (Xavier-da-Silva *et al.*, 2001, p. 304), geotopology (Xavier-da-Silva and Zaidan, 2007, p. 20) and geoinclusion (Xavier-da-Silva and Marino, 2011). These concepts will be presented and discussed together with its associated methods and techniques through the use of two examples.

2. Concept clarification

2.1 Guiding paradigms

Many environmental problems worthy of attention stem from inadequate use of available environmental characteristics portrayed (or disguised) as data, representing their possibilities and limitations, always interpreted by human analysts in accordance with their idiosyncrasies. Actually, the human presence at a basic geographic referential, the Earth's surface, has been guided by some encompassing ethical views – namely, the paradigms of economic development, quality of life and sustainability. These guiding visions of human life are conflicting. It is extremely difficult to reconcile the effects deriving from the simultaneous valorization of all these three views. At least in Brazil, the development of mountainous areas, both by poor dwellings and beautiful resort mansions, in places lacking proper infrastructures, without the due respect to risky geological slope structures or fluvial plains, without accounting for possible meteorological hazards like extra heavy rains, can be considered examples of an irrational and strict narrow consideration of the paradigm of economic development (guided by lower costs) and quality of life (availability of employment for the poor and beautiful landscapes for all).

2.2 The concept of geotechnologies

The recent development of geotechnologies has brought some advances to environmental studies, but some confusion arises from improper use of the geotechnical nomenclature. Important disclaimers need to be made: (1) data creation does not mean, necessarily, availability of the needed information, and (2) any action rests, axiomatically, on a referential (a concept described later by the authors). It follows that any gain of knowledge (information) which has necessarily originated from data (registers of occurring or imagined phenomena) comes into existence only when the pertinent data is integrated in the proper referential.

Many research fields operate upon the Earth surface referential, based on a geographic projection (i.e. Mercator) as it tends to be the case of planning. The concept of geotechnologies encompasses four different areas: (1) digital cartography, the central aim of which is to find the best possible digital representation for the spatial distribution of entities and events along a specified portion of a referential; (2) global positioning systems, having as basic goal the identification of the geographic positions of entities and events; (3) remote sensing, through which it is possible to generate indirect images obtained through classification of energy incidence on the earth's surface; and finally, (4) geoprocessing, essentially an integrative procedure aimed directly at transforming data into information (Xavier-da-Silva, 2009).

2.3 Concepts x methods x techniques

It is a well-known fact that technological developments may bring relevant conceptual, methodological and technical contributions to scientific endeavours (Levy, 1995). To illustrate this point, some propositions can be made which simplify environmental research based on geoprocessing. A phenomenon can be defined as any perceivable alteration of the inspected or imagined reality. Once an adequate referential (a logical or physical organized locational structure) has been chosen, the phenomena and their attributes under inspection can be represented by two basic primitives – namely, entities and events. They are, essentially, energy manifestations that can be classified according to the velocity of occurrence. Thus, entities are slow-changing phenomena, perceived mainly in space, while an event is a rapidly changing phenomenon, mainly perceived through the reality's basic parameter of time.

Some other conceptual propositions, a few of them about environmental dynamics, should be mentioned. These provide the context for environmental research and need to be jointly considered (even to avoid pursuing or misdirecting the research design and development):

- The human timescale is notoriously inadequate to properly consider environmental changes, particularly those of a planetary nature.
- Any research field can be seen as an assemblage of concepts, methods and techniques aimed at understanding portions of the perceivable reality.
- A concept is a logical construction, of variable correspondence to reality (exactitude), destined to characterize perceived phenomena.
- For the purpose of analysis a method can be understood as a particular arrangement of identification and classification procedures, to be applied to perceived phenomena in order to establish deductions, correlations and other logical procedures to explain their occurrence (Xavier-da-Silva and Marino, 2010).
- Techniques are practical procedures, to be properly arranged through adequate methods.
- Events change entities and are modified by them by them, in a continuous and ever-changing interactive process.

At this point, it is important to state that our perception of reality is necessarily built through the insertion of the perceived phenomena into a virtual or material structure which usually comprehends the basic parameters of space and time. This encompassing structure, as mentioned before, can be named a referential and be defined as a perceptual physical or logical framework which allows the systematic recognition of changes in the reality investigated. Can this theoretical framework be translated into a pragmatic approach to environmental research? GIS and geoprocessing, consciously or not, have been developed and are evolving to allow an affirmative answer to this question.

It can be stated that the nature and the intensity of environmental relationships have been investigated by classical statistical procedures (Krumbein and Graybill, 1965; Snedecor and Cochran, 1980; Davis, 1986). However, the GIS technology offers a more encompassing view of environmental problems. It generates a digital model of the environment (Xavier-da-Silva, 1982) which displays environmental phenomena in direct correspondence to their real geographic positioning. This fact allows, consequently, immediate investigation of their geotopology (Xavier-da-Silva and Zaidan, 2007), understood as the attribute of the location, proximities and types of dispersions of identified entities and events. In addition, geodiversity, understood as the

physical, biotic and socio-economical variability of an environment, is also automatically displayed and made available to analysis at any GIS database. Thus, a multitude of integrated environmental characteristics can be reasonably studied through the classic suggestion of problem fractioning in its multiple components, analysis and finally assemblage and display of resulting information.

Some examples of geoprocessing's investigative capabilities are listed here:

1 Reproducible raster analytical procedures can be applied to environmental data structured as a GIS database, particularly in association with diverse types of distance, environmental friction estimates, resiliency and spatial interaction indicators.
2 Complex trend surfaces based on regression procedures can be used as a simulated layer of environmental information and superimposed on the geographic areas being studied, thus allowing the automatic creation of territorial scenarios, which can be easily combined with other parameters.
3 Correlations, the classic hypothesis generator tool, can be exhaustively used, through database searches for spatial/temporal coincidences of specific environmental characteristics.

The amount of data that can be used, presently, in any environmental research differs by orders of magnitude from the previous data handling capacity. As mentioned before, exhaustive scanning of large databases – in the search for singular or joint occurrences of variables, a classic indicator of possible causal correlations – can be promptly performed through data mining (data searches) and other geotechnological research procedures (i.e. new hyperspectral scanners in satellites, together with new algorithms for the classification of the images, produced detailed geological maps that pinpoint exact locations of iron, oil, etc.).

An important methodological characteristic of geoprocessing and GIS (geographic information systems) rests in the need to consider vast amounts of data. Environmental data generation traditionally has been (and still so remains, in many cases, although significant changes are occurring) a dense, diversified and time-consuming process. The analysis of the abundant available data, however, is under drastic transformation, and the literature on data mining and data processing is discussed elsewhere in this volume (Craglia, Chapter 4.10; Haining, Chapter 4.2).

Although statistical analysis and data mining techniques are pivotal to the development of data analysis, there is a key concept that needs to be further addressed: geoinclusion, which means the insertion of the population and its activities, for example, into the geographical circumstances (physical, biotic and socio-economic) of the environment where they occur. This concept calls attention to the need to adequately place the "object" human into its socio-economic and environmental context in order to perform a proper integrated environmental study. This is usually neglected by geoscientists. Thus, a geoinclusive environmental investigation has more chances of becoming a useful systematic search for all the relevant risks and associated threats, potentialities and corresponding opportunities which axiomatically occur in any environment. It must be emphasized that the objective clearly associated with geoinclusion is a method that allows the inclusion in the geographic analysis of a most needed adjustment of any relevant environmental alteration to its identified limitations and possibilities.

3. Methods

The term geoprocessing can be accepted as an assemblage of concepts, methods and techniques aimed at changing environmental data into relevant information to be used for environmental

understanding, planning and management. It is reasonable to accept it as a methodology – that is, a valid complex approach to environmental research, since it comprehends specific concepts, methods and techniques. However, environmental research, in terms of environmental understanding, requires more than accumulating isolated pieces of factual knowledge. Spatial planning and management, at all geographic levels, demand massive idiographic integrated knowledge. Geoprocessing provides data in an ample and organized way, originated from diverse sources, ready to be restructured towards many objectives. Nowadays, environmental data is available to anyone who uses the Internet.

Concerning geoprocessing applied to spatial planning, it is reasonable to accept that it tends to be particularly important to decisions about support information. Examples include the following:

- Environmental monitoring, understood as a data collecting procedure for generation of spatial/time series, creates essential data for future estimates of environmental conditions and, eventually, identifies phenomena's behaviour and their respective evolutional pathways (please see Wong's Chapter 4.3, this volume, for further details).
- Identification of single and multiple proximities (including adjacency and relevant spatial connections, like roads) allowing estimates of single or multiple causal incidences (please see Bao, Chapter 4.5, and Haining, Chapter 4.2, this volume, for further details).
- Multiple criteria evaluation, which permits approximations of the expected multiple causes associated with a consequence, a condition obviously found in environmental situations.
- Identification, comparisons and classification of critical (attention-requiring) geographic areas, where incongruent human usages are practiced – for example, existing land uses which do not consider environmental limitations or do not take advantage of identifiable potentialities.
- Environmental impact evaluations of both disadvantageous and advantageous human land uses. This environmental synthesis permits direct identification of impacted areas associated with potentialities or risks. Local future prospecting can be performed and measures to avoid or control undesired environmental effects can be proposed.
- Creation of classificatory data structures, such as the "Index of Geodiversity" (Xavier-da-Silva *et al.*, 2001, p. 304), as tools to identify relevant and converging assemblages of environmental variables; examples associated with the Index of Geodiversity can be seen in the identification of possible niches of animal and vegetal species, and mapping extensive areas of similar environmental characteristics, with their nuances and exceptions being registered (Xavier-da-Silva *et al.*, 2011).
- Spatial interactions investigation, using a form of gravity model, for example, on spatially distributed point data, allowing the generation of surfaces of interaction by interpolation.
- Contingency plans, aimed at avoiding or minimizing the consequences caused by eventual future occurrences of relevant environmental events and entities (i.e. the preparation for environmental disasters). One example of a contingency plan associated with firework festivities involving more than two million people will be presented ahead (Xavier-da-Silva *et al.*, 2011).
- Environmental zoning, understood as a coordinated spatial fragmentation obtained under reproducible criteria; examples can be a real fragmentation aimed at maximizing the proper use of the creation of land parcels and creation of controlled river water diversion to avoid or minimize effects of river floods.

- Spatial management decision support trees, able to promote progressive integration of spatial decision processes, allowing cost versus benefit analyses. An example will be presented in this chapter.
- Planning support systems (defined in more detail in Geertman, Chapter 4.7, this volume).

3.1 Geoprocessing, GIS and environmental data acquisition/analysis

Spatial management plans developed for specific environmental situations make a good and widespread example of the usage of geoprocessing in any of four territorial levels or scales: local, state, national and international. Today's advances in remote sensing, global positioning systems, geoprocessing, electronic data processing and planetary information networks brought to environmental studies an enormous accessibility to data and capability to handle large data volumes, along with new methods and concepts, some of them previously discussed.

The growing amount of geoprocessed environmental information available today and the increased feasibility of results are promising avenues, although the amount of available information can be a problem in itself (i.e. what to select from the millions of files of available information? What are their reliability/error margins?). This problem demands accurate research guidance and the need to be wise enough to place the results in a useful and adequate context (as a part of many other analyses and the need to include the "human" factor in decisions). In this way, the proposed solutions really can be put in practice, and *when* and *where* they are needed.

Worldwide, many geographical information systems are being installed in municipal, state or federal agencies involved in environmental vigilance, control, planning and management. At the municipal level, in Brazil at least, many possibly fruitful results from these systems are hampered or simply do not occur. The main cause of this unwanted situation is lack of absorption capacity of the municipal administrations (i.e. lack of human resources expertise, hardware/software availability and knowledge, understanding of available methodologies). As a consequence, the simplicity of the technical procedures and a high degree of objectivity are characteristics frequently sought in such systems, without disregard for the diversity of their applications, which, preferably, should not require costly and sophisticated data sources and equipment.

3.1.1 Emergency logistics and geoprocessing

Decision support during environmental emergencies has to be performed, usually, under uncertain conditions and with new data constantly arriving. Timely decisions have to be forcibly made, and the assemblage of qualified personnel and selection of correct equipment and transportation measures often cannot be made calmly. The procedures aimed at answering to the unveiling disaster may be called emergency logistics. These specific logistics operate in conditions where human and material resources are usually scarce. Usually decisions are based on very imperfect information, under uncertainty, little support and scarce resources, at least during an important and variable initial period.

In all, places affected by a disaster may consist of a disorganized and often uncertain geographic mosaic of entities, events and contradictory information crumbling over the teams attending the disaster. This chaotic situation must be rapidly turned into an orderly information system, able to systematically absorb and provide information to evaluate conditions, plan the near future and take decisions.

To build such a system is a noble and attainable research goal, and attending to the identified emergency situations (wounded inhabitants, wandering thirsty and hungry mobs and a

need for many kinds of emergency searches, such as looking for survivors) must depend on the best-informed priorities created at decisive moments. These priorities, in turn, depend not only on the available material, ways of assistance and characteristics of the proposed attendances but also on their locations and displacement difficulties, which must consider geographic distances and the real feasibility of procedures in useful time. Since the GIS technology encompasses and allows geotopological analyses and correlated investigations (i.e., geoprocessing) upon digital spatial databases (i.e., the referential geographic framework itself), along with a notorious updating facility concerning the nature and location of the entities and events involved in the emergency, it can be a useful instrument in decision processes associated with emergency logistics.

Environmental disasters can be classified either as having a precisely dated occurrence established for a certain geographic area (i.e. resulting for an activity that people are going to develop), or as being a possible occurrence along a geographic area where predisposed specific conditions were naturally or artificially created (i.e. probability of occurrence of torrential rains). Contingency plans must be carefully prepared for the first case, in which prevailing specific environmental conditions may be measured or estimated. The amount of people involved at the event or presence and possible use of escape routes are some examples. As to the second case, the elaboration of contingency plans must be a continuous, ample and updated task to be performed by civil defence agencies, in order to minimize the chances of unsuccessful treatment of eventual future environmental disasters at places under their jurisdiction.

An example of geoprocessing concerning the first example of a possible disaster type will be next briefly presented. For more information, it can be accessed at the site www.viconsaga.com.br, specifically created to show applications of a geoprocessing programme named VICON/SAGA – Vigilance and Control. Further information can be obtained from the Geoprocessing Laboratory web page, at www.lageop.ufrj.br.

A. Water resources monitoring for a programmed event that has a potential to cause eventual urban emergencies

The aforementioned programme VICON/SAGA was developed by the Rio de Janeiro State Fire Department during the last four New Year's Eves. Those were huge fireworks events of more than one million spectators each, happening along a beach six kilometres long (Copacabana Beach, Figure 4.8.1). Information for control of all available water resources in Rio de Janeiro's Copacabana district was entirely available during these festivities (hydrants, swimming pools, water reservoirs, strategically placed water tank trucks, specially trained and equipped personnel). Also many critical points had their location identified for possible use or special attention (hospitals, shopping malls, schools). Those entities' location was ascertainable, singularly or as an assemblage of entities inside a specified radius, for any specific street and number address (location of eventual phone calls needed to be made or any other form of help needed to be solicited) of the Copacabana urban district. Thus, decisive and immediate information support to eventual emergencies was made available by the State Fire Department of Rio de Janeiro.

The creation of this contingency plan allows the identification of available water sources nearby eventual fire accidents and also critical areas prone to panic origination. The monitoring of all available water resources is a pivotal element of the analysis. The VICON\SAGA–based information system allows the creation of detailed comparative reports about the monitored New Year's Eve festivities. In this regard, it must be stated that one of the main concerns raised about this type of festivity is spectator panic. Such organized knowledge (i.e. the geoprocessing system in itself) about an area and an occasion clearly or dramatically allows the identification of

Figure 4.8.1 Available water resources and critical points – New Year Festivity at Copacabana, Rio de Janeiro, Brazil, 2011.

other time/spatial series about possible or occurring accidents, including associated estimation of eventual panic occurrence, along with analysis and tests for their avoidance, and control or mitigation options. These objectives can be reached through the adoption of specifically created environmental digital models, as an informational structure able to receive and integrate more data, information and research procedures. This structure must be built to consider occurred or estimated incidents associated with located relevant entities (i.e. in this case, location of fireworks, people, water reservoirs, etc.). Thus, it can *jointly* consider the *variety* of spatially *located* entities and events (geodiversity), both entities and events unevenly distributed over a geographic area and having functional relationships among them requiring investigation (geotopology). Once performed with the proper care, the basic dimensions of space, time and taxonomy (the variables involved) are directly available at the geoprocessing system for the needed analyses and syntheses. If the locally existing geodiversity and geotopology are properly investigated, existing research or management problems can be considered as contained inside an efficient physical, biotic and socio-economical framework (geoinclusion). This efficiency resides in the ample possibilities for identification of occurrences (vigilance) and respective frequencies (control), definition of future procedures (planning) and execution or correction of established initiatives (management), the basic day-to-day activities performed by a geographic information system.

B. Urban land use planning, cost/benefit analysis, budget estimates: a spatial management system

The following schematic presentation is an upward successive evaluation structure called a spatial management tree (Figure 4.8.2). It is a procedure aimed at risks and potentialities

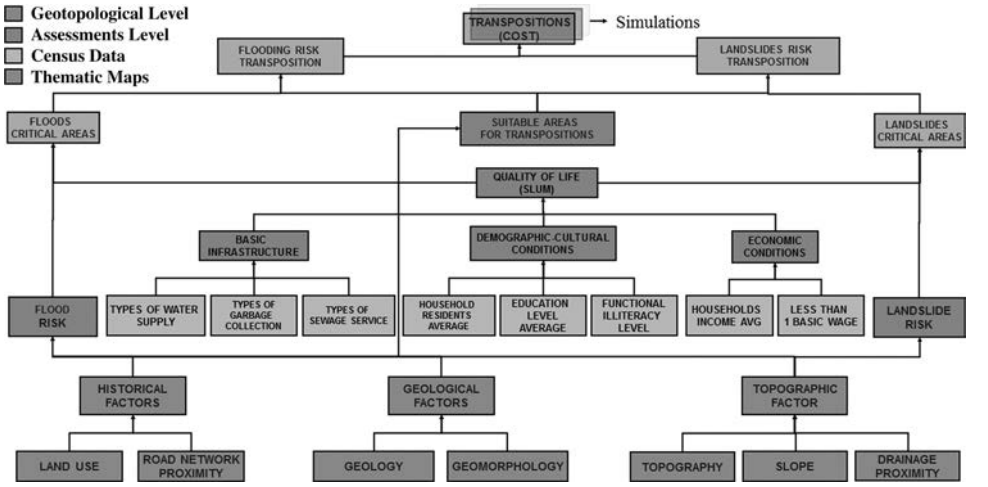

Figure 4.8.2 Spatial Management Tree: precarious settlements reallocation.

identification, as well as their associated threats and opportunities. In the present case, it is related to the presence of slums in urbanized areas, as an example which can be applied to other critical environmental situations. Relevant threats and opportunities can be identified by specific proximity analyses. Through simulated changes of data, the importance of hypothetical financial expenditures can be estimated in association with supposed individual or multiple changes. Specific cases of decision support obtainable from this tree are: (1) which slum places should be locally urbanized, due to impossible removal; (2) which slums demand population removal, due to dubious and/or expensive risk control at their present location; and (3) through simulations, which investments may produce the best results concerning quality of life for the population. Alternatives about where to act can be balanced against presumed expenditures. Again the local physical, biotic and socio-economic environmental variability (geodiversity) and the location and attributes of the involved entities and events (geotopology) are being considered by this geoprocessing structure. Successive analyses and syntheses can be efficiently performed to allow comparisons among individual or multiple environmental changes. The possibility of executing extensive, detailed or associated environmental investigations represents a clear evidence of the alleged condition named geoinclusion.

Some of the characteristics related to the foregoing tree should be further detailed:

- Maps are represented by rectangles. From any of the tree maps can be computed the areal extension of any map class, as well as the area of an arbitrarily drawn polygon. As usual, any computed areas can be understood as a random probability of occurrence for the considered area in relation to the total mapped surface.
- A digital evaluation map can be generated by combining distinct aspects related to the inspected area, such as geology, topography, inhabitants' social conditions, hazards (floods, landslides, etc.), and potentialities (urban expansion, tourism, etc.). In fact, the SMT structure can be used with any type of classificatory algorithm. Instances from these procedures are Boolean algebra trees and multi-criteria evaluations (Avdagic *et al.*, 2008).

- The map aggregation procedure and respective analyses can be conducted by teams of specialized professionals (geoscientists, civil engineering, health and education personnel). The interdisciplinary cooperation is particularly stimulated by the use of several types of maps. Multidisciplinary joint evaluations are induced and aimed at a synthetic final map generation, at the top of the "upside down tree".
- At the geotopological analysis level, identification of proximities may become important decision support information. A defined proximity between a slum area and areas suitable to receive its inhabitants, together with the respective cost estimates, can be ascertained. This identification may define if the slum area under investigation should be an object of population removal or else be subjected to local environmental improvements (e.g. risks elimination), due to the costs involved in the hypothetical population transfer.
- Sensibility of intermediate or final tree maps to simulated numerical variations applied to a map (or group of maps) can have their contribution shown as changes in the spatial distribution of the resulting tree map classes. Comparisons are not restrained to the taxonomic dimension of the spatial management tree. They can be extended to the spatial domain, through the simulated application of funds and/or physical changes (e.g. roads) along different geographic areas represented at the georeferenced database.
- A tree final map represents a complex and synthetic spatial estimator. It can be used to estimate the importance of simulated combinations of types and levels of phenomena.
- As mentioned before, the monetary costs related to the implementation of each final map's spatial estimates (i.e. the identified local environmental improvements costs) can be directly computed and reserved for future comparisons or controlling information.
- Many complex comparisons among sets of different tree applications can be made.
- If an overall environmental future scenario is created, including a projection for future expenses, high-level comparisons can be made as attempts to reconcile conflicts among prevailing paradigms, such as economic development, life quality and sustainability.
- As a final remark, the use of spatial management trees creates an organized series of evaluating procedures. This series embraces and gives immediate access to expenditure proposals and respective possible spatialized implementations. In some instances, previously accepted cost estimates can be analysed before their actual implementation and rejected, due to the arrival of better alternatives or new priorities.

4. Final Considerations

The presented concepts of geodiversity, geotopology and geoinclusion surround and are basic to most spatial planning areas and not only to environmental analyses. The role of these concepts, in both cases, is to support the creation of efficient parameters – that is, approximate measures – for the elaboration of classifications, evaluations and forecasts that are embedded into the environmental reality. It is always hoped that such an insertion promotes respect for environmental limitations, at the same time indicating occurrences of environmental threats, risks, potentialities and opportunities.

Analytic and synthesizing procedures must consider guiding concepts like the aforementioned, or else they have a great chance of producing conclusions of limited scope. If geoinclusion, particularly, is methodically considered in an environmental investigation, the probability of occurrence of unwanted results is minimized. The recommended procedure implies the use of such guiding concepts to produce and validate the conclusions obtained. For instance, alternatives can be compared according to their importance as possible originators of relevant

environmental disturbances. Geodiversity can be similarly considered through the application of indexes showing the amount of environmental interference related to the recommended procedures. Geotopological considerations, like accessibility, for instance, can serve as parameters for the selection of the alternatives created. Thus, the concepts of geodiversity, geotopology and geoinclusion can be used to verify, step by step, if necessary, the validity of conclusions, allowing cross-checking of tried alternatives. Decisions based upon this procedure have a firm and reproducible foundation.

Since geoprocessing can encompass, practically simultaneously, space, time and taxonomic dimensions, it brings predictive capacity to environmental research. And predictions can be made for any of the aforementioned dimensions. Through the analysis of other phenomena assemblages pertaining to similar environmental situations, relevant knowledge can be obtained. Especially if scanning procedures (exhaustive searching) are adopted, this empirical learning may be turned into an objective task, in contrast with subjective selections sometimes used in spatial investigations.

Another recent development involving geoprocessing deserving attention and leaving questions open is associated with the exponential growth of environmental data that is constantly acquired. Huge budgets are spent on large data storage centres. Systems involving environmental data have to be dynamic entities, able to promote constant changing of their stored data into socially useful information. Recently occurring developments in network search mechanisms, systems interoperability and metadata structures (Chan and Zeng, 2006) are good news in this regard.

Regarding environmental research, a new semiotic structure is arising for use in environmental research, with some its aspects deserving consideration:

- Maps are more transitory than ever as an environmental information source. They can be "ad hoc" digitally produced, in useful time, for practically any geographic referential location. What was a coveted and valuable treasure – the guiding map – has become an organized, more available and ephemeral geotopological data source.
- Isolated results like, for example, a map showing areas classified as risky regarding landslides or river floods, have only a self-limited use. They must be included, analysed and presented, embedded in encompassing structures ready to produce real, explicit and useful decision support results. The spatial management tree structure, for instance, can give support to decisions concerning human displacements and specific financial investments.
- The key to a successful adaptation of a methodology to a research field resides in searching the key theoretical points. As an example, if the contention is accepted that, to scientifically operate at any environment, the starting point is to select the spatial referential (the Earth's surface, for instance) and identify the entities and events which are relevant to the investigation, many relationships among variables may be exposed by a location-referenced database creation. Proximity, precedency and contingency, among other relational properties, become available in exploratory and synthetizing procedures which may have, as a result, the identification of new and unsuspected entities (e.g. risk areas) and associative structures, allowing sensibility studies and predictions. Again, an example of this structure type is the aforementioned spatial management tree.
- The value of obtaining digital information for a geographic location has recently received increasing attention. Less attention has been paid to geoinclusion, a concept able to induce alternative searches and illuminate obscure aspects of environmental conditions which may cause enormous future problems. The lasting success of environmental modifications

demands their careful and previous inclusion in possible threats and opportunities (which can be considered estimated events), as well as the places (entities) where risks and potentialities are foreseen.

- We call attention to scientific texts' elaboration. It is important to produce reading materials that pass the screening of experts, and that are rigorous and reliable, but research needs to be able to produce documents that overcome the technical jargon and are readable by wider audiences.
- Learning from past assemblages of entities and events associated with an environment, progressively stored as a local memory, will expand the capabilities of geoprocessing. Nowdays, instead of excessively using subjective research propositions, this procedure can be performed through analytical and exhaustive search procedures. Growing and spatially organized records of past events from an environment may become a valuable knowledge inheritance.
- Instead of offering only a means of phenomena identification and classification, as is usual in geosciences, geoprocessing encourages hypothesis creation and verification, mainly but not only concerning the spatial distribution of environmental phenomena. It also allows vigilance and control concerning the entities and events involved – that is, about the represented environmental reality.

Hopefully, from the foregoing discussion a conclusion may emerge: geoprocessing, as an assemblage of concepts, methods and techniques aimed at changing environmental data into documented information, can increase the operational power of spatial planning and environmental management and be an important element of sustainable development.

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4.9

SPATIAL SIMULATION AND THE REAL WORLD

Digital methods and techniques in the context of strategic planning

Claudia Yamu, Andreas Voigt and Pierre Frankhauser

Abstract

Spatial modelling and simulation allow a complex reality to be shown in simplified form, in order that spatial strategies and their impacts can be explored in advance. Spatial strategies are like guidelines into the future on which the long-term process (often lasting many years) of implementing solutions for difficult spatial problems is orientated (Scholl, 2005, p. 1122–1123).

In this chapter we discuss two topics that fit well into the context of a digital reality: first, the idea of *strategic planning* and second, a *multi-scale, multi-fractal simulation model for informed decision making*; both linked to each other and supporting the development of a sustainable and sustaining built environment.

Basic theoretical approach

Spatial planning processes have their starting point in specific, socially relevant questions that affect the real world (Scholl, 2005, p. 1122). These questions are either problems that have already been solved, which can be revised by means of routines, or unresolved problems awaiting a solution. In the temporal context, planning tasks can be differentiated into those that are already imminent and those which appear foreseeable, probable or at least conceivable from a synoptic perspective and looking ahead into a possible future. These are usually problems that are to be avoided in the first place or whose negative impact is to be mitigated. In a democratic context, dealing with both types of problems entails obtaining political legitimisation and the acceptance and understanding of society at large. Resources for the design of planning processes and opportunities for "interventions"[1] in the real world – and likewise the objects of planning processes – that is, space and time – are limited and therefore require priorities to be set and justified. When addressing problems there is often a clash between differing points of view, both political and disciplinary. Planning processes must therefore begin with a joint "awareness-raising" phase encompassing everyone involved in the respective process. The "shaping of the

living environment" in order to safeguard the living conditions of all living things can serve as a common concept of planning (Voigt, 2012).

Based on a "comprehension of the situation"[2] the task is to draft possible solutions, draw up a shortlist based on justifiable criteria and arrive at a democratically legitimised decision as to the further course of action.[3] The resulting spatial concepts and plans – elaborated in most cases in several rounds and generally in teams – are based on a real world. The preliminary outcome of planning processes is recommendations for concrete interventions in this real world and associated actions for solving recognised specific problems. The realization of these interventions changes the world, in the medium term or permanently. Their spatial impact must therefore be carefully investigated prior to implementation.

The key issues for future spatial development – for example, safeguarding the energy supply for our living environments, securing mobility, the infill development of urban systems, dealing with demographic change and climate change – are complex ones. Proper handling of this complexity (De Roo and Silva, 2010) is therefore of decisive importance in developing viable potential solutions for planning problems. The reduction of complexity to an acceptable level by means of spatial modelling is the essential basis for a spatial simulation, the aim being to facilitate decision making, communication and knowledge gain (Markelin and Fahle, 1979, p.19–20).

The real world is the actual "laboratory" for planning and architecture. Spatial modelling and simulation allow a complex reality to be shown in simplified form, in order that interventions and their spatial impacts can be explored in advance. Spatial models and simulations need to be representative, precise, clear and vivid, attractive and comprehensible (Sheppard, 1989). The fast-paced development of digital modelling and simulation technologies recommends the construction of digital spatial simulation labs, which allow experimentation with space and solutions related to spatial problems in different temporal contexts. Thus, the following quality criteria can be used for digital "spatial simulation labs": Support of all phases of planning processes (cf. Schönwandt 2008, p. 36), especially team-based decision making; optimum clarity and intelligibility of spatial information (Sheppard, 1989); and combination and synoptic presentation of different qualities of information (quantitative and qualitative, image-based and text-based information).

In order to comply with these criteria, Voigt, Wössner *et al.* (2009) suggest for spatial simulation labs following framework: System development of a multipurpose virtual reality (VR) simulation environment, lab to be useable as both a working environment and a presentation environment, and interactive real-time simulation of highly complex geo-referenced and graphical data.

The spatial simulation lab at Vienna University of Technology was set up on the basis of the aforementioned criteria.[4] It follows that the fields of research at the Spatial Simulation Lab (acronym: SimLab) at Vienna University of Technology are geared to the requirements of planning processes (solving or avoiding complex spatial problems [Schönwandt *et al.*, 2013; Voigt, 2012], strategic planning [Scholl, 2005]), with a special focus on topical issues (e.g. safeguarding the energy supply for our living environments, inner city development, sustainability of metropolitan areas, etc.). The Spatial Simulation Lab is designed to enable a positive relationship between use and benefit (Figure 4.9.1).

Let us recall that the solution of complex, spatial problems demands a "strategic attitude" and procedure, as even the simplified digital world (2D, 3D, 4D) is highly complex given the interdependency of the chosen spatial, social, economic and ecological parameters that are interwoven in a multi-scale and multidimensional manner.

Figure 4.9.1 Spatial simulation laboratory (VR Environment), Vienna University of Technology: team-oriented planning process.

By way of example, the underlying concept of strategic planning (with a focus on planning processes) will first be elucidated, followed by a detailed discussion of one of the research fields: multi-scale, multi-fractal simulation model for planning (Czerkauer-Yamu, 2012; Czerkauer-Yamu and Frankhauser, 2010, 2011, 2013). Both fields support the lab's overarching goal of a sustainable and sustaining built environment.

Strategic planning[5] for solving complex spatial problems developing a sustainable built environment

Strategic spatial planning has been widely discussed in the literature (Bryson and Roering, 1988; Bryson, 1995; Healey, 1997, 2004, 2013; Mintzberg, 1994, 2002; Mastop and Faludi, 1997; Kunzmann, 2000; Kreukels, 2000; Albrechts, 2004; Albrechts *et al.* 2003; and Friedmann, 2004 for a synthesis), giving us the awareness that there are no single universally accepted definitions (Albrecht, 2006), as the topic can be approached from many viewpoints. A recent definition of Healey *et al.* defines strategic planning as: "A social process through which a range of people in diverse institutional relations and positions come together to design plan-making processes and develop contents and strategies for the management of spatial change […]" (Healey *et al.*, 1997, p.5). Strategic planning includes directly witnessing, experiencing and observing aspects of behaviours in the real world as a proven way of inspiring and informing new ideas. Careful observation of people's behaviour and market forces (socio-economic interactions) combined with the urban and regional layout can open up an insight that uncovers a broad spectrum of opportunities that were not evident before (Fulton Suri, 2005). This is based on the consideration that for any planning and design strategy we need to start with an original insight about

the usage of space and its physical layout. The meta-idea is to address diverse levels of the built environment, such as transport, demography, businesses, production, services, tourism, health sector, living, leisure, etc. We have to acknowledge that the built environment on all scales (from global to local and vice versa) is driven by various forces that are interwoven in quite a complex manner. Thus, strategic planning is a systemic approach incorporating the elements of a multi-disciplinary and interdisciplinary holistic approach.

Based on the background and requirements of strategic planning, it can be seen that concepts, models and simulations (2D, 3D, 4D) can add value to strategic planning, as all of them contribute significantly to the formulation and exchange of spatial ideas. These visualized and modelled ideas address the users of space and enhance social (team-oriented) processes to obtain a further in-depth interpretation in order to reach the next level of a more and specific realizable interpretation (awareness-raising process). Thus, we are in line of thought of Bryson (1988) as spatial modelling and simulation can support the ideas of: clarifying future directions, develop a coherent and defensible basis for decision-making, exercise maximum discretion in the area under scrutiny, and to build expertise. Within the framework of strategic planning simulation and modelling is a co-process using embedded information from the strategic planning process. Spatial problems, planning pre-requisites and the complexity of the area under scrutiny predefine and identify modelling and simulation methods and techniques (and not vice versa) as well as parameters (spatial, social, economic, ecological).

In general, the range of modelling vary from decision simulation, decision support systems, planning support systems ongoing to visualization techniques used for participation and collaborative processes. Once, the bundle is defined and ideally an interactive scenario development and testing has been carried out, expertise and recommendation feed back into the strategic planning process and is enriched with information on strategic issues such as conflict embodiment. The post evaluation of implemented planning and design projects supports not only enhancing future design processes, but also the ongoing development of simulation and modelling techniques and tools.

The use of multi-scale simulation models for planning (within strategic planning) supports tackling the idea of complexity of the built environment. In the discourse of urban change a multi-scale view is linked to a non-linear, hierarchical approach. Hierarchy is part of complex systems (i.e. fractals, power laws).

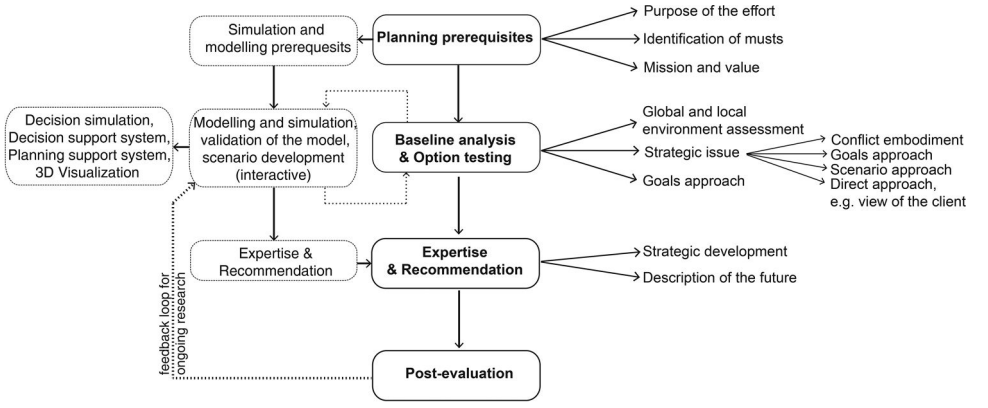

Figure 4.9.2 A strategic planning process incorporating a simulation and modelling process.

Strategic planning can be supported through decision simulation, decision support systems, planning support systems. Our digital labs are a compound of diverse components and modules (e.g. visualisation software, GIS software, hardware). Thus, spatial simulation labs support planning processes by visualisation and processing of complex data (graphic and numeric), ideally consistent through all scales (zoom in/zoom out). In order to make optimum use of digital labs a logical consequence is to focus research on planning support systems, as this links the "digital lab" framework with "digital in-situ" planning processes where a possible spatial future can be tested and evaluated. The presented research focuses on decision simulation incorporating multi-scale/multidimensional/multi-fractal attributes. These attributes guarantee efficiency, a quality criterion for sustainability, which will be explained in more detail ahead.

A multi-scale, multifractal simulation model for planning[6]

Morphological analyses of cities have shown that urban patterns after the industrial revolution, which are often felt to be amorphous, mostly follow a fractal structural principle (Frankhauser, 1994, 2008; Batty and Longley, 1994; Batty and Xie, 1996, 1999; Benguigui *et al.*, 2000; Shen, 2002; Salingaros, 2005; Tannier and Pumain, 2005; Thomas *et al.*, 2010).

Urban growth appears to be governed by complex dynamic processes generating morphologically well-defined macrostructures. This is reminiscent of other evolutionary systems such as clouds, trees, leaves or the human vascular system. However, this hierarchical ordering principle is changing with increasing car traffic, and the form this change takes is that agglomerations are becoming more and more uniformly distributed due to the increased growth of remote suburbs (Frankhauser, 2008). Thus, using fractal geometry for urban planning assumes implicitly that fractality corresponds to underlying optimisation criteria, as is supposed for natural structures.

Indeed, fractal surfaces seem to be optimal for spatial systems requiring a high articulation between subsystems. Then, hierarchical structures seem very efficient. This holds for many natural networks such as lungs or vascular systems. In urban planning, an example could be the urban street network. For Paris it has been shown that the street system, including Haussmann's street layouts of the nineteenth century, indeed follows fractal scaling (Frankhauser, 1994). Since every building must be accessible, transport networks generally play a crucial role in urban growth. Therefore, during the train-tram period, public transport networks generated axial growth, as can still be seen in the case of Berlin, where the suburban railway network structured the urban space. Railway networks are usually hierarchically organized and cover space less uniformly than street networks do nowadays. This explains why emerging urban patterns showed particularly fractal properties as long as public transport preponderated. In Berlin this type of growth later became the basis for planning strategies by privileging development around the suburban railway axes. This holds even more explicitly for Copenhagen's Finger Plan. Privileging transport axes as development axes is an important aspect of the fractal planning concept.

Another well-known property of urban systems is the emergence of a central place hierarchy known as rank size distribution, which corresponds to a fractal hierarchy. The concept presented for the planning model refers to such a hierarchical organization of metropolitan areas. The hierarchical structure of an agglomeration, developed on the basis of social and economic interaction and interdependency between the locations (e.g. villages), has been investigated in urban geography for a long time. These observations served Christaller (1933) as the foundation for his central place theory, which is based on a reflection about the catchment areas of different levels of services depending on how often the services are used. That is why the services for everyday life (e.g. supermarkets) are close to housing, whereas weekly or monthly services require bigger

catchment areas. Christaller's theory is constrained to concerning only a functional hierarchy, not the spatial structure (topography). This explains why in Christaller's theory locations are evenly distributed across the spatial surface plane. The accessibility of such a distribution is disadvantageous for several reasons. On the one hand, it demands a pseudo-homogeneous traffic infrastructure; on the other hand, all of the remaining free spaces are approximately the same size. In our research, Christaller's theory undergoes a reworking that is clearly differentiated from Hillerbrecht's ideal city structure of the Regionalstadt (regional town). Christaller's concept leads further to the sustainable concept of a city of short distances supporting a functional, administratively sustainable urban planning concept.

The planning concept used modifies the Christaller scheme by introducing an uneven spatial distribution of settlements where urbanised areas are concentrated close to public transport axes (Frankhauser, 2008). Nodes of a hierarchically structured transport network are the privileged locations for services and shopping areas. This calls to mind the concept of decentralised centralisation or, as Calthorpe formulates it, the regional town (Calthorpe *et al.*, 2001), which also enables an intraregional supply for in-between spaces of global axes.

The concepts allow preserving a hierarchically organized connected system of green areas. Hence natural reserves of different sizes are preserved, providing habitats for a large number of animals and plants.

However, here we explicitly present a multi-scale simulation model where fractal measures become norms for planning consistently from a metropolitan scale to a local scale (neighbourhoods) (Czerkauer-Yamu, 2012). The metropolitan area is thus an organic entity in which different parts of the agglomerations are linked to each other.

How the planning concept can be applied

When Christaller published his theory of central places in southern Germany, it was clear that important functions providing for the population extra mures oriented themselves towards the very centre of the city. Commerce and services were mostly located near the marketplace as the core of European cities. It was quite apposite that Christaller called these functions "central functions", given that infrastructures with the highest importance tended towards the most central locations. Furthermore, Christaller noted a strong hierarchy among "central places" (Borsdorf, 2004). Borsdorf stresses the fact that within this system, surrounding villages near a central city could never gain a higher centrality, as Christaller's theory took gravitation and transport costs (= distance) as a basic principle (Borsdorf, 2004). Borsdorf's view on Christaller is correct if we try to implement Christaller as a rigid, non-flexible system that is not embedded in the surrounding built environment.

However, if we vary Christaller in the sense that we see his scheme as a modular system and further rescale it, adding new hierarchies and interfaces for agglomerations (working, living, leisure), we find surprising new insights and possibilities for use in a differentiated spatial context. Hillebrecht's Regionalstadt (regional town) addresses central locations for commerce, services and workplaces. In the present-day search for a sustainable future, planners need to give up the idea of an a priori linking of regional spatial hierarchies with functional hierarchies. It is well known that vital European city centres are often the crystallisation points of economic, political and cultural power. It is important to make this distinction when addressing new planning strategies with the underlying idea of central place theory.

An aspect not taken into account by Christaller, but crucial to the concept presented herein, is the spatial system of green and leisure areas. The importance of green areas and open spaces

for a good-quality residential environment has been stressed by many authors (Gueymard, 2006; Bonaiuto *et al.*, 2003), as has the presence of vegetation in urban space (Botkin and Beveridge, 1997). Other authors point out, too, the importance of access to leisure areas (Guo and Bhat, 2002; Barbosa *et al.*, 2007).

A first step for drafting a fractal concept of planning and developing a tool for elaborating fractal development scenarios was realized as a planning concept (Frankhauser, 2007, 2011) together with the associated interactive planning tool (MUP-City) at ThéMA,[7] Université de Franche-Comté (Tannier *et al.*, 2012; Frankhauser *et al.*, 2011). The method used in this project employs a grid which covers the study area. According to the logic used for fractal grid analysis, the grid size is progressively modified, allowing the consideration of "soil occupation" (cf. soil occupation index) at different scales. Hence, this grid serves as a spatial reference system.

Figure 4.9.3a illustrates how the iterative procedure functions. In our illustration, the grid mesh is reduced by a factor $r=1/3$ for each step. As shown in Figure 4.9.3 a, b, the pattern at each iteration step consists of black grid squares corresponding to built-up sites and white ones representing undeveloped land (including transport networks). In each step, the size of all grid squares is the same. It would be possible to introduce clusters of black squares, but the logic of iteration would separate them in the course of iteration and generate isolated white islands of different sizes within the urbanised area, which is contradictory to our goals (Figure 4.9.3b). It should be emphasised that fractal iteration by no means requires the existence of a grid. This logic allows simplifying the multi-scale planning tool and serves to identify whether a grid square contains

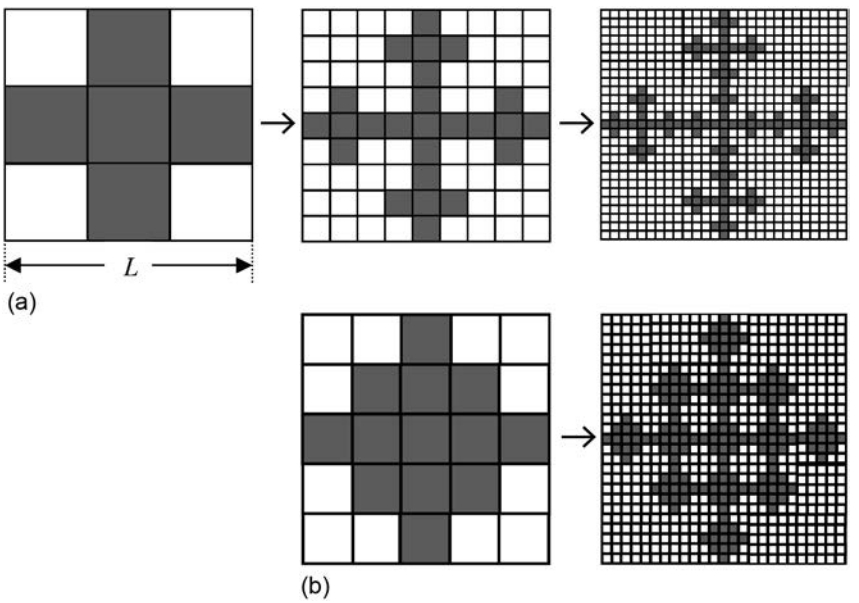

Figure 4.9.3 (a) The first three iteration steps for generating a uni-fractal Sierpinski carpet, with the width of the grid reduced by 1/3 for each iteration step. This model is the reference model used in the subsequent research. (b) The first two iteration steps of a different uni-fractal Sierpinksi carpet in which the iteration generates isolated inner lacunas.

buildings. Tests showed that this procedure is well suited to tackling urban development scenarios on the scale of suburban villages or possible neighbourhoods.

For practical use, at each step we identify whether a grid square contains buildings – what we, in previous papers, called "fractal decomposition". The planning tool allows developing scenarios by combining several morphological rules based on fractal geometry and topological properties (Figure 4.9.4a). These rules control for each step (scale) whether grid squares may be opened for a potential urban development. According to the underlying fractal logic at a given decomposition step, grid elements can be only chosen for further urbanization, if they lie within larger grid elements being identified as future potential urbanization areas at the previous decomposition step. Due to this logic, fragmentation of built-up space as well as of open landscape are avoided, but good access to leisure areas ensured (Frankhauser *et al.*, 2007; Frankhauser, 2012). Moreover, accessibility to different kinds of service and shopping centres is evaluated (Figure 4.9.4b) (cf. Tannier *et al.*, 2012).

However, this method becomes less effective for metropolitan areas on a regional scale. Indeed, here it seems important to include, from the very beginning, the various sizes of settlements according to the Christallerian logic described earlier. This is not really possible when using a uni-fractal reference model as used in the previous projects, which was a standard Sierpinski carpet which corresponds directly to the described grid-like logic.

Thus we propose here a *multi-fractal reference model* (Figure 4.9.5) which combines different reduction factors (Feder, 1988). As in previous work the reference model serves merely to illustrate the basic principles of the planning concept and define the procedure for application to real-world cities. The reference model used in this research is a multi-fractal version of the Sierpinski carpet in Figure 4.9.2. (Czerkauer-Yamu and Frankhauser, 2011; Frankhauser, 2012).

We still have square-like elements but at each iteration step we now obtain squares of different size. Hence such logic is no longer compatible with a grid-like support. Figure 4.9.5 represents the so-called generator which defines the iteration procedure. A square of base length L is reduced by the reduction factors r_1=0.5 and r_2=0.25. One square of size 0.5 x L is placed in the centre and four small ones of size 0.25 x L are placed around it. In the next step this procedure is applied to each of the generated squares. Hence in the course of iteration the two factors are combined, which in the nth iteration step yields the set of values: r_1^n, $r_1^{n-1}\ r_2$, $r_1^{n-2}\ r_2^2$,…,$r_1\ r_2^n$. Figure 4.9.5 shows the first three iteration steps.

We interpret the square of size L as a metropolitan area consisting of two main axes, which we assume intersect in the centre of the main agglomeration, which corresponds to the big black square and which is surrounded by four smaller sub-centres. In contrast to previous work, we consider these black squares as catchment areas of the central places of different supply levels, for which we assume suitability for further developments. Settlements lying outside these areas are considered as "rural hinterland", too remote from any centres and not suitable for future developments. This illustrates our basic principle of aiming to concentrate urban development close to existing centres in order to avoid large-scale traffic flows (transit oriented development TOD). Through ongoing iteration, we refine our spatial model by generating additional subcentres located at the intersections of the main transport axes and secondary shorter branches. The next steps generate an increasing number of additional smaller network branches and smaller centres with local catchment areas located at the network intersection points. Since each step generates free space, we obtain a complex border of the areas which are open for urban development.

Due to iteration, the spatial system follows a strong hierarchical organization principle, which allows the definition of a sequence of centres referring to different levels of supply according

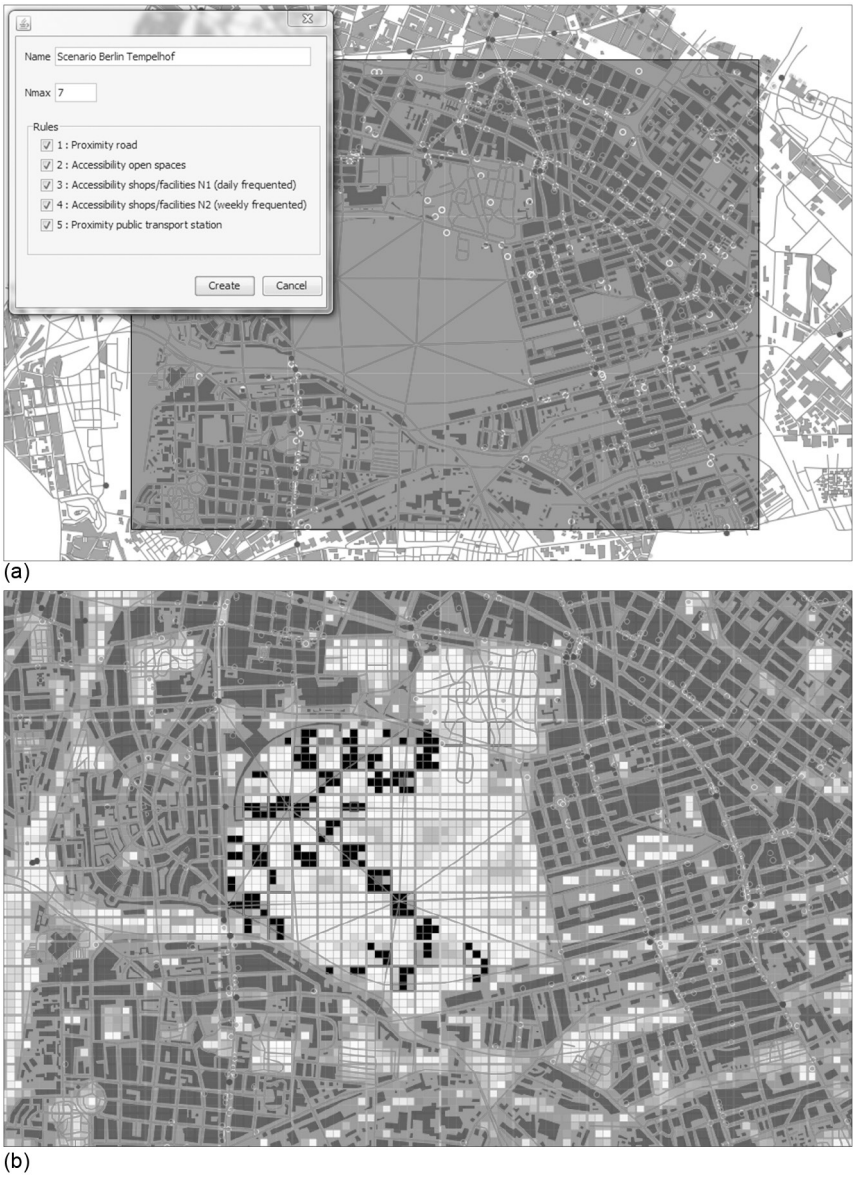

Figure 4.9.4 (a) Set-up for a fractal scenario with MUP-City for the area of the former airport Berlin-Tempelhof (Czerkauer-Yamu *et al.*, 2011). (b) Scenario evaluation for Berlin-Tempelhof (suitability map logic) (Czerkauer-Yamu *et al.*, 2011).

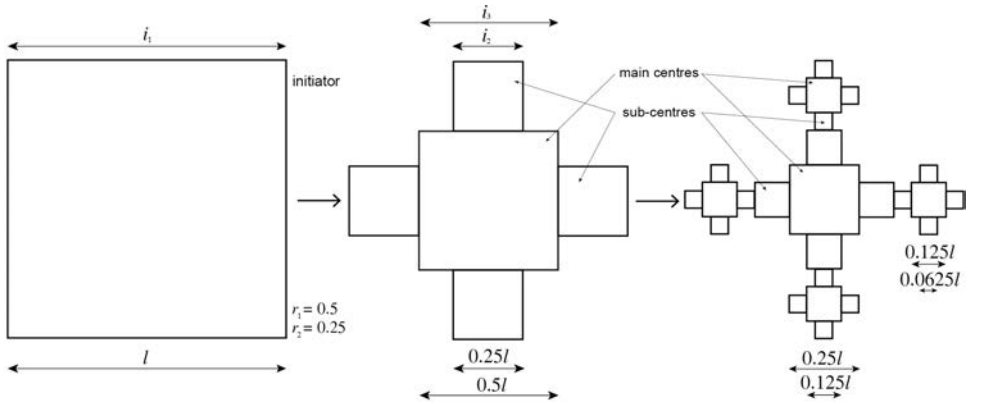

Figure 4.9.5 The first iteration steps of a multi-fractal Sierpinski carpet which generates a hierarchy of squares of different sizes. This fractal serves as one possible reference model for fractal urban planning both on a regional and urban scale.

to their catchment areas. The underlying radio-concentric logic guarantees good accessibility of the service and shopping centres. Similarly to the uni-fractal Sierpinski carpet, the model avoids detached patches of built-up space – that is, sprawl – but also avoids fragmentation of non-urbanised areas – that is, natural landscape. However, fractality does allow a multi-scale articulation of built-up areas and open space by lengthening the urban border. This provides for good accessibility of leisure areas and green areas in the direct neighbourhood of urbanised areas.

For real-world application, a new decision simulation software , "Fractalopolis"[8] was developed. Therefore, we will discuss the procedure and illustrate it by means of a manual simulation of the Vienna-Bratislava metropolitan region (Figure 4.9.6).

The first step is now to delimit the metropolitan area we want to tackle, corresponding to the base length L of the initial square. The square-like area should be centred (gravity centre) on the main agglomeration. In the next step we define the generator, which usually will be less symmetrical than that of the reference model. We fix the extent r_1 x L of the catchment area of the main agglomeration and define size r_2 x L and position of the catchment areas of first-order sub-centres (Figure 4.9.5). This may be done by using the existing employment areas but also by estimating them for planning purposes when sub-centres should be more developed. This step also serves to define the number of elements by the reduction factor r_2. It should be emphasised that catchment areas are not necessarily adjacent but may be separated by "empty zones". This is, however, less realistic when going on with iteration and thus working on detailed intra-urban scales. As far as possible, the cells representing the catchment areas of the sub-centres should be centred on these places according to the underlying radio-concentric logic.

In the next step, the software user repeats this procedure for each of the defined potential development areas (mesh) – that is, the cells localised in the previous step. Zones lying outside these meshes cannot be developed and will be blocked by the decision simulation. Within each square, again, one big and four small squares may be localised. Hence, at each step the user can delineate the future development zone by choosing the position of the squares. As in previous research, additional constraints are introduced. Additional morphological rules avoid fragmentation of continuous open space as well as built-up space, ensuring good traffic flow (interlinkage) between green space and urbanised area (teragon boundary). The fractal constraint and the additional morphological rules may not be infringed (strict rules).

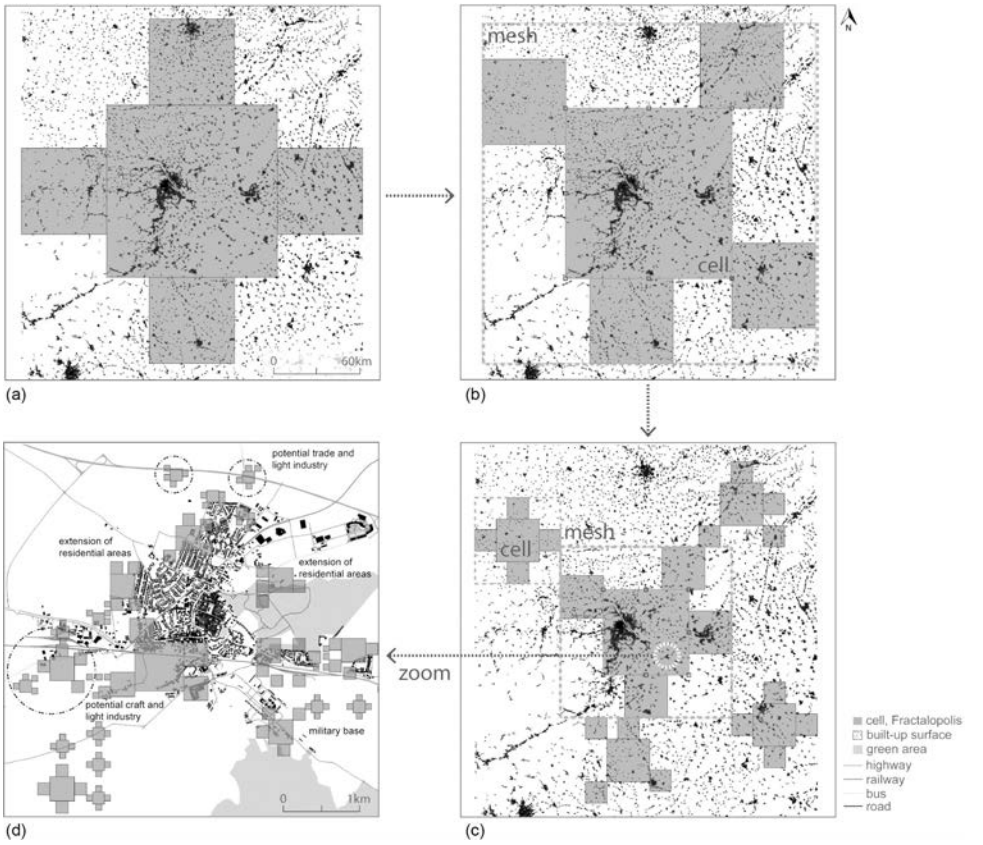

Figure 4.9.6 The first iteration steps of a multi-fractal Sierpinski carpet generating a hierarchy of squares of different sizes representing a hierarchy of possible potential urbanization areas.

a) Starting with a theoretical multifractal Sierpinski at iteration step 1

b) Creating a normative development strategy at iteration step 1

c) Normative development strategy at iteratio step 2

d) Scenario addressing a variety of urbanization strategy at iteration step 7

By taking into account the location of existing or possible new shopping and service centres, it is possible to compute the accessibilities for each site.This makes it possible to evaluate to what extent the different sites are suitable for development. For this purpose, clusters of services and shopping amenities are constituted by using the aggregation method used in MUP-city (Tannier *et al.*, 2012; modified and applied by Czerkauer-Yamu, 2012).

As in MUP-city, the user will be informed about the accessibility of service, shopping and leisure amenities by means of values. For this purpose, the logic of MUP-city will be used to introduce a synthetic measure combining the accessibilities of different kinds of amenities by means of fuzzy aggregation. Since the position of the elements is no longer constrained by a grid, this information is given in the logic of a "suitability map", which provides information on a rather fine scale. Similar information is introduced concerning the accessibility of leisure areas. However, the intention is to take into account the size of the accessible leisure areas, since a small wooded area does not have the same function as a big forest.

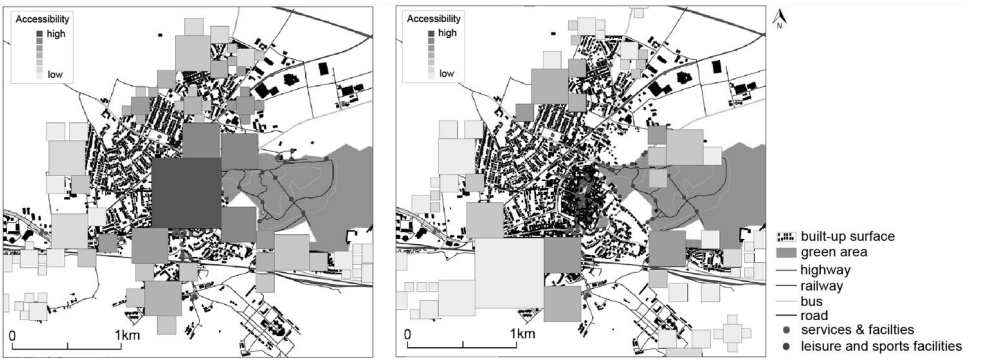

Figure 4.9.7 Accessibility evaluation combining daily and weekly shopping, services and leisure amenities (incl. green areas); computed on the road network for two different scenarios using Fractalopolis 6.0 software.

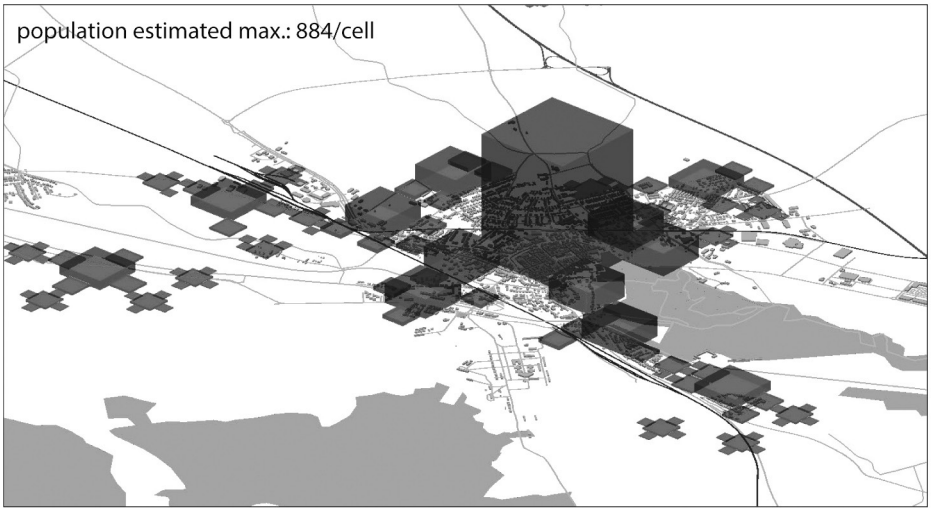

Figure 4.9.8 3D population model calculated on bases of empirical data for scenario Figure 4.9.7 a).

In addition, the concept also introduces an "intensity index" which e.g. correspond to the population (existing and scenarios) for each cell for potential urbanization. For this purpose we introduce an additional multi-fractal model, which can be done by assigning a weight to each cell of the generator (Frankhauser, 2012). According to the same logic as that used for generating the multi-fractal Sierpinski carpet, the following iteration steps combine these factors. We distribute a given amount P of population of the whole metropolitan area among the different cells of the generator. Using the model in Figure 4.9.5 we assign a weight p_1 to the central agglomeration and the same weight p_2 to each of the four secondary centres, which yields

$$p_1 + 4\,p_2 = P, \text{ usually with } p_1 > p_2$$

In the next step, population is distributed among the five cells lying within each of these five meshes. Hence we have factors p_1^2, p_1p_2, p_2p_1, p_2^2. This lets us introduce higher concentrations within central zones, taking into account the usual decline in intensity of land occupation with increasing distances from the city. The principle is illustrated in Figure 4.9.8. By specifying the factors, simulations can 3D visualizations can be realized for informed decision making and strategic planning. If sufficient data about the buildings is available, the impact of the different factors can be input according to the real-world situation in order to minimise the deviation between development simulation and reality.

Summary and outlook

In this chapter we have linked system design with the idea of spatial simulation labs in order to enhance an awareness-raising process supported by participation processes. As stated earlier, spatial strategies are like guidelines into the future on which the long-term process (often lasting many years) of implementing solutions for difficult spatial problems is orientated (Scholl, 2005). Physical digital realization requires a spatial simulation lab. The chosen quality criteria and attributes of the Spatial Simulation Lab [SimLab] at Vienna University of Technology support the development of sophisticated 3D/4D models, real-time information and meta-information, clarity, teamwork and hybrid systems (digital-analogue interfaces).

Ongoing research in the context of the topics discussed herein includes advanced 4D models (time trajectories), spatial models consistent through scales with defined levels of detail (LoD) according to corresponding scales, and sophisticated interactive models (which add another level of complexity to spatial simulation and software development).

There is a need for suitable laboratories to create spatial models – as representations of reality – and simulations building on them, which permit a clear overview, as well as insight at various levels of scale, and facilitate teamwork. The results of simulation should be available promptly; the ideal option is a simulation in real time. Digital simulation laboratories and associated planning information systems can provide state-of-the-art instruments for dealing with difficult spatial issues and ensure the success of dialogue between the world of planning ("planning world", Schönwandt, 2008) and everyday life ("life world", Schönwandt, 2008).

Notes

1 "The keyword 'Intervention' refers to all that is actually done on the basis of 'Instructions' that have been previously worked out" (Schönwandt 2008: 39). "'Instructions' detail all that must be done in order to bring about a desired effect" (ibid.: 38).

2 "By 'Comprehension of the Situation' we mean the act of developing a description of a problem in need of planning such that this description represents the task of the planner as accurately as possible" (Schönwandt 2008: 37).

3 "Once a set of 'Instructions' has been elaborated, it is important to come to an understanding with those who will be affected by the course of actions that follow" (ibid.: 39).

4 The system provides interactive real-time visualisations of highly complex graphic datasets in a 3D or 4D accessible walk-through environment. Visual representation is achieved by means of 3D-rear projection. COVISE (Collaborative Visualization and Simulation Environment), a research software developed by the High Performance Computing Center Stuttgart (www.hlrs.de), is currently used as VR-software (Voigt, Wössner & Kieferle 2009: 145).

5 See also Czerkauer-Yamu and Voigt (2011).

6 See also Czerkauer-Yamu and Frankhauser (2011).

7 Théoriser et Modéliser pour Aménager.

8 The authors are grateful for financial support for this project provided by the French Ministry of Environment and Sustainable Development, the Environment and Energy Management Agency (ADEME) in the framework of the PREDIT 4 research programme.

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4.10
SPATIAL DATA INFRASTRUCTURES FOR SPATIAL PLANNING RESEARCH

Max Craglia

1. Introduction: European environmental legislation and spatial planning

The term spatial planning gained currency in the early 1990s during the development of the European Spatial Development Perspective (ESDP), which recognised that the development of the European Union had an increasing number of spatial implications, from transport to energy, to regional development, which needed to be recognised at national and sub-national levels. As the ESDP was finalized, there was a flurry of academic articles considering the implications of this development for planning and governance in Europe. Titles such as "The Europeanisation of sub-national governance" (John, 2000), "Constructing the European spatial development perspective – for whom?" (Williams, 2000), and "Power shifts in the European Union? The case of spatial planning" (Eser and Konstadakopoulos, 2000) give a flavour of the concern among academics about the increasing influence of Europe on the planning debate and practice.

European Planning Studies is a journal published in cooperation with the Association of European Schools of Planning and therefore can be taken as broadly representative of the areas of interest of the European planning community of practice. A review of twelve years of the journal (2000–2012) shows that those concerns were not sustained over time. Although the journal features regular European briefings, their focus is primarily on the role of structural funds, while the vast majority of research articles in the period focus on issues of how to address the deepening economic and social crisis and facilitate innovation, and growth in a range of policies from industrial to cultural. The European dimension of spatial planning features only occasionally, and it is worth noting that of the twenty-eight special issues of the journal dedicated to specific topics, only one is dedicated to spatial planning (issue 2, 2005), giving a sense of the shift in focus of the European planning community.

Of relevance to this chapter is also the relative neglect in the planning community represented by this journal of the influence of environmental policy on spatial planning. Again in the twelve years reviewed, only one spatial issue is devoted to environmental aspects (climate change and sustainable cities, issue 1, 2012), and only three articles on the impact of the Water Framework Directive (Howe and White, 2002; Kaika, 2003; Pares, 2011).

It is worth recalling, particularly for non-European readers, that the European Union is not a federal state like the US. It is a union of (currently) twenty-seven member states that decide to share certain areas of responsibility through treaties signed by the heads of state and ratified by their parliaments. For those policy areas in which the EU is given responsibility (such as agriculture, regional policy, internal market, and so on), the European Commission proposes actions that are voted and approved (or not, as the case may be) by the Council, representing the governments of the member states, and the European Parliament, representing all European citizens. The EU has no jurisdiction on matters of land use planning, which remain a national and sub-national responsibility. For this reason the ESDP was an initiative led by the member states and not the European Commission. The EU does, however, have powers on environmental policy since the 1993 Amsterdam Treaty introduced sustainable development as one of the key objectives of the Union. Today, there are more than four thousand legal acts in the European environmental legislation, of which more than three quarters have a direct or indirect spatial impact as they relate to pollution and nuisance for water, air, noise, chemicals and radioactive waste, and natural resources.

Since the year 2000, environmental directives have become more prescriptive and spatially focused. A landmark in this respect is the Water Framework Directive (2000/60/EC) which requires all member states to improve the environmental status of their surface and underground waters, managing them through river basins management plans. These plans must set out a detailed account of how the objectives set for the river basin (ecological status, quantitative status, chemical status and protected area objectives) are to be reached within the timescale required. The plan must include the analysis of the river basin's characteristics, a review of the impact of human activity on the status of waters in the basin, estimation of the effect of existing legislation and the remaining "gap" to meeting these objectives, and a set of measures designed to fill the gap. In addition, it is necessary to carry out an economic analysis of water use within the river basin. This is to enable a rational discussion on the cost-effectiveness of the various possible measures.

As 70 per cent of all fresh waters in Europe cross national boundaries, and river basins also cross multiple administrative units (see Figure 4.10.1), the preparation and implementation of these management plans will have profound implications on spatial planning at local, regional, and national levels across the whole of the EU. The equivalent of the WFD for the seas is the Marine Strategy Framework Directive 2008/56/EC, which asks member states to develop marine strategies to achieve "good environmental status" for their waters.

Other directives with a noticeable spatial impact are, for example, the Environmental Noise Directive (2002/49/EC), which requires the preparation of strategic noise maps for urban areas above one hundred thousand inhabitants, major roads, railways, and airports; the Habitat and Birds Directives (92/43/EEC and 2009/147/EC respectively), which established the Natura2000 network of protected areas. This network covers 18 per cent of the territory of the Union and 4 per cent of its seas. Bearing in mind that the Union has a land surface of 4 million km^2, the total land area protected under the Natura 2000 network is the size of Germany, the UK, and Bulgaria combined! Considering that since 1985 every large-scale project in Europe requires an Environmental Impact Assessment (EIAs), and since 2000 land use plans need Strategic Environmental Assessments (SEAs), both of which need to identify, inter alia, potential impacts on protected areas, it is easy to see the extended spatial impact of environmental legislation on the planning and development processes. To understand the scale of such impacts, it is worth noting that COWI (2009a, 2009b) estimated that there were some twenty-four thousand

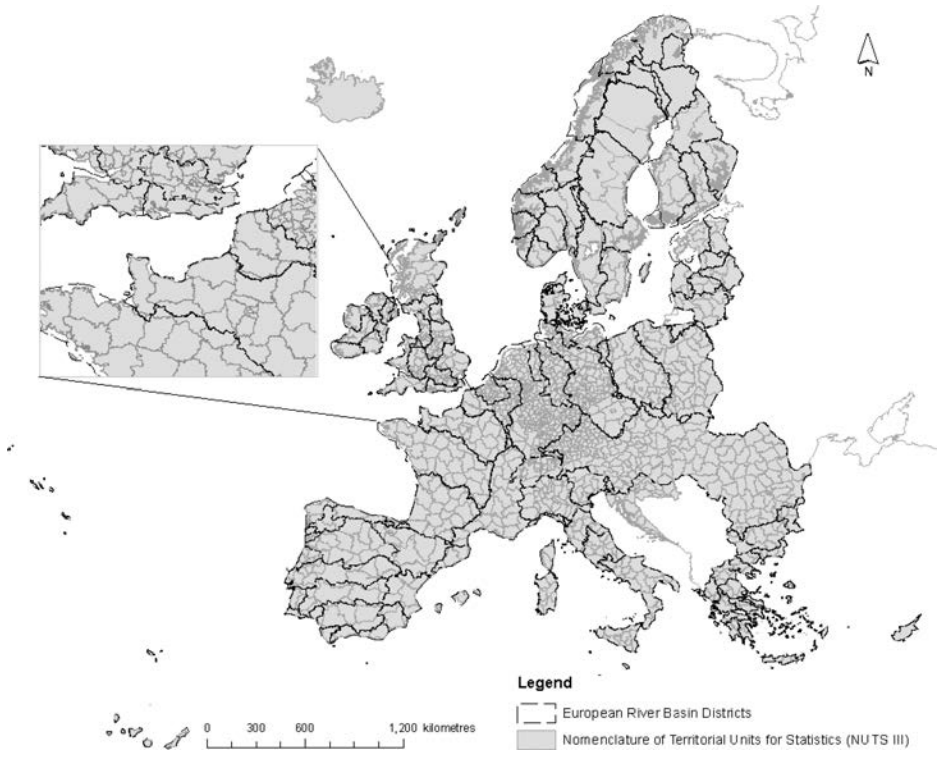

Figure 4.10.1 River Basin Districts overlaid on administrative units (in the inset an example of River Basin cutting across multiple administrative units).

EIAs and SEAs undertaken each year in the EU, a business worth over €1 billion a year (Craglia, Pavanello, and Smith 2012).

Looking ahead, it is likely that the pressure on planning practitioners coming from European environmental legislation is going to increase. The 7th Environmental Action Programme for the period 2013–2020 (EC, 2012) argues that in spite of the progress made, there is still much to do in Europe to reduce the loss of biodiversity, reduce air and water pollution, improve the efficiency of waste collection and turn it into a resource for Europe, reduce soil erosion (up to 25 per cent of Europe's territory is affected by soil erosion), and clean up the over half a million contaminated sites which pose a serious health risk for the population. The strategy proposed is articulated around several actions which also identify land use planning as having an important role to play in addressing the challenges – for example, in reducing soil erosion and contamination, reducing traffic volumes and congestion, and applying correctly the EIA and SEA directives.

Given this increasing influence of environmental legislation on spatial planning, the planning practitioner and researcher need to master an increasing volume of data and information coming from multiple sources and disciplines in the social and environmental sciences. The next section introduces the concepts of spatial data infrastructures that are increasingly available to support the work of planners and researchers, and address the complex interactions between society and the environment.

2. Spatial data infrastructures

During the 1980s and 1990s, the planning professionals and researchers became familiar with geographic information systems (GIS), which allowed the analysis and integration of data based on location. Masser *et al.* (1993) documented the diffusion of GIS in local government in Europe during the period of transition from mainframes to portable computers, and the increasing number of datasets becoming available in digital format. With the rapid diffusion of the Internet in the mid-1990s, we witnessed two main trends: (1) an strong policy emphasis on allowing the reuse of public sector information to support the development of new services and applications in the private sector, and support transparency in government; and (2) a greater availability of digital data, and use of the Internet to search, find, and access data published by different organizations around the globe. Spatial data infrastructures (SDI) are the children of these trends. They can be understood as the extensions of GIS in the Internet age. While in a "normal" GIS most of the data we use for analysis is our own, or collected by the agency we work for, an SDI is an Internet-based platform that makes it easier for us to search and find data that may be relevant for our work and that maybe collected, stored, or published by other organizations, and often other countries. The key components of an SDI are therefore (1) catalogues of available resources, documented in a structured way through metadata; (2) agreed access policies and standards; and (3) a set of services to access and download the data to our GIS. In many countries, some key datasets have been identified, which are perceived to be of general usefulness to many (the "framework" data in the US). Priority has therefore been given to documenting them, and making them available.

The diffusion of SDIs around the globe, in both developed and developing countries, is documented, for example, by Masser (1999, 2005), Williamson *et al.* (2003), Vandenbroucke *et al.* (2005–2011), and Crompvoets and Bregt (2003). SDIs are now a truly global phenomenon, and are widely used by researchers and policy analysts to gather the evidence necessary to support scientific advances and policy. Europe is leading the way in developing spatial data infrastructures, and the outcome of these efforts is described in the next section, as it will have important benefits for the planning profession throughout the continent.

2.1 Inspire

The Infrastructure for Spatial Information in Europe (INSPIRE) is a decentralised and multilingual infrastructure built on SDIs and set up and maintained by the twenty-seven member states of the Union, plus Switzerland and Norway, which are participating on a voluntary basis. The purpose of INSPIRE is to support environmental policy, and other policies that affect the environment, and overcome major barriers still affecting the availability and accessibility of relevant data. These barriers include:

- inconsistencies in spatial data collection: spatial data are often missing, incomplete or, alternately, the same data are collected twice by different organizations;
- lack or incomplete documentation of available spatial data;
- lack of compatibility among spatial data sets that cannot, therefore, be combined with others;
- incompatible SDI initiatives in the member state that often function only in isolation;
- cultural, institutional, financial, and legal barriers preventing or delaying the sharing of existing spatial data.

It is important to remember that Europe has a long history of conflicts and that mapping largely developed to support the military. This may explain the wide array of coordinate reference systems, map projections, and even height reference systems that exist in Europe, which make it difficult to combine data across national (and often also sub-national) borders. Moreover, there are many different institutional and legal frameworks, organizational practices, cultural priorities, and so on, which contributed to the aforementioned barriers.

With the adoption of the Water Framework Directive discussed in the introduction, and the creation of River Basin Districts cutting across national and local administrative boundaries, it became clear that an action at the European level was needed to overcome these barriers. After several years of preparation, the INSPIRE Directive (2007/2/EC) was adopted in 2007 and is now approximately one third of the way into its implementation programme, which is foreseen to be completed in 2019–2020.

The key elements of the INSPIRE Directive include:

- metadata to describe existing information resources so that they can be more easily found and accessed;
- harmonisation of key spatial data themes needed to support environmental policies in the Union;
- agreements on network services and technologies to allow discovery, view, and download of information resources, and access to related services;
- policy agreements on sharing and access, including licensing and charging;
- coordination and monitoring mechanisms.

INSPIRE addresses thirty-four key spatial data themes organized in three groups (or Annexes to the Directive) reflecting a staged phasing (see Table 4.10.1). These themes were identified as the ones being most relevant to support the implementation of environmental policies in Europe. Table 4.10.1 shows it is clear nonetheless that the harmonisation of data across Europe on many if not all of these themes is of potential major significance for planners.

There are at least two aspects of "harmonisation" that are worth highlighting: the first is technical and semantic harmonisation, which makes it possible to access and integrate data across borders so that they have the same coordinate and vertical reference systems, and the meaning of the variables in the data is shared and understood by all. This is no mean feat, and will have value for those analysing data not only in cross-border areas (20 per cent of the European population live with 50 kilometres of a national border) but also within national boundaries as often sub-national differences exist in the way the data is collected and analysed. The second and equally important element is that INSPIRE asks member states to adopt measures for the sharing of data across public administrations at minimum cost, free of restrictions at the point of use, and that such arrangements be equally open to all public administrations in Europe on a reciprocal basis. Anybody who has experienced sharing data across public administrations would know how important these requirements are, as the norm is that each public administration has its own rules, and it is often more important "who you know" than what you want to know.

The legal framework of INSPIRE has two main levels. At the first, there is the INSPIRE Directive itself, which sets the objectives to be achieved and asks the member states to pass their own national legislation establishing their SDIs. This mechanism of European plus national legislation allows each country to define its own way to achieve the objective, taking into account its own institutional characteristics and history of development. As an example, Germany does not have a single SDI but a coordinated framework among seventeen ones, one for each of its

Table 4.10.1 Key data themes addressed by INSPIRE

Annex I	**Annex III**
Coordinate reference systems	Statistical units
Geographical grid systems	Buildings
Geographical names	Soil
Administrative units	Land use
Addresses	Human health and safety
Cadastral parcels	Utility and governmental services
Transport networks	Environmental monitoring facilities
Hydrography	Production and industrial facilities
Protected sites	Agricultural and aquaculture facilities
	Population distribution – demography
Annex II	Area management/restriction /regulation zones and reporting units
Elevation	Natural risk zones
Land cover	Atmospheric conditions
Ortho-imagery	Meteorological geographical features
Geology	Oceanographic geographical features
	Sea regions
	Bio-geographical regions
	Habitats and biotopes
	Species distribution
	Energy resources
	Mineral resources

states (Länder), and one at the federal level (which also means that seventeen different legal acts had to be passed to implement INSPIRE). Similarly, Belgium has three SDIs, one for each of its regions (Wallonia and Flanders) and one for Brussels. The INSPIRE Directive also requires the establishment of an EU geoportal operated by the European Commission to which the infrastructures of the member states have to connect (Figure 4.10.2).

The geoportal includes (as of 2012) over 250,000 datasets described with harmonised metadata that can be searched and translated in any other language to provide an approximate understanding of the content, topic, and restriction to access (if any). Services to view and download the data are being added, and the process of harmonising the data is in full swing with the agreement on common specifications for each of the thirty-four data themes. These specifications span thousands of pages, and are the work of hundreds of experts from across Europe over a period of several years (see http://inspire.jrc.ec.europa.eu/index.cfm/pageid/47). As they get implemented in the coming years, they will provide a major foundation for new applications in both public and private sectors, supporting planning, development, and general services to citizens and business.

While most of the data themes in Annex I and II of INSPIRE are the responsibility of national or state/regional level organizations (see Table 4.10.1), Annex III data themes are by and large under the jurisdiction of local-level public authorities. Spatial planners working in these organizations have therefore the obligation to document and make accessible any spatial dataset falling under the scope of INSPIRE that is created and used to support environmental policies or policies that affect the environment.

Figure 4.10.2 The INSPIRE geoportal (www.inspire-geoportal.eu): example of Finish Land Cover data.

Table 4.10.2 INSPIRE metadata elements for spatial datasets and services

INSPIRE Metadata for Spatial Datasets	*INSPIRE Metadata for Spatial Services*
Resource title	Resource title
Resource abstract	Resource abstract
Resource type	Resource type
Resource locator	Resource locator
Unique resource identifier	Coupled resource
Resource language	Spatial data service type
Topic category	Keyword
Keyword	Geographic bounding box
Geographic bounding box	Temporal reference
Temporal reference	Spatial resolution
Lineage	Conformity
Spatial resolution	Conditions for access and use
Conformity	Limitations on public access
Conditions for access and use	Responsible organization
Limitations on public access	Metadata point of contact
Responsible organization	Metadata date
Metadata point of contact	Metadata language
Metadata date	
Metadata language	

Spatial datasets and the related web services to discover, view, download, transform, or process the data must be documented with metadata that follows the INSPIRE specifications (see http://inspire.jrc.ec.europa.eu/index.cfm/pageid/101 for the legal requirements and technical guidance). Table 4.10.2 shows the minimum set of elements needed to describe both datasets and services.

INSPIRE is the first European directive that specifies exactly how to document information resources in a harmonised way. For those needing to create the INSPIRE metadata there is a multilingual metadata editor available from the main page of the INSPIRE geoportal (www.inspire-geoportal.eu). This open source editor has been adapted by many national INSPIRE nodes of the infrastructure to help public administrations in documenting their data, thus making them more discoverable and usable.

2.2 A regional example of SDI

For many planners working at the local level, the notions of a European SDI may seem a bit remote. It is important, however, to note that INSPIRE is the framework for the development of national SDIs in every EU country and very often this framework filters down at the sub-national or local level. We report ahead the example of the regional SDI in Lombardy, Italy, which is interesting because it was set up by the Planning Department and anchored by a new planning framework that requires all new urban plans to be done in a digital format based on common specifications so that the information they collect can develop and maintain the local SDI.

Context

Lombardy is the wealthiest among the twenty Italian regions, hosting one sixth of the national population (9.7 million), and contributing to 21 per cent of the total national GDP with €324 billion in 2008 (ISTAT, 2009). Located in the north of Italy, it covers an area of approximately 23,000 km^2. The administrative system is hierarchically structured within three main tiers: the region, eleven provinces, and 1,546 municipalities (or communes).

The development of the regional SDI is an evolution from many different information systems, including geographic information systems (GIS), which developed over time in the regional offices. A key factor that kick-started the transition towards a spatial data infrastructure open to the whole system of the regional public administration, and to the public, has been the strong relationship between GIS and spatial planning in the region. Spatial planning responsibilities were decentralised from the national to the regional level in the 1970s. Regions therefore adopt their own planning legal framework, and develop regional planning regulations and plans establishing general guidelines for spatial development. At the local level, municipalities are responsible for developing land use master plans implementing the strategies of the regional plans.

Responsibility for topographic mapping at a scale larger than 1:10,000 was also decentralised to the regions and local authorities in the 1970s, resulting in a patchwork of regional maps with different characteristics. These regional differences continued with the transition to the digital formats in the 1980s, until an agreement was reached in 1996 among central, regional, and provincial administrations defining common specifications for the development and implementation of the national topographic databases, which are now being further updated on the basis of the emerging INSPIRE technical specifications.

A related important development was the establishment in 1986 of the Ministry of the Environment, marking the beginning of environmental policies in Italy. Two important milestones in the context of this paper were the transposition of the EU Directives on Environmental Impact Assessment (EIA Directive 85/337/EEC, Amended EIA Directive 97/11/EC) and the Strategic Environmental Assessment (SEA, 2001/42/EC). The latter become operational in Italy in 2004.

In the general context outlined earlier, each region in Italy has developed and adopted its own planning legal framework, with successive modifications and refinements. Among them, the Regional Planning Act no.12, adopted in 2005 by the Regione Lombardia (RL), represents an innovative example of integration of spatial planning with environmental protection. This law integrates regional, provincial, and local plans to foster sustainable socio-economic development, and requires that each new plan is subject to the SEA procedure. The Regional Planning Act also gives a special role to the regional SDI as a dynamic tool to maintain up-to-date knowledge of what takes place or is planned in the region. For this purpose all new local plans have to be underpinned by new topographic databases, based on common detailed technical specifications issued by the RL. The approach adopted by Lombardy can be considered innovative in Italy since for the first time the regional topographic database is updated automatically through a process of generalisation, starting from the more detailed local databases, which keep track of new developments.

To facilitate and enforce this process, the RL co-financed (50 per cent) the development of the new local topographic databases, encouraging the formation of consortia of local communes to pull resources together. Between 2006 and 2008, the RL contributed some €10 million in funding, and other public administrations in the regions another €14 million, obtaining a topographic database coverage of approximately two thirds of the region. Part of the funding is paid out only if the specifications of the RL have been followed in the establishment of the local databases. On the enforcement side, local plans have to be developed in digital format and be uploaded into the regional database, otherwise they are not considered for approval. This is very important to ensure that the regional infrastructure stays relevant and up to date.

The General Directorate for Planning of the RL is the unit responsible for leading the implementation of the regional SDI. The public face of the regional SDI is the regional geoportal that provides the entry point to other public administrations, the public, businesses, and professional users. The geoportal (see Figure 4.10.3) includes services for metadata editing, and data discovery, view, and download. It also gives access to global positioning system data from the regional network, as well as geocoding, mapping, and coordinate transformation services. The geoportal also gives access to web applications supporting a number of processes, such as local planning, hydrological risk prevention, and environmental impact assessment.[1]

Campagna and Craglia (2012) studied the socio-economic impact of the Lombardy SDI among planning practitioners, focusing in particular on their use of the SDI to access data needed for EIAs and SEAs, which are required by law throughout the EU.

The direct costs for the establishment and operation of the Lombardy SDI in 2006–2008 was €4.1 million for technology development and maintenance – that is, approximately €1.4 million per annum. Against these investments, the data gathered through two surveys of practitioners operating in the fields of EIA/SEA reports and spatial planning show that practitioners saved on average 11–12 per cent of cost and 17–19 per cent of time in preparing the EIA/SEA reports thanks to the open access to the regional SDI data and services. As every year there are more than three hundred EIAs and some two hundred SEAs being prepared in the region for a turnover of over €30 million, the estimated savings to the planning practitioners are in the order of €3 million a year for this specific application alone, which is more than twice what was invested by the region for the SDI – a good case of value for money. Moreover, intangible benefits may produce even higher positive impacts on the social and environmental system: in the case of EIAs, practitioners declared they were able to produce more accurate impact analyses and have an improved dialogue with the regulating authorities thanks to the availability of a common geographic knowledge base.

Figure 4.10.3 The geoportal of Regione Lombardia.

3. Looking ahead

In this chapter we have discussed the increasing importance of European environmental legislation for the planning practitioner. Almost anywhere you work you will have to be involved with some aspect of the corpus of environmental legislation, whether addressing or impacting issues related to water, air, soil, protected areas, and so on. EIAs and SEAs are required throughout Europe for large development projects (EIAs) and new plans (SEAs). New requests on planning practice to contribute to the resource-efficient, green, and low-carbon economy agenda will also filter through the various institutional layers, from the European down to the local, in the next decade.

We are also all living in an increasingly data-rich society with new data streams appearing almost daily from new sensors, microchips, and social networks. Everything from your favourite brand of cereals to your local authority or business seems to have Facebook and Twitter accounts that generate millions of data items.

These new heterogeneous sources of information provide opportunities for the planning profession, as new sources of timely information (the so-called crowdsourcing or volunteered geographic information phenomenon) but also as a way to communicate with the public and involve particularly younger people in the planning process.

SDIs are being developed worldwide, but they have accelerated rapidly, particularly in Europe with the approval of the INSPIRE Directive in 2007. INSPIRE is a decentralised and distributed infrastructure building on national, regional, and often local nodes which are of increasing

relevance to planners working in local and regional public authorities. Evidence from the case study in Lombardy shows, however, that also private practice can benefit significantly by accessing relevant data in a way that is faster, cheaper, and less complicated than was the case before. This provides tangible economic benefits but also intangible ones through a better dialogue with the regulatory authorities, who base their decisions on the same data as the developer.

New initiatives on open data[2] and open government,[3] as well as new investment in electronic research infrastructures, will see an increasing convergence and linkage of all these infrastructures addressing thematic policy areas, research, and service delivery. It is important therefore that planning practitioners and researchers are aware of these opportunities and exploit them to deliver more transparent, participative, and well-informed policy and action.

Notes

1 See www.cartografia.regione.lombardia.it/geoportale/ptk (accessed 5 August 2014).
2 www.cabinetoffice.gov.uk/content/open-data-white-paper-and-departmental-open-data-strategies and http://ec.europa.eu/information_society/policy/psi/index_en.htm (accessed 5 August 2014).
3 See, for example, www.opengovpartnership.org (accessed 5 August 2014).

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4.11
URBAN SPRAWL AND REGION BUILDING

Gu Chaolin

In a sense, urban planning is the science of spatial distribution with particular focus on place. Place is dependent on the material and spiritual spaces of a region. Although region is traditionally a central theme in spatial planning, planners have always been reticent about the ways in which a region can be built up. In ancient China, there have been studies on the relationship between the urban and the regional. Chronicles of the Han Dynasty in 79–105 refer to elements to consider when selecting city sites: to find out the balance of *Yin* and *Yang*, to taste the flavour of spring, to examine the suitability of land, and to build the city state (Ban, 105). Already, geographers have worked on improving the regional structure of hospitals (Godlund, 1961), schools (Yeates, 1963), social administration areas (Massam, 1975), and regional applications (Haggett, Cliff, and Frey, 1977), as well as the more widely known cases of local government boundaries. This chapter will try to explore a quantitative method for region building under urban sprawl conditions. It will include a clarification of the regional concept, regional combinatory, nodal regions, and graphs. Also, this chapter will present the case study of the Sunan (Southern Jiangsu Province), China, with the aim of discussing the methods for regional planning and in order to bring together the explicit techniques that have been used in regional delimitation and in grouping.

1. The regional concept

A region is usually constrained to a particular geographical scope, ranging from the entire planet to a county, township, village factory, school, or even a particular space or place. In other words, the region is everywhere.

1.1 Definition of region

Geographers define region as geographical section on the surface of the Earth, which could be overlapped and should be seamless and cover the entire area. Economists see region as an economic complex in which economic activities take place. Sociologists see region as a social unit which could be classified by ethnic, linguistic, and other characteristics, such as ethnic minority region, Chinese region, English-speaking region, etc. Politicians see region as an administrative

unit which is measureable and hierarchical. For planners, a region is concept that is used to study the variety of physical or non-physical phenomena within a particular area. It refers to a complex that contains a place, a core, a gradient, and an edge.

As Harvey (1969) observes, the region was "sometimes accorded the status of a 'theoretical entity' rather like an atom or neutron which could not be precisely observed but whose existence could be inferred from its effect. The areal differentiation of the earth's surface could thus be 'explained' with reference to this theoretical object which governed human spatial organization." Jacobs (1961) also said, "A region, someone has wryly observed, is an area safely larger than the last one to whose problems we found no solution."

1.2 Types of regions

Four main types of region are commonly recognized by planners: planning regions, administrative regions, uniform regions, and nodal regions.

Planning regions

When a city is ready to draw up plans, it is usually the first delineation of the urban planning area. It may be defined as areas, contiguous or non-contiguous, delimited on an ad hoc basis for purposes of administration or organization. Planning regions may be overlapping or non–overlapping; they may exhaust the complete study area, or be confined to any part of that area. An objective in the design of planning regions is to maximize overlap between the needs of administration and 'naturally occurring' uniform or nodal regions.

Administrative region

Cities can divide their territory into small administrative units – that is, administrative regions of different sizes, based on their political, economic, ethnic, historical, and other differences, in order to establish the appropriate institutions for social management accordingly.

Uniform regions

These may be defined as contiguous areas within which, conditional upon the purpose for which the regional system is being defined, place-to-place variations may be regarded as trivial. More formally, a set of uniform regions may be defined as the arrangement of regional boundaries (cf. analysis of variance). Characteristically, uniform regions are non-overlapping and completely exhaust the space available. Uniform regions are sometimes termed homogeneous or formal regions .

Nodal regions

The nodal regions are defined in terms of bonds or 1inks between pairs of places. Unlike uniform regions, nodal regions may be overlapping and interpenetrating. Nodal regions are sometimes termed functional regions.

1.3 Regional scale

That scale problems have long troubled planners is rather plainly shown in the attempts made to define regions in scale terms. Regions under different scales in planning could be defined using an accessible distance for pedestrians (Table 4.11.1).

1.4 Partitioning and grouping procedures

We can proceed to classify the regions in either of two ways: by logical division or else by grouping.

Interregional (across regions)

Logical division or 'classification from above' proceeds by dividing the universal set according to a particular property/attribute. In order to follow this method, we must have prior information on the property being used as an indicator, and thus this approach is sometimes called a deductive one (Figure 4.11.1).

Table 4.11.1 Different scales in planning

Meters (Log Scale)	*City-region*	*Planning*
10^0		
10^1	House	Urban design
10^2	Block	
10^3	Neighbourhood	
10^4	City	Urban planning
10^5	Region	Regional planning
10^6	Nation state	Spatial researches
10^7	Continent	
10^8	Global	

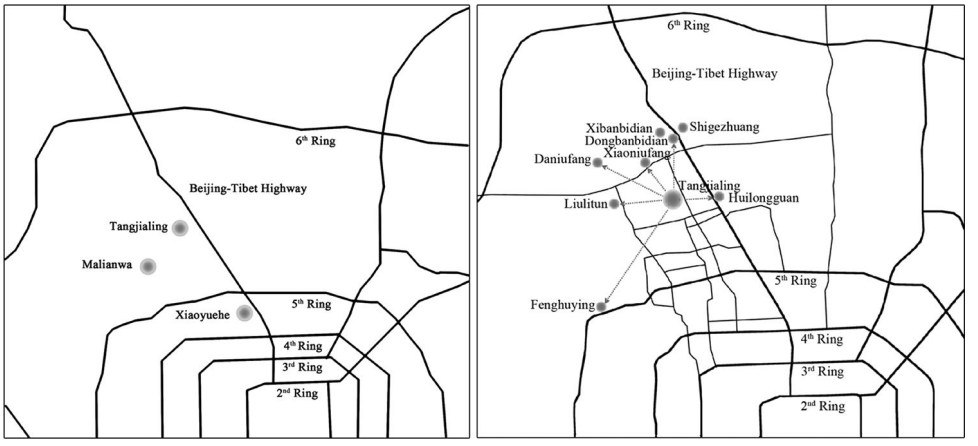

Figure 4.11.1 Interregional: main low-income graduates gregarious and spatial diffusion in Beijing.
Source: Chaolin Gu, SHENG Mingjie, and Lingqian HU, Spatial and Social Characteristics of the "Ant Tribe" Urban Village in Beijing: Case Study of Tangjialing. Submitting.

Figure 4.11.1 presents an example of how some urban villages, such as *Tangjialing*, *Xiaoyuehe*, and *Malianwa*, are typical gregarious villages; they are also the bordering villages of the *Haidian* district outside the Fifth Ring Road of Beijing. *Tangjialing* village was removed in 2011; some other villages such as *Xiaoniufang*, *Shigezhuang* and *Liulitun*, which are adjacent to *Tangjialing*, and other villages that are much more remote, such as *Xiyuan*, *Fenghuying*, *Eastern Banbicun*, *Western Banbicun* and *Huoying*, have become the new gregarious villages for low-income new graduates, but these villages are located in the *Changping* district of Beijing. Observe, however, that some of these partitions may put them together as a low-income graduate gregarious region but an interregional region which is located in two administrative districts.

Intraregional (within regions)

Figure 4.11.2 shows the population density of China's Census 2010. According to this map, the sharp division between the two main procedures, partitioning and grouping, may not be maintained. For example, we may be able to partition only part of our universe by logical division; the remaining elements may then be assigned to these cores by a grouping process. This progressive grouping process, shown in Figure 4.11.3, shows population changes in the Beijing-Tianjin-Tangshan conglomeration since the 1990s.

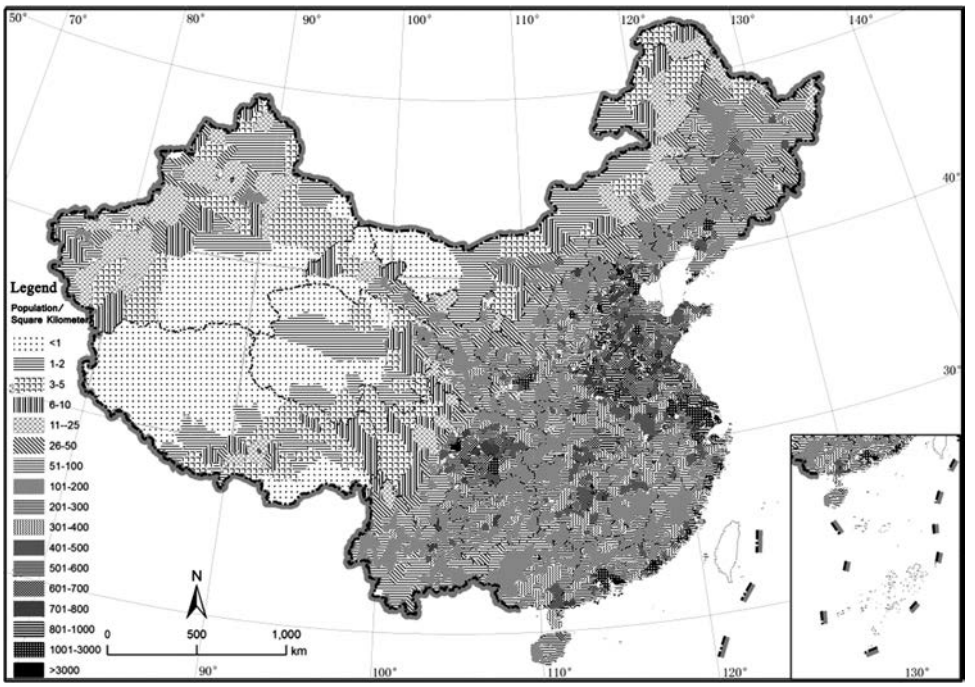

Figure 4.11.2 Population density of China's Census 2010.

Source: Research report 2010, 2011. Institute of Geography and Natural Resource, Chinese Academy of Science.

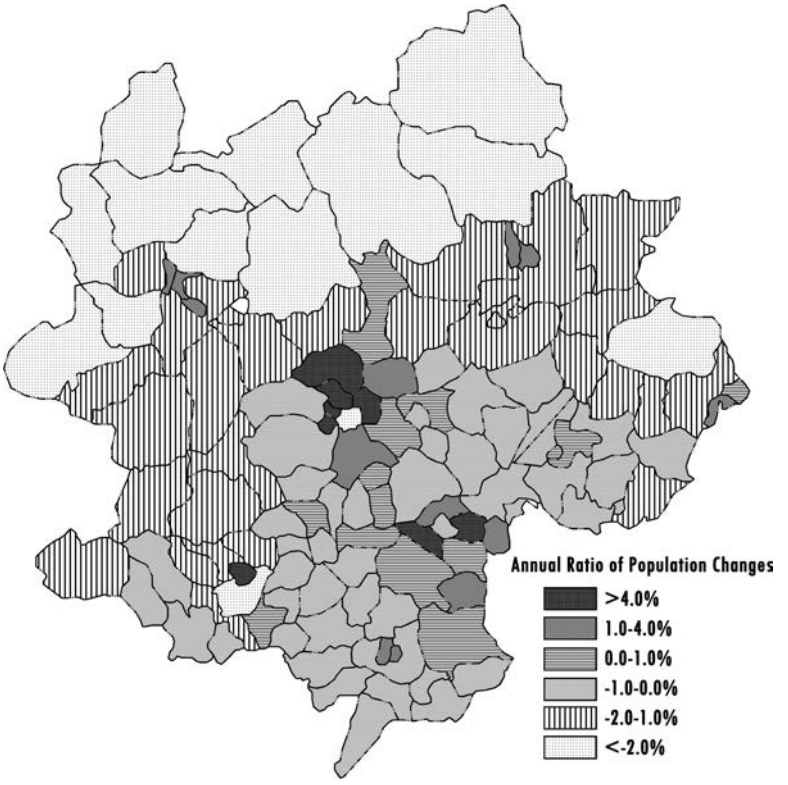

Figure 4.11.3 Population changes in the Beijing-Tianjin-Tangshan conglomeration since the 1990s.
Sources: Author's calculations based on urban statistical database in China.

Boundary overlap of regions

Although regions can be partitioned or grouped in an unambiguous fashion, in practice the contrary situation is more likely. Figure 4.11.4 shows a great variety in regional definitions. Figure 4.11.4a shows these boundaries. This core area is shaded in Figure 4.11.4b.

2. Regional combinatory analysis

Where a small number of areas have to be assigned to a fixed number of regions, complete enumeration of all possible allocations of areas to regions may be feasible, and the 'best' grouping for the purpose at hand chosen. Figure 4.11.5a illustrates such a complete enumeration for this problem.

Gu *et al.* (2005) argued that the region-building process is based on a weighted combination of time and space distances. The Beijing urban mosaic is illustrated in Figure 4.11.5b.

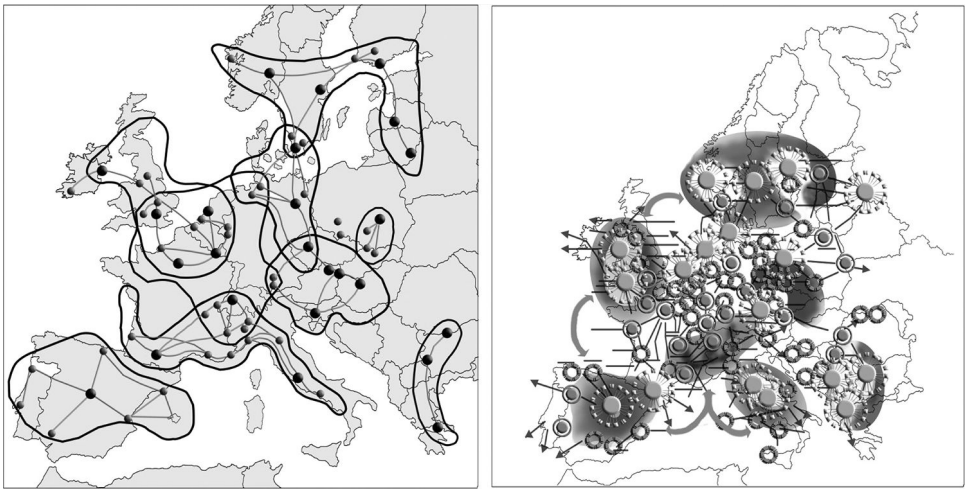

Figure 4.11.4 Boundary overlap of regions in EU.

Source: European Commission. European Spatial Development Perspective. May 2003. http://en.wikipedia.org/wiki/European_Spatial_Development_Perspective (accessed 5 August 2014).

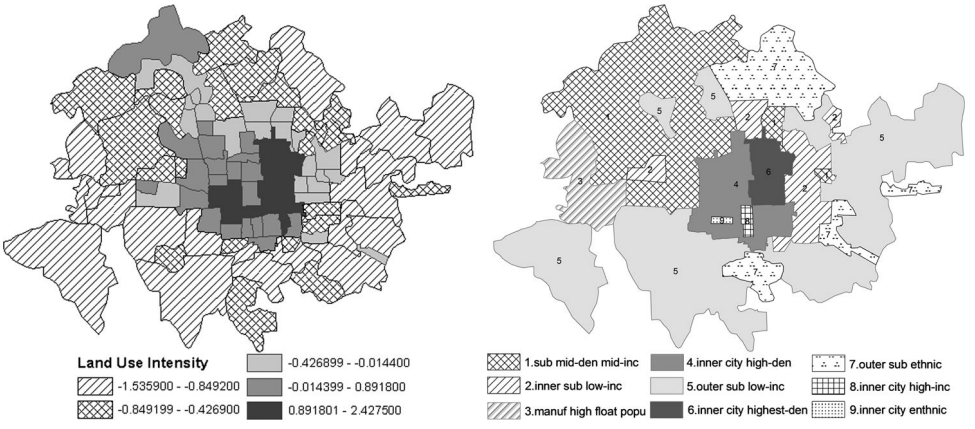

Figure 4.11.5a Beijing's social areas, 1998.

Source: Chaolin Gu, Fahui Wang, and Guili Liu. 2005. The structure of space in Beijing in 1998: A socialist city in transition. Urban Geography, 26(2):167–192.

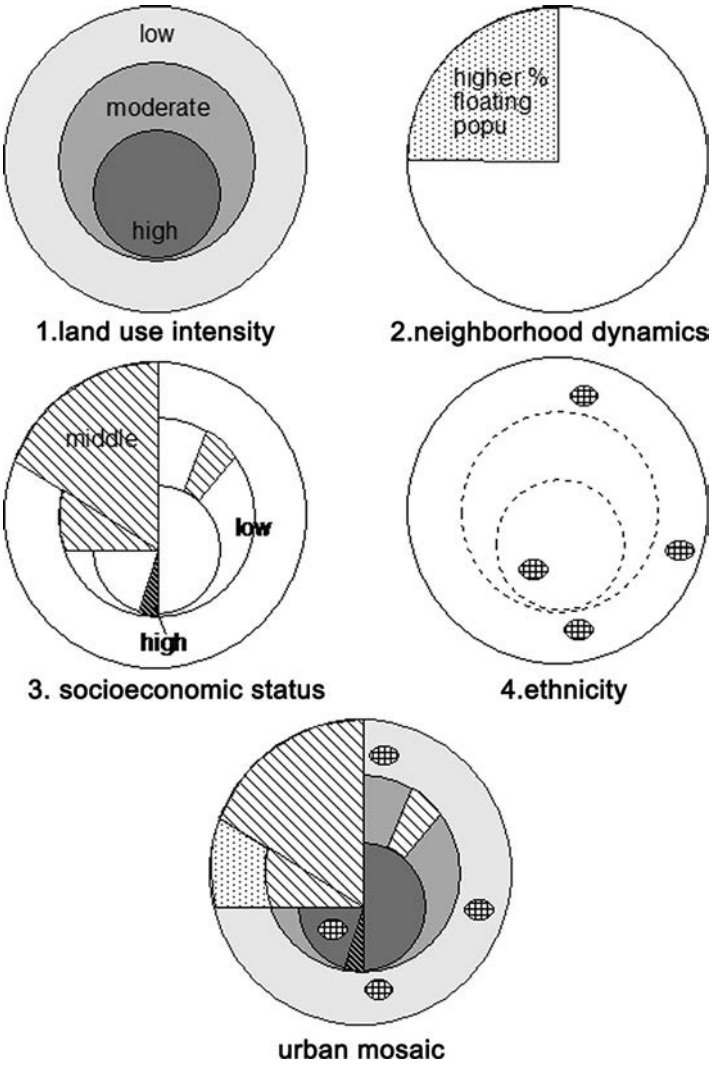

Figure 4.11.5b An urban mosaic in Beijing, 1998.

Source: Chaolin Gu, Fahui Wang, and Guili Liu. 2005. The structure of space in Beijing in 1998: A socialist city in transition. Urban Geography, 26(2):167–192.

3. Nodal regions and graphs

Our discussion of region-building methods has been conducted mainly in terms of formal or homogeneous regions. To a large degree, procedures developed for these can be extended to include nodal regions. Goddard (1970) was able to develop a nodal regional structure for central London from a principal components analysis of dyadic data on taxi flows. The fullest account of dyadic components analysis is given by Berry (1966, pp. 189–237) as part of a massive study of commodity flows for sixty-three commodities moving between thirty-six trade blocks within India. Despite this evidence of similarities between the two main types of regions, there remains a set of techniques which have been developed to tackle the special problems of nodal regions. The data input for nodal regionalization consists of dyadic scores measuring flowers or links between each county and all other counties in the system under analysis. Typically, such scores measure spatial interaction of some kind – for example, number of commuters, migrants, commodities, or telephone calls.

3.1 Primary linkage analysis

The use of graph theory in the interpretation of transport networks has already been clarified. Nystuen and Dacey (1961) have shown how the same type of analysis may be extended to the regionalization of flow data. A study of intercity telephone calls led them to argue that "within the myriad relations existing between cities, the network of largest flows will be the ones outlining the skeleton of the urban organization within the entire region"(Nystuen and Dacey, 1961, p. 7).

Since Nystuen and Dacey built up a regional hierarchy using the dominant outflow from each city, their method has become known as primary linkage analysis. The approach is essentially a simple one. As an illustration, consider Table 4.11.2 which shows a hypothetical matrix

Table 4.11.2 Matrix of flow between pairs of centres (hypothetical data)

To centre:	*A*	*b*	*c*	*D*	*e*	*f*	*g*	*h*	*i*	*j*	*k*	*L*	*Class*
Form centre:													
A	00	75	15	20	28	02	03	02	01	20	01	00	Satellite
B	69	00	45	50	58	12	20	03	06	35	04	02	Dominant
C	05	51	00	12	40	00	06	01	03	15	00	01	Satellite
D	19	57	14	00	30	07	06	02	11	18	05	01	Satellite
E	07	40	48	26	00	07	10	02	37	39	12	06	Dominant
F	01	06	01	01	10	00	27	01	03	04	02	00	Satellite
G	02	16	03	03	13	31	00	03	18	08	03	01	Dominant
H	00	04	00	01	03	03	06	00	12	38	04	00	Satellite
I	02	28	03	06	43	04	16	12	00	98	13	01	Satellite
J	07	40	10	08	40	05	17	34	98	00	35	12	Dominant
K	01	08	02	01	18	00	06	05	12	30	00	15	Satellite
L	00	02	00	00	07	00	01	00	01	06	12	00	Satellite
Total:	113	337	141	128	290	071	118	065	202	311	091	039	
Rank order	8	1	5	6	3	10	7	11	4	2	9	12	

Source: Nystuen and Dacey, 1961, p. 35.

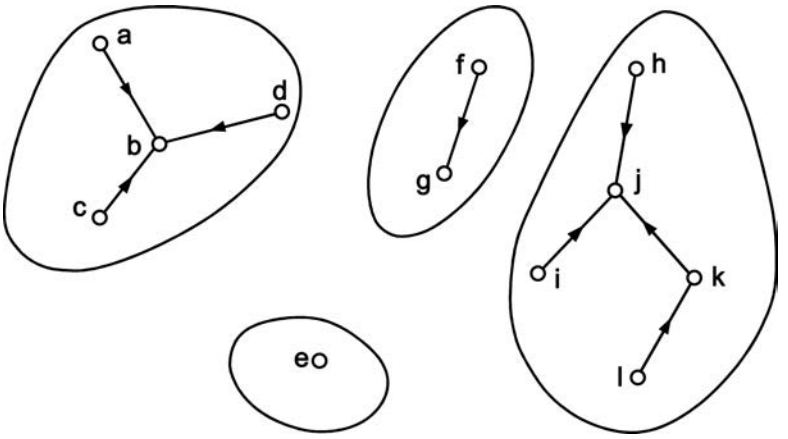

Figure 4.11.6 Nodal structure of the matrix shown in Table 4.11.3 in terms of graph theory.
Source: Nystuen and Dacey, 1961, p. 35.

of cities (a,b…) for which the numbers in the matrix measure the flow (e.g., telephone calls) from one city to another. Figure 4.11.6 nodal structure of the matrix shows in Table 4.11.2 in terms of graph theory.

3.2 Multiple linkage analysis

Nystuen and Dacey urged caution in interpreting the primary link as evidence of urban dominance. It is clear that an outflow representing, say, 10 percent of all flows should be regarded as of quite different importance to one of 90 percent. Holmes (1973) found a strong inverse relationship between hierarchical order and traffic dispersion .The information provided by a single dominant link needs to be combined with that from other subdominant links. If, however, we wish to use more than one link from each town or county, then a criterion is needed to separate the 'significant' from the 'insignificant' flows. A regional application of this link method has been made by Holmes and Haggett (1977) to migration flow data. A number of parallel approaches to multiple link analysis have been put forward, notably that of transaction flow analysis (Brams, 1966; Soja, 1968) and graph hierarchization analysis (Rouget, 1972).

4. The case study of regional building of the *Sunan*[1] *region*

This case employs the use of satellite image data in 1984, 1991, 2000, and 2005 to obtain the urban cluster sprawl in the *Sunan* (Southern Jiangsu Province). A fractal dimension calculation (the concept of fractal dimension is described ahead) is used for urban cluster analysis but not for the inner urban analysis as demonstrated by the literature, which, together with the compactness index, shows in the *Sunan* case study that the urban cluster is becoming a more and more homogenous and compact region. An alternative measure is spatial autocorrelation based on the urban sprawl intensity, which is used for analysis of urban cluster pattern and the hot/cold spot detection of urban sprawl (please see Matos, Chapter 4.6, and Haining, Chapter 4.2, this volume, for examples of these methodologies).

4.1 Data

Measures of areal coverage and spatial distribution are both needed to describe the morphology of an urban area adequately (Schweitzer and Steinbrink, 1998). A satellite image offers the historical footprint of human activities in a certain time, which makes the source of the data derivation comparable (see figure 4.11.7).

4.2 Methodology

Fractal dimension

Fractal dimensions are a good instrument for a global comparison of the morphology of cities (Tannier and Pumain, 2005). So in this section, we give more details about fractals through the description of the methods of determination of their fractal dimension, including radius dimension, grid dimension, correlation dimension, and boundary dimension. The first three dimensions can be assigned to the counting method, which was implemented by *Fractalyse*, developed by Gilles Vuidel. The fourth may be calculated by a regression function available in most statistic software.

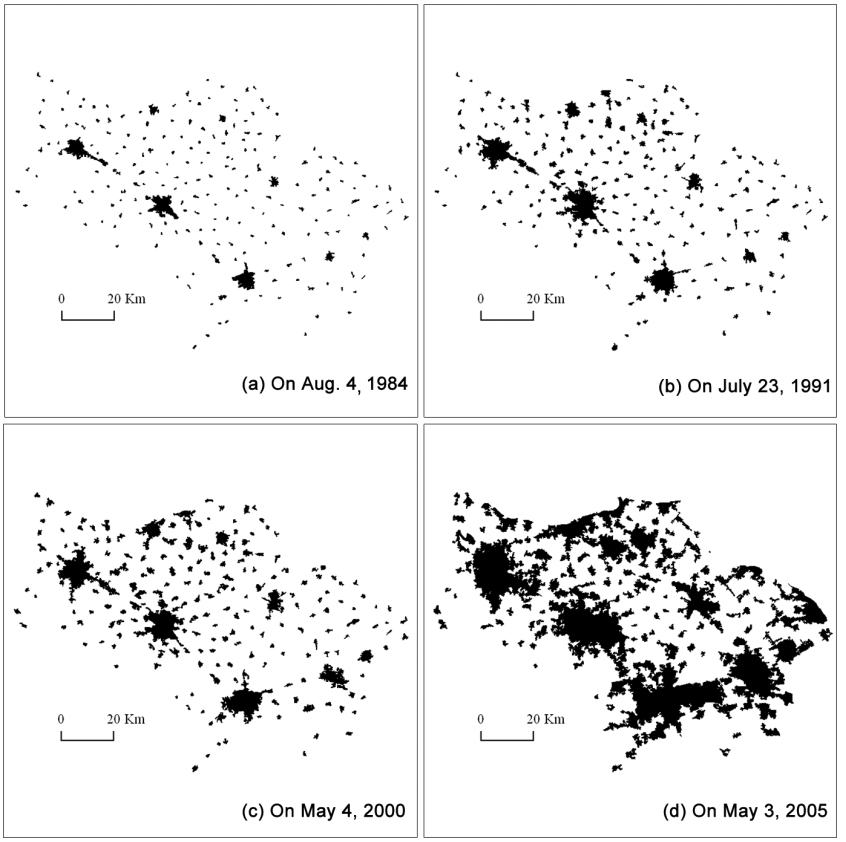

Figure 4.11.7a The urban morphology of Sunan in different years.

a. Grid method

Theoretically, the grid dimension (D_g) ranges from 0 to 2, which shows a uniformity degree of urban distribution in a certain area. If D_g is equal to 0, it shows that all towns are concentrated on one point – that is, there is only one town in the area, which is generally impossible in reality; if D_g is equal to 1, it shows towns uniformly distribute along a line – for example, a railway, a river, or a coastal line; and if D_g is equal to 2, it shows the spatial distribution of towns is completely uniform. In general, D_g ranges from 1 to 2; with the value of D_g increasing, there is more and more uniform spatial distribution of towns. In this study, we choose the counting centres, respectively, at the barycenter (310, 335), *Changzhou* (113, 229), *Wuxi* (253, 322), and *Suzhou* (388, 441).

b. Radius method

This method refers to a specific point known as the counting centre and gives the law of distribution of the occupied sites around this point. The radius dimension (D_r) indicates that the attenuation features of spatial distribution depart from the centre of the analysis window to its periphery. If D_r is less than 2, it shows that spatial distribution of the town attenuates in density from the centre to its periphery; if D_r is equal to 2, it shows the spatial distribution of the town system element is uniform in the direction of radius; and if D_r is more than 2, it shows that the spatial distribution of the town system element increases in density from the centre to its periphery. For a more convenient analysis and comparison, the counting centres are used as those in the grid method.

c. Correlation method

Each point of the image is surrounded with a small squared window. The number of occupied points inside each window is enumerated. This allows the mean number of points per window of that given size to be calculated. The same operation is applied for windows of increasing sizes. In principle it is possible to choose any shape for the window, such as circle, hexagon, etc. However, since pixels are square-like, the choice of a square helps to avoid rounding errors. Like D_g, D_c also shows a uniformity degree of urban distribution in a certain area; however, it gives more detailed results about the distribution of occupied points than the grid dimension. Generally, the correlation dimension (D_c) is in the range of 0 to 2. If D_c is closer to 2, it shows all towns distribute more uniformly; and if D_c is closer to 0, it shows one premier city has been formed.

d. Boundary method (or area-perimeter method)

If those urban surfaces were simple geometrical objects, their borders would be characterized by the dimension 1 and their surfaces by the dimension 2. Although the observed relation between borders and surfaces was regular, the ratio of surface to border was about 1.05 (Tannier and Pumain, 2005), which seems to be in contradiction to Euclidean geometry but seems to confirm the fractal geometry. For each urban polygon, its perimeter P is related to the area A of the same polygon by the basic fractal relationship (Johnson *et al.*, 1995):

$$P = kAD/2 \quad (3)$$

where D is the fractal area-perimeter dimension (D_a) and k is the constant of proportionality. Equation (3) can be transformed logarithmically:

$$\ln A = (2/D_a) = \ln P + c \tag{4}$$

where c is the intercept (constant) for linear regression. We employed ARCGIS 9.0 for A and P; the statistic software SPSS 11.0 was employed for regression to acquire the value of D_a. Similarly, the quality of the estimation is quantified using a correlation coefficient. In general, D_a is in the range of 1 to 2.

Compactness index

We employ the indicator *compactness* derived from "landscape metrics" (for a detailed description of landscape metrics, please Reis, Silva, and Pinho, Chapter 4.4, this volume) to quantitatively measure the urban form. Compactness not only measures the patch shape for the individual patch but also considers the dispersion degree of the landscape. The compactness index (*CI*) defined by Li and Yeh (2004) is

$$CI = \frac{\sum_i P_i / p_i}{N} = \frac{\sum_i 2\sqrt{S_i/\pi}/p_i}{N} \tag{5}$$

where S_i and p_i are the area and perimeter of patch (here, urban area) i, P_i is the perimeter of a circle with the area of S_i, and N the total number of patches. According to this definition, the compact patch with the round shape will have the high value. In order to minimize the bias caused by the numerous small compact patches rather than the large complex ones., Li and Yeh (2004) also revised the compactness index as follows:

$$CI' = \frac{CI}{N} = \frac{\sum_i 2\sqrt{S_i/\pi}/p_i}{N^2} \tag{6}$$

Sprawl intensity

In addition to static analysis of urban forms by using a fractal dimension at some specific time and dynamic analysis by the evolution of the fractal dimensions in the course of time, it is necessary to select a dynamic index for showing the urban and urban cluster growths more directly. So we employ the sprawl intensity index (*SII*) as follows:

$$SII = \frac{A_s}{A_t \times \Delta t} \times 100 \tag{7}$$

where A_t (in m^2) is the total area within the administrative town boundary, and A_s (in $m^2/year$) the urban sprawl area of each of the towns along some direction or directions in its corresponding administrative boundary during the period time Δt (in *year*). In China, the city or town is the most basic administrative boundary, which usually is merged or split partially or wholly according to its economic development in that time. As a consequence, there is a probability that the

boundary is not the same in different time periods. Here, we take the administrative boundaries in 1991 for the basic calculation and analysis unit in the course of time.

Spatial autocorrelation

Some standard global and new local spatial statistics, including the Moran I (Cliff and Ord, 1981), Getis-Ord *G* (Getis and Ord, 1992), and Local Indicators of Spatial Association (LISA) (Anselin, 1995), can be employed to detect the sprawl pattern of urban cluster (Ma *et al.*, 2006). They start from the assumption of a randomized distribution of spatial pattern. Or the spatial pattern or form for the spatial dependence is derived from the data only without a preconceived theoretical notion. In this study, the global and local Moran I were carried out by GeoDa 0.9.5-i (Beta) developed by Luc Anselin; the global and local G statistics were calculated by Spatial Statistics Tools in ArcGIS 9.0.

a. Global Moran I

The Moran *I* is defined by

$$I = \frac{n}{S_0} \frac{\sum_{i}^{n} \sum_{j \neq i}^{n} w_{ij}(x_i - \bar{x})(x_j - \bar{x})}{\sum_{i}^{n} (x_i - \bar{x})^2} \tag{8}$$

where n is the number of observations, x_i and x_j denote the observed value (of sprawl intensity in this study) at location i and j, respectively, $\bar{x}$ is the average of the $\{x_i\}$ over the n locations, w_{ij} is a symmetric binary spatial weight matrix ($n \times n$) defined as 1 if location i is contiguous to location j or location i and j are within a certain distance d and 0 otherwise, and S_0 is the sum of all the elements from w_{ij}.

The value of Moran *I* ranges from -1 to 1. The Moran *I* is significant and positive when the observed value of locations within a certain distance or their contiguous locations tends to be similar, negative when it tends to be dissimilar, and approximately zero when the observed values are arranged randomly and independently over space.

b. Global Getis-Ord G

The Getis-Ord *G* is defined by

$$G(d) = \frac{\sum\sum w_{ij}(d) x_i x_j}{\sum\sum x_i x_j} \tag{9}$$

where the symbols have the same meaning as in equation (4). For ease of interpretation, a standardized form of $G(d)$ can be defined as

$$Z(G) = \frac{G - E(G)}{\sqrt{Var(G)}} \tag{10}$$

where $E(G)$ is the mathematical expectation of G and $Var(G)$ variance of G. If G is more than $E(G)$ and $Z(G)$ is significant, the observations are clustered by relatively large values; if G is less than $E(G)$ and $Z(G)$ is significant, the observations are clustered by relatively small values; and if G is close to $E(G)$, the observations are randomly distributed over space.

Each of the two aforementioned statistics gives only a single value to show a whole spatial pattern for observations, so we cannot know about the spatial variance at each of locations.

LOCAL MORAN I

The local Moran statistic for each observation i is defined as

$$I_i = \sum w_{ij} Z_i Z_j \tag{11}$$

where the observations $Z_i$and Z_j are in standardized form (with mean of zero and variance of one). The spatial weight w_{ij} are in row-standardized form. So, I_i is a product of $Z_i$and the average of the observations in the surrounding locations. The value of I_i, unlike that of global Moran I, is tightly related with the observations, and not confined to the range of -1 to 1.

With a significant level (such as p-value less than 0.05), a positive I_i and a positive Z_i indicate that a high observation value at location i is associated with relatively high values at its surrounding locations, viz. high-high value cluster (HH); a positive I_i and a minus Z_i indicate that a low observation value at location i is associated with relatively low values at its surrounding locations, viz. low-low value cluster (LL); a minus I_i and a positive Z_i indicate that the observation value at location i is much more than those at its surrounding locations, viz. high-low value cluster (HL); and a minus I_i and a minus Z_i indicate that the observation value at location i is much less than those at its surrounding locations, viz. low-high value cluster (LH).

c. Local Getis-Ord G

The global Getis-Ord G may not easily distinguish the presence of negative spatial association from spatial clustering, which is often defined as either high-rate or low-rate spatial clustering. The global G has not been evaluated extensively, especially for low-value clustering. It is critical to interpret the local G according to the degree of the global G (Ord and Getis 2001). The local G (including G_i and G_i^*) is used to test the deviation of a local pattern from the average values of observations. The spatial statistic $G_i(d)$ and $G_i^*(d)$ can be defined as

$$G_i(d) = \frac{\sum_{j,j\neq i}^{n} w_{ij}(d)x_j}{\sum_{j,j\neq i}^{n} x_j} \qquad G_i^*(d) = \frac{\sum_{j}^{n} w_{ij}(d)x_j}{\sum_{j}^{n} x_j} \tag{12}$$

where the symbols are the same as before. For ease of interpretation, a standardized form of $G_i(d)$ in Ord and Getis (1994) can be defined as

$$Z(G_i) = \frac{G_i - E(G_i)}{\sqrt{Var(G_i)}} \qquad Z(G_i^*) = \frac{G_i^* - E(G_i^*)}{\sqrt{Var(G_i^*)}} \tag{13}$$

where $E(G_i)$ is the mathematical expectation of G_i and $Var(G_i)$ is the variance; and $E(G_i^*)$ is the mathematical expectation of G_i^* and $Var(G_i^*)$ is the variance.

A significant and positive $Z(G_i)$ or $Z(G_i^*)$ indicates that the location i is surrounded by relatively large values, whereas a significant and negative $Z(G_i)$ or $Z(G_i^*)$ indicates that the location i is surrounded by relatively small values. So the local G statistics can be used to identify spatial agglomerative patterns with high-value clusters or low-value clusters.

4.3 Results

General situation

In the period of 1984 to 2000, the urban area became linearly larger and larger from about 230 km^2 in 1984 to 750 km^2in 2000, and then it suddenly speeds up to about 2800 km^2 in 2005, and about 900 km^2 is covered by various development zones, including industry development zones and economic and technical development zones. The total urban area of *Sunan* in 1991 is 2.33 times that in 1984, in 2000 is 1.57 times that in 1991 and 3.64 times that in 1984, and in 2005 is 3.41 times that in 2000, 5.34 times that in 1991, and 12.42 times that in 1984. The relationship between the total urban area and the total urban population agrees greatly with a positive exponential function (Figure 4.11.7). And the urban area growth is much faster than the urban population growth, which means that the urban growth is land-enclosed.

The global fractal radius dimensions (GFRD) centred at the barycenter (310, 335), with a maximum effective circle radius range of 1 to 619 pixels containing almost all the towns, show on the whole that the repartition of urban areas has been becoming more homogeneous over time, except in 1991 with a value below 1 (Figure 4.11.8a), revealing that the spatial organization became like a Fournier's dust in 1991. A similar tendency with big and many oscillations (meaning different reliable local dimensions with many estimated intervals) is illustrated by scaling behaviour curves in 1984, 1991, and 2000 (Figure 4.11.8), revealing similar heterogeneous spatial organization of urban surfaces, and a strong dilution existed in the radius range of 150 to 230 pixels. With urban sprawling, the curve in 2005 was obviously different from others, revealing more homogenous repartition and more compactness especially in the radius range of 1 to 400 pixels. The GFRD's centre in different cities will present results accordingly; due to space limitations those results aren't going to be presented in this chapter (see Figure 4.11.9).

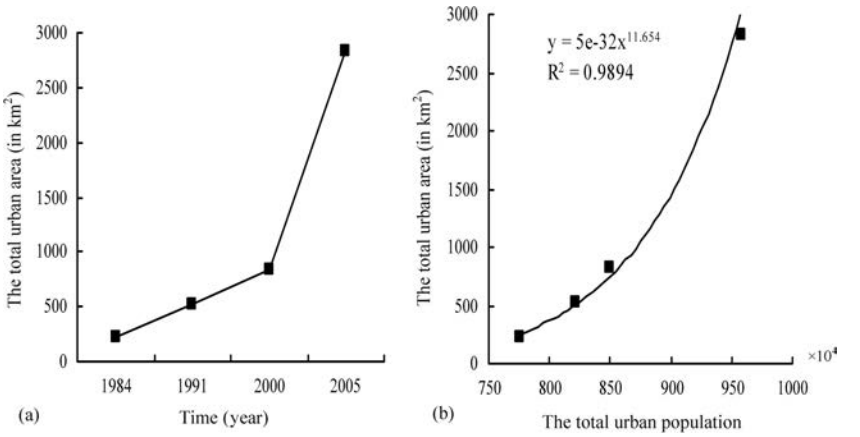

Figure 4.11.7b The total urban areas in different years and the relationship with the corresponding total urban population.

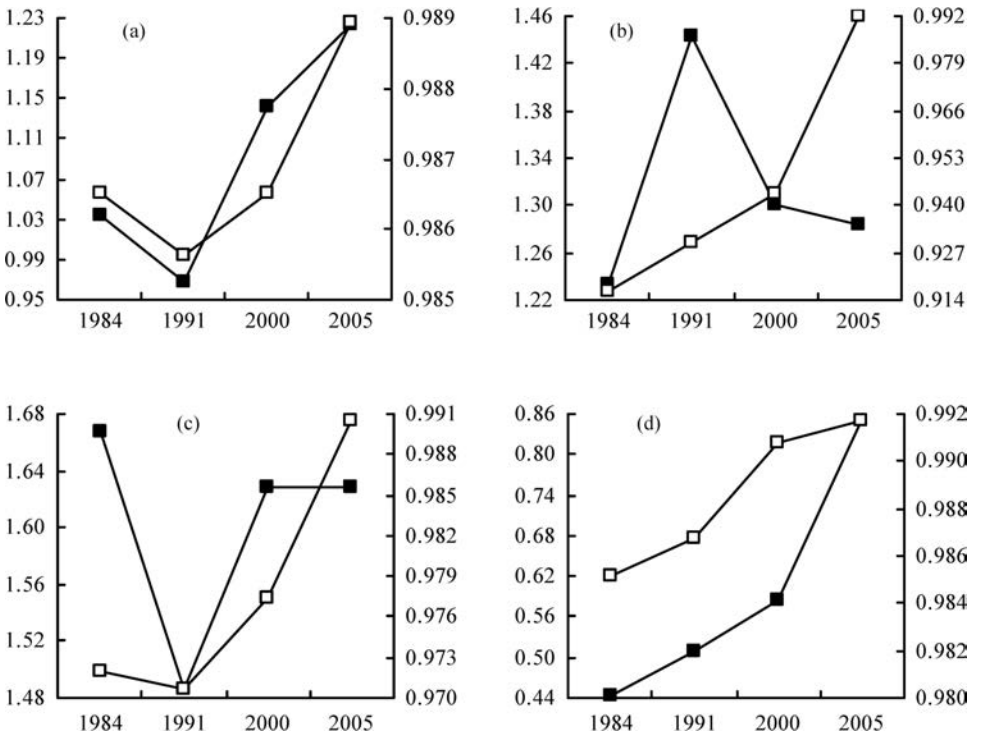

Figure 4.11.8 Global fractal radius dimensions and their corresponding correlation coefficients centred at: (a) barycenter, (b) Suzhou, (c) Wuxi, and (d) Changzhou; left y-axis and solid black rectangle for dimension (dimensionless), right y-axis and hollow white rectangle for correlation coefficient (dimensionless), x-axis for time (in year).

In 1984, the global fractal correlation dimension (GFCD) was close to 1 (Figure 4.11.10a), and there also were big fluctuations of dimensions from about 0.55 to 1.43 for different estimation intervals (i.e. the local fractal correlation dimension, LFCD) (Figure 4.11.10b), showing heterogeneous spatial organization like Fournier's dust, especially in the *e* ranges of 23 to 58, 58 to 69, 69 to 86, 118 to 130, and 130 to 154 pixels because of LFCD less than 1 with correlation coefficients more than 0.999. This corresponds to the towns which are distant from each other. The GFCD was higher (less than 1.3) in 1991 and 2000 but kept similar values for different estimation intervals, and the most difference was in 1991 when there still were some LFCD less than 1 with *e* ranges of 28 to 90 and 112 to 126 pixels. The fractal correlation dimension in 2005 was highest (more than 1.5) in the different estimation intervals, which means that the urban area has been becoming more homogeneous.

Figure 4.11.11 illustrates that *CT*' is becoming higher and higher over time from 1984 to 2005. It reveals on the whole that the connection between towns is more and more compacted, which validates the analysis resulting from fractal dimension. Different from the implication of the fractal dimensions and the revised compactness indexes – that is, the urban surface becoming more and more homogenous and compact – the comparison of fractal boundary dimensions

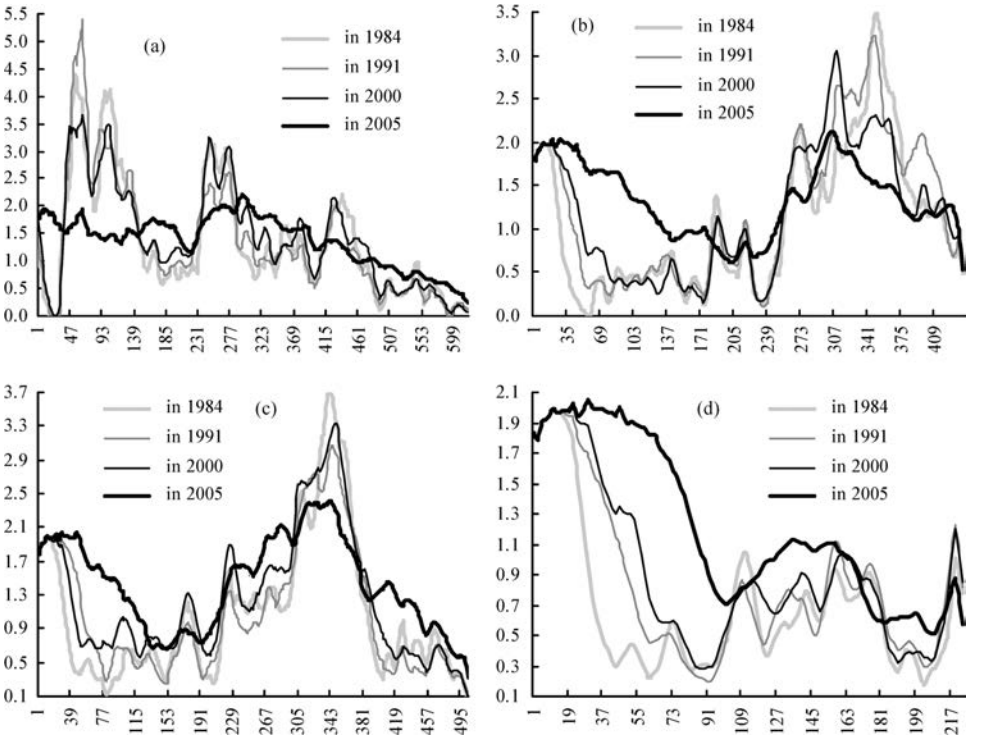

Figure 4.11.9 Scaling behaviour in the five years, respectively, centred at: (a) barycenter, (b) Suzhou, (c) Wuxi, and (d) Changzhou; y-axis for α (dimensionless), x-axis for ε (in pixel).

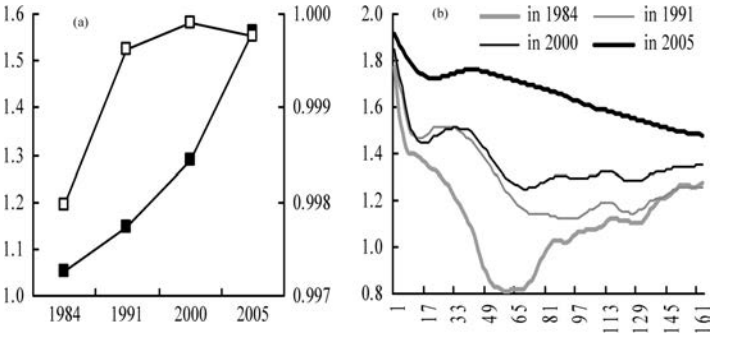

Figure 4.11.10 Fractal correlation dimension, left y-axis and solid black rectangle for dimension (dimensionless), right y-axis and hollow white rectangle for correlation coefficient (dimensionless), x-axes for time (in year); (b) the scaling behaviour, y-axis for α (dimensionless), x-axis for ε (in pixel).

shows on the whole that the outlines of urbanized surfaces are unstable and irregular. It reveals that the urban outline is out of order to some extent from 1984 to 2005, maybe because there is a lack of a continuous urban planning schema over a long time even though in some periods some planning exists.

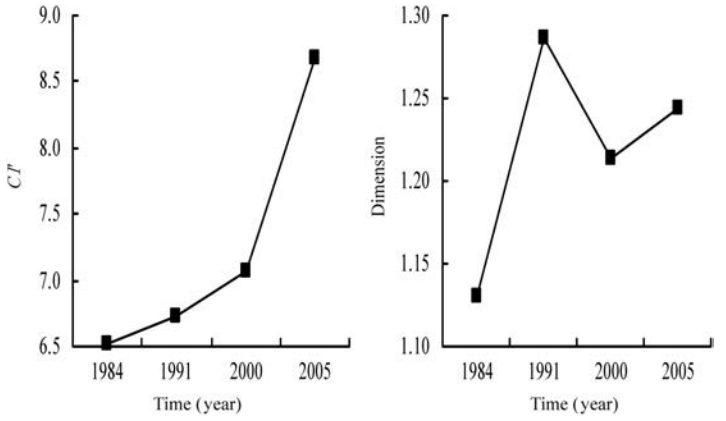

Figure 4.11.11a The revised compactness indexes.

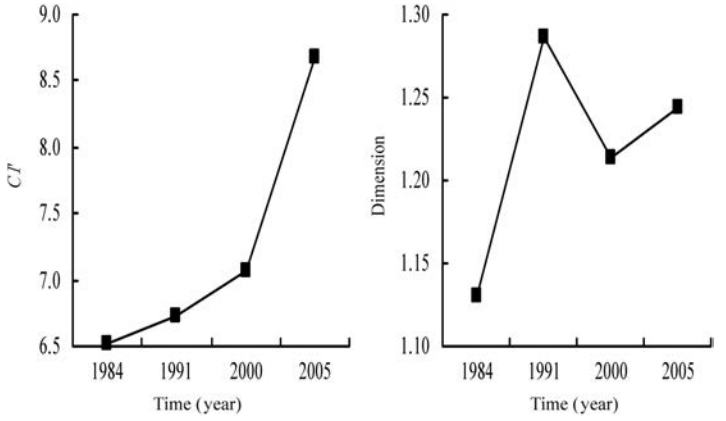

Figure 4.11.11b The fractal boundary dimensions.

Sprawl pattern

Means of *SII* of all the towns are, respectively, 0.54 in the periods from 1984 to 1991, 0.34 from 1991 to 2000, and 3.65 from 2000 to 2005, showing that the sprawl intensity increases sharply in the new century and is about 6.8 times in the initial stage of reform and opening-up period after going through a transitional stage from 1991 to 2000.

The sprawl is clustered to a certain extent on the whole in each of the three periods, revealed by the global Moran *I* of *SII*, whose spatial weights were constructed based on contiguities, respectively, from polygon boundary files (I=0.427 in 1984–1991, 0.176 in 1991–2000, 0.294 in 2000–2005), from the average nearest neighbours with a threshold distance of 5,000 m (the nearest neighbour observed mean distance is about 4910 m, calculated by the spatial statistics tools in ARCGIS 9.0) and from the nearest neighbours with a threshold distance mean distance of 10,000 m (Table 4.11.3). On the whole, the clustered degree in the period of 1984–1991 is highest, then in 2000–2005, and the lowest in 1991–2000, which shows that: (1) in 1984–1991, urban sprawl intensity was very heterogeneous and maybe the prominent sprawl happened only

Table 4.11.3 Global I of SII whose spatial weights are constructed based on contiguities from the nearest neighbours

	Threshold distance = 5000 m			*Threshold distance = 10000 m*		
	1984–1991	*1991–2000*	*2000–2005*	*1984–1991*	*1991–2000*	*2000–2005*
I(d)	1.620	0.200	0.456	0.707	0.167	0.222
E(d)	–0.005	–0.005	–0.005	–0.005	–0.005	–0.005
Z Score	15.317	1.878	4.165	18.517	4.363	5.666

Table 4.11.4 Global G of SII whose spatial weights are constructed based on contiguities from the nearest neighbours

	Threshold distance = 5000 m			*Threshold distance = 10000 m*		
	1984–1991	*1991–2000*	*2000–2005*	*1984–1991*	*1991–2000*	*2000–2005*
$G(d)$ ($\times 10^{-6}$)	9.234	2.165	1.517	19.57	7.300	5.689
$E(d)$ ($\times 10^{-6}$)	1.034	1.034	1.034	4.454	4.454	4.454
Z Score	17.053	3.475	2.441	19.084	5.229	3.668

around several towns or cities; (2) in 1991–2000, urban sprawl intensity became a little homogeneous; and (3) in 2000–2005, the towns grew in homogeneously again; however, the prominent sprawl happened around more towns or cities.

However, the clustered patterns indicating urban sprawl were different, which was confirmed by the local Moran I of *SII*. The local Moran I scatter maps of *SII* show that (Figure 4.11.12):

1. There are obvious HH, HL, LH, and LL clusters with similar spatial distribution but different sizes in the three periods; some towns subjected to *Changzhou*, *Wuxi*, *Suzhou* were classified into the HH cluster in each of the three periods, and some towns along the Yangtze River always were in the HH cluster region; additionally, HH cluster regions were transformed gradually from the city cores to the suburbs in the periods from 1984–1991 to 2000–2005.
2. In 1984–1991, HH clusters were focused on towns subjected to the three cities of *Changzhou*, *Wuxi*, and *Suzhou* and several towns along the Yangtze River, around which existed several HL clusters; a majority of towns were classified into the LL cluster. It reveals in this period that urban fast growth was centralized mainly in the three big cities.
3. In 1991–2000, the HH cluster was extended in spatial distribution; there were more and more HH cluster towns along the Yangtze River, and towns subjected to *Kunshan* were classified into the HH cluster but the LL cluster in 1984–1991.
4. In 2000–2005, the HH clusters were joined contiguously into a zonal region from Wuxi, through *Suzhou* and *Kunshan*, to *Taicang*; additionally, the suburbs were in the HH cluster, like in 1991–2000.
5. Wholly and generally, the HH cluster was pattern-pointed at the initial stage, and then they were transformed into the periphery or enlarged into a large region but still pattern-pointed; with a rapidly developing economy, more HH clusters emerged and some of them were joined together into a zonal region.

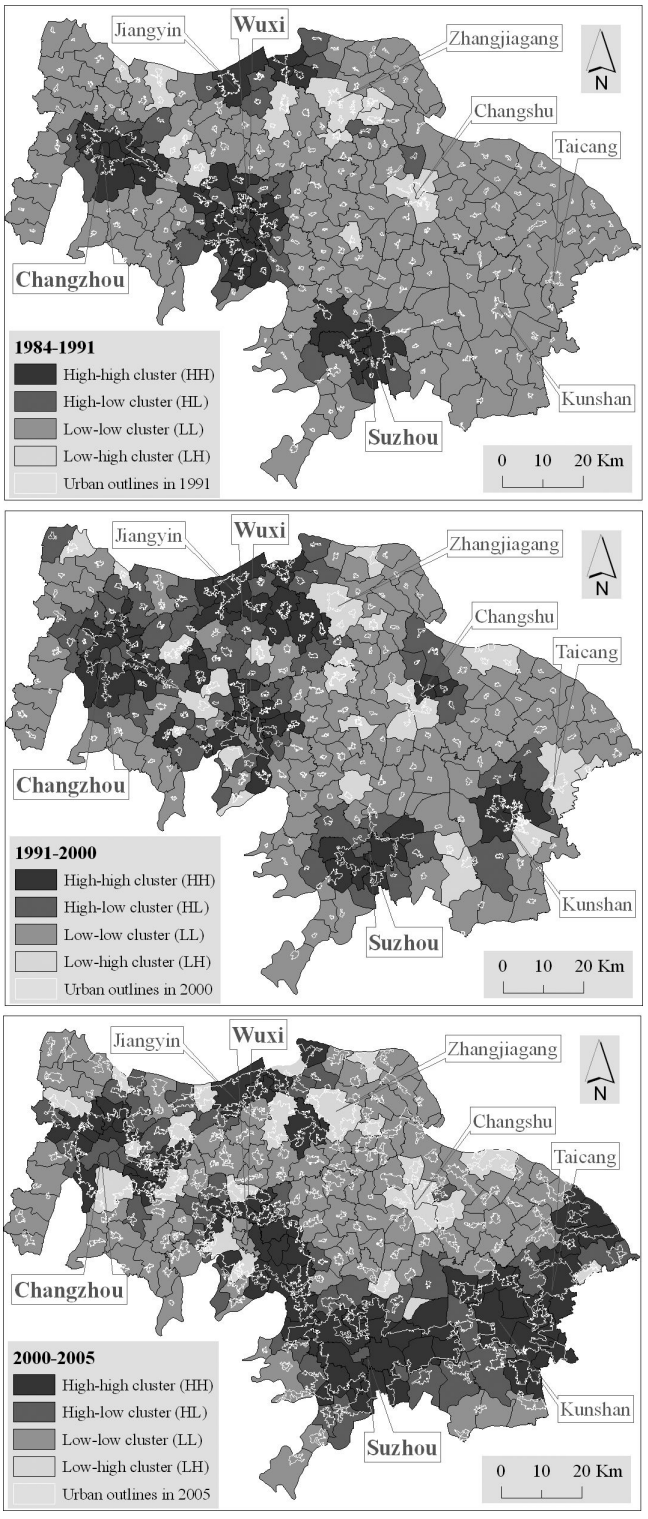

Figure 4.11.12 Moran I scatter map.

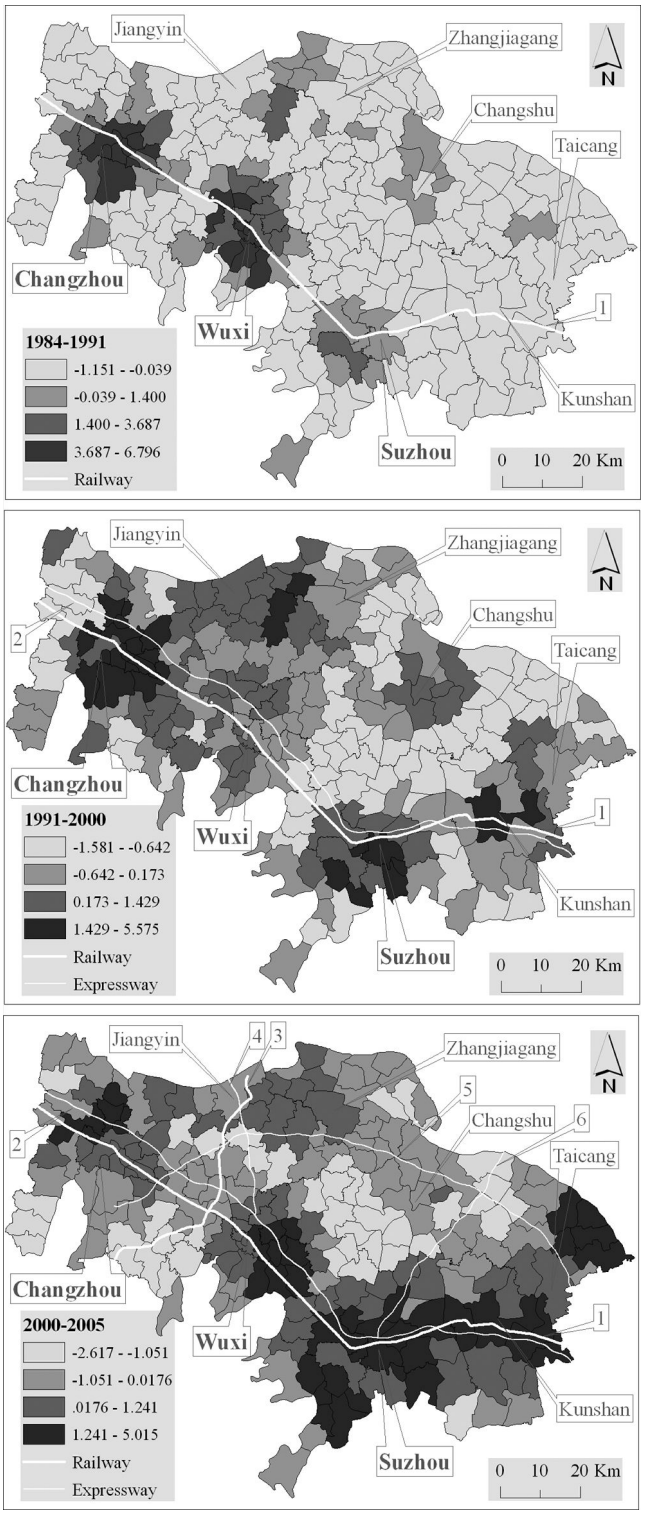

Figure 4.11.13 Spatial distribution of the local Getis-Ord G; 1 denotes Huning railway, 2 Huning expressway, 3 Subei railway, 4 Xicheng expressway, 5 Yanjiang expressway, and 6 Sujiahang expressway.

In order to uncover different clustered patterns more deeply and formally, the hot/cold spot analysis technique was employed to calculate the global Getis-Ord *G* values. The global Getis-Ord *G* value, together with the *E* value and *Z* score (Table 4.11.4), shows that the cluster revealed by the global Moran I is a high cluster, which is more significant in 1984–1991 than in the other two periods. So the hot spot of urban sprawl was very concentrative in 1984–1991, and then was dispersed gradually. In order to uncover the spatial distribution of the hot spots and their transformation, the local Getis-Ord *G* values were calculated also.

Figure 4.11.13 shows from the view of sprawl intensity that: (1) in 1984–1991, there were four hot spots, which were concentrated, respectively, at the four cities – that is, *Changzhou*, *Wuxi*, *Suzhou*, and *Jiangyin*; the former three are connected directly by the *Huning* (from Nanjing to Shanghai)railway and the fourth lies along the Yangtze River; (2) in 1991–2000, the hot spots respectively located at *Changzhou* and *Jiangyin* still existed but dispersed into a big connected patch; the hot spot located at *Suzhou* was enlarged and a new one grew up at *Kunshan*; the one located at *Wuxi* became weaker; (3) in 2000–2005, the hot spot located at *Changzhou* still existed but diminished, and so did the big connected patch; the one located at *Wuxi* was enhanced again; noticeably, a zonal hot spot had grown up from *Wuxi*, through *Suzhou*, to *Kunshan* along *Huning* railway and *Huning* expressway; additionally, a new one emerged at *Taicang* along the Yangtze River; and (4) wholly and generally, the hot spots of urban sprawl were concentrated mainly at big cities at the initial stage, where the urban sprawl were self-governed and they didn't have a strong influence on one another; and then the hot spots were spread to their surrounding towns gradually, or they were joined with other hot spots into a big connected patch; with economic and social development, the hot spots were spread and dispersed continuously and some were joined into a zonal region along the important transportation axes.

Conclusion

Region building is one of the commonest applied problems encountered in location analysis. This chapter has shown advances that have been made in regionalization methods. Regional divisions represent a compromise between spatial contiguity on the one hand and grouping counties with like characteristics on the other. The number of possible regional divisions or combinations in any study area is usually very large indeed. Thus, any study area is usually very large. Thus, any proposed scheme is less likely to be a single sharply peaked optimum than one of a set of rather similar near-optimal solutions. This chapter also reveals the practicability of fractal dimension measures for homogeneity and compactness, just as some literature shows; the differences in this research is that it is applied in analysis not of inner urban areas but of urban clusters. In the course of the analysis, applying a scaling action may help detect the change threshold range. So the fractal dimension and its incidental scaling behaviour may complement each other when performing an analysis of homogeneity and compactness. The urban sprawl intensity is a good normalized index for analysis and comparison of different urban sprawls and also is a base to detect the urban cluster pattern by spatial autocorrelation measures, which is very practical and applicable by means of a Moran scatter map and hot/cold spot detection.

Acknowledgement

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Note

1 See Ronghua *et al.* (2008).

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PART 5

Methodology in action

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5.1
METHODOLOGY IN ACTION
The relationship between research and practice

Neil Harris

Introduction

Every researcher, no matter what the nature of his or her individual research endeavour or project, is required to reflect on the relationship between his or her research activity and the world of practice. This is equally true of the 'blue skies' researcher, whose relationship to practice may be long-term, indirect and diffuse, as it is the contract researcher engaged in conducting short-term, client-driven research who is expected to effect change in existing policy or practice. Chapter 1.1 sketched out some of the relationships between research and practice and the chapters in this part of the book explore that relationship further. Some contributions focus on conceptualising the relationship between research and practice, providing us with several different models for thinking about the nature of that relationship. These range from a traditional understanding of research informing practice to a more open and collaborative understanding of the role of stakeholders in the production of knowledge through research activity. Other contributions explore the application of specific concepts in practice, identifying the nature of specific methodologies as they cross over into the world of practice. The common theme running through the chapters is that of research as a collaborative exercise extending well beyond the academic community, in which many varied stakeholders with different perspectives and backgrounds are engaged. These different backgrounds may in some cases be addressed through thinking carefully about how research is conducted and how researchers communicate with their different audiences. Yet in other cases – particularly, but not exclusively, in non-Western contexts – engaging with these different stakeholders may present more fundamental challenges to how research is conceptualised and also to which methodologies are considered appropriate.

Conceptualising the relationship between research and practice

Chapter 5.2, by Davoudi, explores the important question of the practical value of the research that is carried out by academics, whether they are engaged in 'blue skies' research or the production of evidence for more immediate and practical reasons. Her chapter asserts that assessing the impact of research – and especially that which is publicly funded – is a legitimate concern, yet the increasing focus on measuring research impact has many risks and challenges associated

with it. One of the most significant points made by Davoudi is that how we conceptualise the relationship between research and impact and the relationship between research and practice can be critical. Drawing on her own experience of leading an initiative to foster the exchange of research information and knowledge between academics and practitioners, she highlights how conceptualising this relationship in one form rather than another can undermine efforts to shape and inform practice. The chapter also identifies how our research outputs and findings can be also be used symbolically, perhaps appropriated in defence of arguments and positions that we did not anticipate when conducting and disseminating our research. Davoudi concludes with a defence of the role of the public intellectual, which she sees as under threat, but also emphasises the need to recognise research as a diffuse set of practices involving a wide range of different actors.

It is this open, collaborative and participative dimension of research that characterises the field of transdisciplinary research. Chapter 5.3, by Moulaert and Cassinari, relays a research project, Social Polis, that involved a significant number of stakeholders from a wide range of disciplinary backgrounds, each with their different knowledge, culture and practices. They identify similar challenges to Davoudi in thinking about research activity as a cooperative activity involving participants drawn from within and beyond academic research communities. They distinguish transdisciplinary research from other, perhaps better-known terms, such as multidisciplinary and interdisciplinary research. They argue that transdisciplinary research is of particular value in addressing questions and issues characterised by uncertainty and complexity, and so its link to spatial planning issues and problems is potentially very significant. There is an emphasis in their account on the role played by stakeholders in the research process, and the varied challenges of engaging and communicating with stakeholders as an active part of the process of conducting research. The authors' reference to working with concepts and ideas continuously 'in construction' by and with stakeholders presents real challenges to those researchers whose practices are based on defining concepts at early stages of the research process. The chapter is of particular value for anyone engaging in a transdisciplinary research project and facing the prospect of engaging with stakeholders who, both literally and metaphorically, may speak many different languages.

Research in practice contexts

One of the key distinctions thrown into sharp relief by the contributions in this part of the book is that between academic research and other, practical forms of research. Chapter 5.4, by Peel and Lloyd, focuses on one of these areas of applied or practical research through exploring research commissioned by government to inform policymaking. Their account shares with others the characteristic of a research environment composed of a variety of different interests and stakeholders. They outline the ways in which the highly political, immediate and pragmatic research environment for government-commissioned research differs from the traditional academic research environment. The chapter will provide valuable insight for any academic venturing into the world of government-commissioned research, in which others define the research questions, steer the outputs arising through the process and influence the manner in which the research is disseminated and assessed. Peel and Lloyd set out the distinctive contribution that academics can make to client-driven research, particularly in challenging established ideas and ensuring that research is based on robust conceptualisation.

The relationship between academic research and practice is also at the core of Duminy's account in Chapter 5.5 of research methodology in the context of Africa. The chapter explains

the necessity of aligning the research training provided in university curricula with the specific demands of planning practice in African countries. The documented efforts to embed case study research methodology at the core of African planning schools' research design and methods training are a response to the need for practitioners to engage with the informality of African settlements and a distinctive, African urbanism. The traditional focus of African planning schools' methodology on survey design has been complemented with that of case study methodology which better addresses some of the real and practical issues facing planners in Africa. The chapter acts as a reminder that research methods training is not delivered exclusively or principally as a means of completing a dissertation, thesis or academic research project, but also for engaging meaningfully in practice contexts. Duminy's point on research training embedding a distinctive set of values, as well as practical skills, is also an important one. Despite its very different setting, Chapter 5.6, by Zhang and Wang, similarly outlines how traditional or established methodologies in China are increasingly subject to pressure for change in the face of emerging patterns and trends. The account in the chapter of urban planning in China emphasises the importance of several traditional, physical planning methodologies, albeit ones infused with a distinctive Chinese philosophy and ethics. Zhang and Wang argue for a renewal of expertise to address increasingly complex social, economic and environmental issues. Drawing on physical planning traditions, and the use of SWOT analyses (analysis of strengths/weaknesses/opportunities/threats), one of their key points is that many plans are not made on a sufficiently scientific basis, and that many of the applied methods in masterplanning exhibit important weaknesses. The chapter paints a picture of a need for development in research methods to equip planners to deal with the scale and pace of change in Chinese cities and regions.

Lloyd and Peel's earlier chapter highlights that one of the distinctive contributions that academics can make to practical research projects is rigorous conceptualisation. This theme of conceptualisation is developed further by Chapter 5.7, by Törnqvist, on the renewal of industrial areas in Sweden. His chapter explains how various research projects were used to better understand apparent conflicts between planners and others in how they approached specific planning issues. By exploring the concepts in use among both planners and small industrial businesses, a better understanding of the issue of industrial estate renewal was attained. The key lesson from the account is that research can serve as a basis for constructive dialogue, better understanding and even consensus among different participants. One of the means of achieving this is using research to reveal a different picture or outline alternative ways of understanding the character and nature of problems.

Stakeholder participation in research

The theme of participation in policymaking and practical problem solving is continued in Sager's chapter (5.8), addressing the use and application of cost-benefit analysis (CBA). CBA is a well-established and renowned method that is regularly applied to investment projects. It often features as part of the justification for large-scale infrastructure projects, and it is in that respect that it interfaces with planning systems. Sager's exploration of CBA focuses on how established methods and techniques, such as CBA, need to be adapted to processes of participation and deliberation. Several significant points are made in Sager's chapter that are useful ones for anyone engaged in the use of methods and techniques in practical contexts. One of these key points is that evaluation methods, and other similar methods, used in practice are underpinned by certain ethical frameworks or positions that can be revealed and subjected to critique. Sager consequently identifies several key questions that lay participants engaged in a process involving CBA

might ask of the method. Another of the lessons that Sager draws is that methods and techniques should reflect the values held and expressed by citizens if they are to be appropriate. So, what Sager offers us is an example of how citizens can challenge and adapt established methods used in planning practice, and how we as academics and researchers can also subject these established techniques to critique.

The final two chapters in this part address the common theme of participation of defined groups in the formulation, design and implementation of land use planning policies. The focus of Chapter 5.9 is on the charrette as a specific form of research activity for engaging stakeholders in policymaking and decision making. In that chapter, Kotval and Mullin provide very practical advice on the conduct of research charrettes, from their design through to their application and interpretation. Drawing on their experience as researchers who have applied charrettes in a variety of contexts, they distil a series of working principles for the use of charrettes. One of the key benefits of the charrette as a research method, they argue, is its capacity to engage with both expert and experiential knowledge to the benefit of the policy- and decision-making process. Chapter 5.10, by Uttke, Machemer and Kotval, also addresses the use of charrettes, but as part of a wider series of methods and techniques for the creative and innovative engagement of children and young people. Their chapter instructs us to think carefully about how we communicate our research findings and our policy goals to specific audiences, and to tailor our methods to the needs of our intended audiences. The work that Uttke and her colleagues have conducted demonstrates the need to think creatively about our research activities, as well as the ability for research activity to perform an educative function.

Conclusion

The chapters in this part collectively urge us all to think carefully about the relationship between research and practice. It may be that we are seeking to achieve various forms of impact through our academic research, looking to build knowledge and explore understanding across disciplinary boundaries, hoping to bring robust conceptualisation to the messy world of practice, or committed to engaging specific stakeholders in producing knowledge and understanding about the world. In each of these tasks we operationalise an understanding of the relationship between research and practice; the way in which we do that will have important implications for the design of our research and the impacts and effects of our research activity.

5.2
RESEARCH IMPACT
Should the sky be the limit?

Simin Davoudi

Introduction

There is a scene in Hugh Whitemore's play *Breaking the code* (1986) which all academics ought to read and recite every time they are asked to anticipate the practical worth of their research. It is about a job interview where a civil servant asks a young academic about his research and receives the following enthusiastic, yet rather confused, answer:

> Hilbert thought there should be a single clearly defined method for deciding whether or not mathematical assertions were provable . . . I wanted to show that there can be no one method that will work for all questions . . . Eventually I conceived the idea of a machine.
>
> *(33–34)*

The baffled civil servant asks, "You actually built a machine?" to which the young academic replies, "No, no. It was a machine of the imagination". The interviewer's next question is emblematic of the dominant, albeit stereotypical, view of academics as people living in their ivory towers and using public money to do 'blue sky' research of no use to anyone. He asks,

> What is the point of devising a machine that cannot be built in order to prove that there are certain mathematical statements that cannot be proved? . . . Is there any practical value in all this?
>
> *(34)*

By now, you have probably guessed that the play is based on a true story; that the young academic was Alan Turing; that he was interviewed for the post of the leading cryptanalyst in the team at Bletchley Park; and, that he went on to break the Germans' Enigma code, which influenced the date of the Normandy landings, shortened World War Two and saved countless lives. And, if that was not enough for 'research impact', he also built, almost by accident, the first electronic computer.

Stories like this abound, showing the non-linear, unpredictable and contingent nature of research impact processes and outcomes. The moral is that "researchers' flights of fancy can pay off" (Reisz, 2008: 37) even if there are no obvious or immediate economic benefits. It also affirms that we can never really know in advance about the impact of research and its beneficiaries, but

we continue to insist that we can, as is reflected in the growing interest in *ex ante* assessment of the impact of funded research. Increasingly, both national and international research funding institutions are assessing research proposals on the basis of not only their scientific quality but also their potential impact. Research impact is now an integral part of the assessment processes of the research councils in the United Kingdom (see, e.g., AHRC, 2007; BBSRC, 2005; Davies *et al.*, 2005) and elsewhere (see, e.g., SSCUC, 2005; Spaapen *et al.*, 2007), as well as major research programmes of the European Union (see, e.g., EC, 2005; Georghiou, 1995) and other international funding organizations (see, e.g., Adamo, 2003; Cunningham *et al.*, 2001; World Bank, 2004).

There is a close link between the growing interest in assessing research impacts and the upsurge in evidence-based policy and planning (see Davoudi 2006 for a critique of the latter). On the one hand, policymakers and practitioners are urged to make better use of evidence and research in policymaking. On the other hand, research funding bodies are asked to justify their research priorities in terms of their contributions to societal demands and governments' policies. Inevitably, these pressures have been cascaded down to individual researchers, who are required to demonstrate the relevance and impact of their research. While research impact assessment is on the rise, there is little agreement on what is meant by it, how it is defined and measured and what factors are important for the research to have an impact. This chapter aims to address these questions by drawing on a review of the literature, prior work on related areas of evidence-based planning and personal experiences of acting as a 'knowledge broker' and assessor of research proposals both in the UK and internationally. The main argument is that the way 'impact' is understood and articulated depends largely on how the interface between research and policy and between research and practice is conceptualized. Three models of conceptualizing research impact are presented and illustrated by planning examples from the United Kingdom.

Research impact assessment

> We prided ourselves that the science we were doing could not, in any conceivable circumstances, have any practical use. The more firmly one could make that claim the more superior one felt.
>
> (Snow, 1959: 16)

This is the kind of statement that can give academics a bad name. It is from a 1959 Rede Lecture presented by Charles Percy Snow, a British scientist and novelist whose book, *The two cultures* (1959), ignited a heated debate about what he called a gulf between scientists and literary intellectuals. It is an extreme example of what was then considered by some as 'good' or 'pure' science.[1] Today, such statements are rarely heard from scientists, at least not in public. By contrast, scientists go – or are pushed to go – to great lengths to show how their science is of relevance to society and what its impacts are because, in addition to *ex ante* evaluation of the potential impact of research, attentions have also turned to the retrospective assessment of research impact. The emphasis is on non-academic or extra-academic effects of research. It is not about how many times an academic paper is cited in other academic papers, as measured in bibliometric counts, but what difference it has made to the economy, society, culture and environment. In short, it is about the societal impact of research.

Assessment of the societal impact of research has been introduced into UK higher education by the most recent reform of the mechanisms for assessing the quality of research in universities. In many ways it is an attempt to correct the pernicious wedges of the former Research

Assessment Exercise (RAE). The RAE, which took place every six years or so, assessed the quality of research in individual units of assessment (which did not necessarily overlap with university departments) on the basis of a number of key factors. These factors included, notably, the quality of staff's submitted publications, level of research incomes and completed number of doctoral studies. The outcome of the RAE had significant direct and indirect impact on universities in terms of the level of central government research funding allocated to them. The outcome of the Research Assessment Exercise was also used by producers of the league tables for the ranking of the universities, as well as by universities themselves as a "rhetorical device" in their publicity materials. Once released, the RAE outcomes "develop(ed) an autonomous 'public life'" with an ever growing "performative power" (Burrows, 2012: 12). Performance in the RAE, which was largely based on the quality of publications in peer-reviewed journals, became the single influential factor in academic career progression and promotion.

This meant a shift of emphasis among planning academics from engagement in planning practice to publication in academic journals. The shift was even supported by the Royal Town Planning Institute – the professional body that accredits many planning schools in the United Kingdom – which in 1991 demanded for the first time that the assessment of the "qualities of an effective planning school" should include their "publications; research income; research rankings [in the RAE]; research council recognition for courses and research students" (RTPI 1991: 5). As a result, there has been a fall in the appointment of academic staff from planning practice and a rise in the number of what are sometimes termed 'career academics'. Having a doctoral degree became more important for securing an academic post than having experience in planning practice. While in the past planning academics in the UK were active practitioners (such as Thomas Sharp and Patrick Abercrombie), today they are hardly involved in practice other than in advisory capacities. Similar trends are taking place in other European countries, such as Sweden, the Netherlands and, more recently, Italy. In these countries research assessments, based on academic publications, are increasingly becoming a common feature of academic performance. Thus, although the RAE has been a powerful drive for improving the quality and profile of planning research in the United Kingdom and internationally (Davoudi and Pendlebury, 2010), it has been largely responsible for a sense of divergence between the planning academy and planning practice. As will be discussed ahead, the extent to which this can be translated into an ontological divide between research and practice is, however, questionable.

To rectify what is considered as the perverse impact of the RAE, the current version of it – now titled the Research Excellence Framework (REF) – has an additional dimension in its assessment matrix – namely, 'research impact'. Therefore, in addition to assessing the quality of research outputs (focusing principally on academic staff publications), the societal impacts of research will also be assessed. The idea is to retrospectively evaluate the extent to which publicly funded research has been used outside academia by non-academics and what impact it has had. The purpose of this *ex post* assessment is to make *judgement* on the 'reach and significance'[2] of impacts achieved. This is different from *ex ante* assessment of a research proposal whose purpose is to *learn* how to enhance future potential impact of research. This difference in the purpose means that, while the former (REF) focuses on the impacts emanating from the research outputs and *outcomes*, the latter (i.e. the research funders) concentrate on research *processes* and pathways to impact.

Measuring impact

The rising interest in measuring the societal impacts of research is closely related to the concern about a perceived gap between what researchers produce and what societies demand, which, as mentioned earlier, has been aggravated partly by the RAE, and particularly so in disciplines

such as planning. Thus, practitioners often complain that academics are interested only in 'blue sky' research with no immediate relevance to policy or practice. Academics, on the other hand, whine about the problem of 'little effects' (Weiss, 1975), referring to the large amount of research which sits on the shelf and gathers dust despite being of direct relevance to policy and practice. Despite this, there is no ontological divide between research and practice. It is difficult to distinguish with any certainty "where is the science? Where is the society?" because, as Latour suggests, "They are now entangled to the point where they cannot be taken apart any longer" (Latour, 1998: 209). Indeed, knowledge is generated in the interaction between science and society in ways that make it almost impossible to know who is producing and who is using knowledge. Latour (1998) interprets this intertwining of science and society as a shift from 'science' to 'research', by which he means a shift from what used to be an exclusive academic enterprise towards a complex web of interactions between science, industry, society and polity. The shift is also manifested in the coupling of 'matters of facts' with 'matters of concern', with the latter referring to conflation of facts and values (Latour, 1993, 2005; see also Davoudi, 2012, for its implication for planning). One example of the entanglement of science and society is the intricate systems of research prioritization, funding, dissemination, evaluation and utilization. Despite all this, simplistic notions such as knowledge *transfer* continue to perpetuate the perceived divide between producers and users. After being subjected to heavy criticism, knowledge transfer is now replaced in official discourses by the notion of knowledge *exchange* as a way of stressing the multi-directional process of interactions between researchers, policymakers and practitioners. As will be discussed ahead, the differences between the two notions are reflected in different models of conceptualizing research impact.

Models of conceptualizing research impact

Since the introduction of research impact assessment there has been a growing body of literature attempting to find ways of measuring it (see, e.g., Lavis *et al.*, 2002; Hanney *et al.*, 2003; Molas-Gallart *et al.*, 2000; Elliot and Popay, 2000; Nutley *et al.*, 2003; Molas-Gallart and Tang, 2007; Wooding *et al.*, 2007; Davies *et al.*, 2005). Drawing on my earlier work on evidence-based planning (Davoudi, 2006) and the work of Carol Weiss (1979), it is possible to group the plethora of approaches to research impacts into three broad models: the instrumental model, the conceptual model and the symbolic model. The following account provides a brief outline of each and their interpretation of research impact.

Instrumental model

In order to unpack the instrumental model I would like to start from my personal experience of acting as a 'knowledge broker' for the United Kingdom government's department responsible for planning. Between 2003 and 2007, I led the Planning Research Network for the UK planning ministry which at the time was called the Office of the Deputy Prime Minister (ODPM) and is now called the Department of Communities and Local Government (DCLG). The network consisted of some thirty senior planning researchers from universities, consultancies and research funding bodies. The aim of the Network was to advise the government on its planning research priorities and facilitate knowledge exchange between researchers and policymakers. It was one of the four networks that were established in the ODPM as a way of responding to the then Labour government's promotion of evidence-based policy. I perceived the Network as being located between two neatly defined policy and research communities and charged with

the seamless transfer of policy concerns into research programmes and research findings into policy agendas. In short, my image of the Network is an illustrative example of the instrumental model of research impact.

According to this model, the impact of research on policy and practice happens through a linear and unproblematic process in which either research *leads* to policy and experts are on top, or research *follows* policy and experts are expected to be on tap (Davoudi, 2006). Weiss (1979) calls the former the 'knowledge-driven model' of research utilizations, and the latter the 'policy-driven (or problem-solving) model' (see also Cave and Hanney, 1996). Given the rapid cycle of policy change and the slow pace of research, in practice the latter often becomes the dominant expectation. The emphasis is, therefore, on speed and on the need for evidence to be timely, digestible and available on demand. The instrumental model has had a powerful influence on several approaches that have been developed for the assessment of research impact. For example, the much-cited approach advocated by Knott and Wildavsky (1980) and elaborated by Landry *et al.* (2001) is based on a 'ladder' of research utilizations, which has seven rungs:

- reception: research findings are transmitted to and received by users;
- cognition: research findings are read and understood by users;
- reference: research findings are referred to by users;
- efforts: users make efforts to make use of the research findings;
- adoption: research findings influence users' decisions;
- implementation: research findings are implemented in the users' policy;
- impact: users' policies lead to a change in practice/behaviour.

Staged models such as the preceding are overly linear and based on instrumental assumptions that research is utilized in a sequential process, with all the steps having equal weight and none ever being skipped. As Davies *et al.* (2005) argue, it implicitly assumes that climbing from one rung to the other requires similar degrees of effort and that research impact can be realized only at the top of the ladder.

Conceptual model

Soon after the establishment of the Planning Research Network, mentioned earlier, it became obvious that in the real world the interface between policy and research does not map on to the instrumental model. The experience confirmed the observation that "neither . . . the academic nor the political has a particularly well-articulated sense of the other's agendas, practices and discourses" (Jasanoff, 1996: 394). The experience confirmed the observation made by many scholars that research is only one input in the messy world of policymaking, and that research is always competing with other contenders – such as experience, political insights, ideological judgment, tacit knowledge and institutional memory – in its attempts to influence policy and practice. In short, the instrumental model upon which the Network was designed proved very limited in explaining the exchange of knowledge between researchers and policymakers. This, however, does not mean an absence of research impact. Indeed, the Network may be seen as a success if it is judged according to an alternative, conceptual model of research impact which considers research impact as indirect and non-linear and taking longer to realize. According to the conceptual model, research works by illuminating the landscape within which decisions are made (Davoudi, 2006), and by providing "a background of empirical generalizations and ideas that creep into policy deliberation" (Weiss, 1980: 381). Such impacts are hard to measure because

research is not neatly codified into tools, instruments, protocols or computer models which can be traced back to its originator. For example, research impact may include the absorption and internalization of research into professional tacit knowledge "as it emulsifies with many other sources of knowledge (experiences, anecdote, received wisdom, lay knowledge, etc.)" (Davies et al., 2005: 13).

Furthermore, a conceptual understanding of research impact suggests that the 'users' of research are not just identifiable policymakers or business entrepreneurs but also society as a whole, with numerous yet anonymous beneficiaries. Therefore, according to the conceptual model a meaningful and fair assessment of research impact should focus not just on whether a particular piece of policy is *based* on a particular piece of research, but also on whether society as a whole has been better *informed* because of the cumulated effects of research and scholarship. The impact may be less targeted and more diffused.

Symbolic model

This third model of research impact refers to the symbolic, rather than substantive, use of research. It is about the 'political' and 'tactical' utilization of research in policy and practice (Weiss, 1979; Lavis *et al.*, 2002). In the former, research is employed to support and justify a predetermined position and enhance the credibility and acceptance of particular political decisions. In the latter, research is a resource to be drawn upon as a substitute for action on complex public issues. It is used, for example, to buy time and dampen down pressure for action. In both, research is a means to maintain a political stance either by bolstering or halting decision making (Davies et al., 2005). Research is not conducted for the purpose of solving specific problems or shedding light on the context for decision making. It is carried out and used as ammunition in adversarial decision processes. The planning system in the United Kingdom has been a particularly fertile ground for the political and tactical use of research because it is riddled with adversarial appeal cases, where the proponents and the opponents of a particular planning application commission their own research and expect that its outcomes justify their particular position. The result is sometimes a set of contradictory evidence for and against the case, which makes it more difficult for adjudicators (including planning inspectors) to reach an informed decision.

Such uses or, indeed, abuses of research raise important questions about impact assessment, such as: is all impact good impact? What is the purpose of assessing impact? Is it about learning how to enhance impact? Is it about making judgements on the level and quality of impact? Or, is it indeed about enacting market processes in the academy and performing "quantified control" on academic scholarship (Burrows, 2012: 2)?

Factors affecting research impact

There is a plethora of good practice guides on how to increase the impact of research. The vast majority of these tend to reduce the problem of 'little effect' to the problem of miscommunication. Therefore, it is not surprising that they are often solely focused on presentational issues, ranging from the use of 'simple' language to the shortening of the length of the reports and to the optimal position of the report's logo and the attractiveness of the cover page. For example, the EU Directorate General on Research has issued a guideline on how to communicate 'research for evidence-based policy'. This stresses that "generally, the length of . . . policy brief should not exceed ten pages. Experience suggests that most briefs can be accommodated in eight pages, though some may be as short as six" (EC, 2010: 16), because decision makers are

reluctant or do not have time to read anything longer than that. It also states that "the project logo should appear directly opposite the blurb, in the left-hand column" (ibid). Elsewhere under the heading of "Power of page one", the guideline suggests that, "Vulnerable to the power of first impressions, people routinely judge policy briefs by their covers" (ibid.: 17).

Guidelines such as these, useful as they might be, tend to treat research as a commodity which can attract potential 'users' in what is becoming a crowded market only by appealing to their sensory perceptions. They tend to overlook other critical factors which can affect research impact – notably, the *content* of research, the *processes* through which research is conducted (and communicated) and the *context* within which these processes take place (Pettigrew, 1990). The *content* is about the scientific quality and credibility of research, which can be influenced by research inputs such as resources, existing knowledge, past experience and expertise. It is then manifested in research outputs, including innovative theories, concepts, methods and tools. It can also be manifested in capacity building such as developing new skills, research training, career development and network formation. The *process* is about the nature, level and effectiveness of dissemination and modes of interaction and communication that are used. Such interactions can be both targeted (such as advisory work and formally organized networks) and diffused (e.g., through research mobility, publications and media appearances). The *context* is about the demand environment (such as policy need for research and the timing of the research results) and the beneficiaries' level of receptiveness. Context plays an important part in the understanding of the dynamics of research impact, particularly if the purpose of assessment is learning. As Walter et al. (2004) argue, research impact is contingent on the context in which it is used. The extent to which those who are the targeted beneficiaries of research (or indeed the society as a whole) are receptive to new knowledge and demand well-informed deliberations plays a significant part in the generation, quality and impact of research. An important element of context is the research funding bodies, including government organizations, whose priorities shape the type and form of research that is funded.

Conclusion

Knowing the impact of publicly funded research is a legitimate concern of the funding bodies. However, developing a deeper and more realistic understanding of research impact requires moving away from the dominant instrumental model of impact assessments, which privileges quantifiable and easy-to-monitor measurements. These are incapable of capturing the diversity, breadth, complexity and contingency of non-academic impacts of research. Such approaches are particularly limited when applied to social science research, whose impact on practice and policy is often less tangible, more indirect and less immediate. A great deal of planning research falls into this category. Social scientists' ideas and concepts often percolate into decision-making processes in such a way that makes it more difficult to identify and distinguish between the originators and the users. Although the difficulties of tracing intangible and convoluted impacts are particularly pronounced in social sciences and humanities, they are not exclusive to them. Indeed, many scientific discoveries are also the outcome of cumulative research, by several unknown researchers, undertaken over decades and in multiple sites. The lack of a clear lineage does not mean that research is of no relevance to society or makes no difference to people's lives; it may simply mean that we need to revisit our conceptualization of 'impact' and the purpose of impact assessment.

If impact assessment is about making the connections between science and society more visible and more fruitful, then it has to go beyond the instrumental model and embrace a broader

perspective on how research creeps into practice, and vice versa, in ways that are sometimes impossible to disentangle, let alone to measure. Otherwise, in the rush to formalize, quantify and institutionalize impact assessment we may lose sight of or devalue that connection. If we get fixated on measuring things, we are in danger of changing the very things we measure, which is ultimately independence of thought and intellectual rigour drawn upon to engage with the concerns of society at large. We are in danger of undermining the role of public intellectuals.

Notes

1 This was later rejected by Snow himself as snobbery.
2 The criterion of 'reach' for impacts does not refer specifically to a geographic scale but is interpreted along with significance by the assessment panels.

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5.3

ENABLING TRANSDISCIPLINARY RESEARCH ON SOCIAL COHESION IN THE CITY

The Social Polis experience

Davide Cassinari and Frank Moulaert

Introduction

Transdisciplinary methodology in research crosses disciplinary boundaries to develop a holistic approach, often involving researchers, practitioners and other non-academics in the production of knowledge, which can actively contribute to solving societal problems (Max-Neef, 2005). This chapter discusses the transdisciplinary methodology which was applied in the European platform Social Polis, a concrete experience of cooperation between urban researchers, policymakers and civil society representatives. Social Polis is a social platform[1] funded under the European Union's Seventh Framework Programme for Research created to generate a European Research Agenda on 'Cities and Social Cohesion'. The Social Polis platform has dealt with the complex *problématique* of social cohesion in cities, involving over three hundred stakeholders with different backgrounds. These stakeholders were brought together in a three-year, multilayered and plural debate with researchers, civil society organizations, representatives from European Union and United Nations organizations and national and local authorities, as well as non-governmental organizations, private-for-profit organizations and community organizations of deprived citizens and migrants. These agents have been involved in combating social exclusion in different domains in cities in Europe, South and North America, Africa, Asia and Australia. Social Polis is therefore an example of a large-scale, transdisciplinary project and illustrates how such a platform can be organized and how stakeholders involvement may be coordinated. Furthermore, it provides the opportunity to discuss some typical problems that frequently arise in transdisciplinary projects, as well as some possible solutions to these.

This chapter starts by briefly presenting transdisciplinary research and some of the arguments in support of it. Next, it discusses some practical issues common to different transdisciplinary projects. It focuses on why the Social Polis project adopted a transdisciplinary methodology, how this was applied and how the social platform addressed the different problems and difficulties arising in the course of the process. In its conclusion, the chapter sets out some future perspectives for transdisciplinary research and identifies challenges and opportunities for transdisciplinarity in the years to come.

1. What is transdisciplinary research?

In the past two decades, there has been a growing interest in the practice of transdisciplinary research, particularly in the social sciences; but a generally accepted definition of transdisciplinarity is still lacking (Jahn, 2008). In this chapter we define transdisciplinary research as research between, across and beyond disciplinary boundaries. It recognizes the dynamics of similarities across disciplinary bodies of knowledge (e.g. community development, social work, social planning) with disciplines referring not only to scientific domains but also equally well to practice fields. Its goal is the holistic understanding of the world or parts of it, and the challenges it holds through connecting knowledge and recognizing its unity (Nicolescu, 2002). In other words, researchers *modify* or *adapt* their approaches to make them more appropriate to the issues studied. Cooperation between scientists and practitioners working inside *and* outside academic communities is essential to transdisciplinary research. This cooperation often materializes in fields oriented to collective action, such as policy studies, spatial planning or transition governance and management.

From the 1970s onwards, criticism of what was considered to be 'normal' positivist science grew. Transdisciplinarity was introduced as an innovative form of relevant research alongside systems analysis, critical realism and postmodernism (Hirsch Hadorn *et al.*, 2008). For Godemann (2006, p. 52), "transdisciplinary research refers to problems outside the scientific world which may only be solved by scientists in co-operation with experts in possession of practical experience from outside the academic world".

Transdisciplinary research complements discipline-bound or even interdisciplinary research in fields characterized by complexity and uncertainty, in which social, technical and economic developments interact with elements of value and culture. As Pohl and Hirsch Hadorn (2007, p. 20) write, "There is a need for transdisciplinary research when knowledge about a socially relevant problem field is uncertain, when the concrete nature of problems is disrupted, and when there is a great deal at stake for those concerned by problems and involved in dealing with them", such as poverty, health, migration, cultural transformation, climate change and bioengineering of new crops. Transdisciplinary methodologies have been used in fields as diverse as participative planning (Antrop and Roggea, 2006), policymaking, design, health care, environmental assessment and technology assessment (Thompson Klein *et al.*, 2001; Hirsch Hadorn *et al.*, 2008). Interest in transdisciplinarity also arises from different stakeholder pressures on science: social movements (peace, environmental, women's movements, etc.), trade unions, welfare state concerns and professional occupation groups, which participated in the establishment of new academic teaching programmes and new areas of scientific expertise (such as development studies, peace and conflict research, social work research). In brief, transdisciplinary research attempts to grasp the complexity of problems, take into account the diversity of life-worlds and scientific perceptions of problems, link abstract and case-specific knowledge, and develop knowledge and practices that promote what is perceived by different actors to be the common good.

The involvement of non-academic actors such as practitioners and lay people, especially end users of particular solutions or products, is a central feature of transdisciplinary research. Practitioners may play a central role in defining the main focus of the research, in order to ensure that the identified problem has both scientific relevance and practical interest (Tress et al., 2003). Practitioners may be consulted for achieving a deeper understanding of the issue, and may also have a joint research role. In our vision of transdisciplinarity, non-academic and final users should not just be a source of information but also have a certain degree of influence in the research process. Alternative concepts of research combining different fields in different ways can be found in Table 5.3.1.

Table 5.3.1 Definitions of research styles

Transdisciplinary research – This literally means research between, across and beyond disciplinary boundaries. It recognises the dynamics of similarities across disciplinary knowledge (e.g. community development, social work, social planning). Disciplines are not only scientific disciplines, but also practice fields. Its goal is the holistic understanding of reality through the connection and unity of knowledge (Nicolescu, 2002). Researchers modify or adapt their approaches to make them more appropriate to the issues studied. Sometimes, a new 'discipline' may emerge, e.g. political ecology, cultural geography, complexity theory (physics, philosophy, cybernetics) to facilitate cooperation between existing disciplines to address particular challenges, for example, climate change, declining social cohesion, democratic deficit, etc. Essential to transdisciplinary research is cooperation between scientists and practitioners inside and outside the scientific communities.

Cross-disciplinary research – Research outside the scope of one's own discipline but using its established methodologies. An example would be a cultural anthropologist researching spatial design practice. There is no natural transfer of methodology or cooperation between the disciplines.

Multidisciplinary research – A self-contained, non-integrative mixture of disciplines in which each discipline retains its methodologies and assumptions. Cooperation between researchers is mutual, but not interactive (Augsburg, 2005). For instance, in the field of healthcare, specialists in different aspects of health or the human body and mind may work together for one patient.

Pluridisciplinary research is concerned with studying a research topic in several disciplines at the same time. For example, a Picasso Cubist painting studied by an art historian, a theologian, a mathematician, a philosopher, etc.

Interdisciplinary research – Originally used to describe research which interactively uses methodologies from several established disciplines with a transfer of methodology and methods between them. For instance, substandard housing may be examined in one project using the methodologies of construction, public health, spatial planning, politics, geography, sociology, community development, etc. *Today interdisciplinary research mainly refers to research that has developed a shared methodology across disciplines to address one theme* (Jessop and Sum, 2003; Funtowicz and Ravetz, 1991; Nicolescu, 2002; Augsburg, 2005).

1.1 Critical issues in transdisciplinary research

The application of transdisciplinary methodologies implies dealing with several practical concerns: participation, development of a coordinating team, and cross-sectoral and cross-actor integration. It is crucial that stakeholders from different fields of practice are included on an equal footing and to guarantee right from the beginning the joint specification and execution of a research agenda which is relevant for policymakers, social movements, NGOs, entrepreneurs, politicians and any other people concerned. Transdisciplinary methods, like action research and forms of theory-practice-dialogue, should integrate tacit, experience-based knowledge, as well as systematic and evidence-based research. To address issues of social cohesion in the city, as is the case in Social Polis, translation and bridge-building beyond academic boundaries should foster learning within and across cities and identify local power structures, as well as the potential for groups and places to shape urban development.

The complexity and multidimensionality of social cohesion should be taken into account. This requires a systemic, relational, holistic and integrated approach which is also path-sensitive and context-specific (Miciukiewicz *et al.*, 2012). Context-sensitive models are needed which structure the multiple problems concerning social cohesion and involve non-western research epistemologies and perspectives. For example, adopting economy of affection or informal socialization perspectives changes the perspective on who is a stakeholder and gives a much more

prominent place to settlement inhabitants, movement and organization leaders, street vendors, etc. within stakeholder practice communities (Macharia *et al.*, 2013).

Developing a multi-scalar approach is also an important dimension of research on social cohesion in cities. Scale-sensitive research links micro- and macro-studies and analyses from different perspectives of complexity. There is a need for specific urban accommodations of socio-ecological coherence at different scales with their respective, sometimes opposing dynamics. Building such accommodations requires researching multilevel-governance arrangements and the relations and roles of institutions (at different scales) in establishing horizontal networks of communication between territorial actors.

1.2 The roles of stakeholders and of practitioners in transdisciplinary research

Participation of practitioners in transdisciplinary research and individuation of stakeholders can vary depending on the focus and goals of a project. Participation can adopt different forms, involve different actors and different roles, or be effective, or token or symbolic. Practitioners may be involved in a transdisciplinary project as stakeholders, but can also be part of the scientific core or the coordinating team of a transdisciplinary project, as is the case in Social Polis, as is illustrated in following sections. A broad and generic definition of a stakeholder is any person or organization who is affected by the social context and effects of the research project, or who can contribute to the process of knowledge production. The stakeholders involved in a transdisciplinary project can include professional practitioners, NGO actors, policymakers, activists and academics, but in general any type of (potential) user of the research results and methodologies of the project.

1.3 Coordination of transdisciplinary research

The management of transdisciplinary research requires specific skills and means. Of special importance is the capacity to cross boundaries, create synergies, develop skills and implement the necessary tools (Hollaender *et al.*, 2008). Therefore, instead of a laissez-faire type of leadership, an active coordination team is required for the smooth functioning of a transdisciplinary project. This coordination, which can be pursued by a small team of delegated actors or distributed among the project team members, involves:

- Identification and clear delimitation of expected tasks, and reasonable time frames for pursuing them, as well as for publication and dissemination of results;
- Management of communication between participants, which should be intensive and continuous, and, for this purpose, requires constant monitoring and an active role for the coordinators in overcoming problems and blocks;
- Management of the tension between heterogeneity and effectiveness, which is difficult to overcome in highly complex networks. Specific tasks of the coordination team in this respect involve conflict resolution, building of mutual trust and commitment, and promoting the pursuit of shared goals. Transparency and reflexivity are also key factors here;
- Cognitive integration of knowledge – research outputs and policy solutions – to enhance application of transdisciplinary results in real-world situations.

This smooth functioning of the transdisciplinary process requires a well-designed coordination strategy, apt to be rearranged during the evolution of the project. For these reasons it is very

important to constantly receive feedback and to carry out intermediate evaluations with the purpose of improving the coordination strategy. The coordination team is usually composed of researchers with extensive long trans- and interdisciplinary research experience, but it may also include also practitioners with research participation experience.

2. The Social Polis experience of transdisciplinary research

Having discussed the foundations of transdisciplinary research and some general features of transdisciplinary research projects, this section presents the experience of the Social Polis platform and derives some relevant lessons for transdisciplinary research.

2.1 Overall objective

Social Polis is a transdisciplinary project in urban studies, public policy and collective action. It was set up as an open social platform for dialogue between scientific and policy communities and civil society practice networks, to develop a research agenda on the role of cities in social cohesion and key related policy questions. The research agenda, which was commissioned by the EU Seventh Framework Programme for Research and also communicated to other funding agencies, was a result of a critical review of research to date undertaken by Social Polis researchers from different social science disciplines, on the one hand, and information gathering, open dialogue and collaborative agenda setting within a multi-stakeholder setting on the other.[2]

This research agenda has been built in two steps. First, a *broader research agenda* with high-priority topics for research on urban social exclusion and cohesion was developed. The second step led to a *focused research agenda* comprising two major societal challenges and five specific topics. The research agenda was collectively formulated, discussed and reworked by individuals and groups of people with academic, civil society and policy backgrounds with great knowledge of real-life problems concerning social cohesion in cities. The formulation of the research agenda implied a back-and-forth process between the scientific core of the social platform and the stakeholders. The agenda was discussed and amended several times following the feedback emerging from a large conference, from online interaction between scientists and actors from the practice field and from more restricted meetings with stakeholders and scientists. Some stakeholders joining *de facto* the scientific core took a central role in the final editing of the *focused research agenda*.

2.2 Social cohesion as a problématique

Problem identification and problem reformulation have been key steps in the Social Polis collaborative process. Grasping the inherent contradictions in constructing social cohesion was a milestone in the collective learning process. Instead of defining social cohesion once and for all, Social Polis participants perceived social cohesion as a multidimensional and multi-scalar *problématique* 'in construction'. Social cohesion concerns such diverse issues as the sense of belonging, citizenship and social inclusion – and all this at various spatial scales: in the neighbourhood, the city and society at large. As a first proxy, in the transdiciplinary endeavour of Social Polis 'social cohesion' is understood "in its general sense of the cohesion of society as a whole, and not simply as a problem of the poor and excluded" (Novy *et al.*, 2012, p. 1873). The discussion of the concept of social cohesion with local, European and global networks of stakeholders has been particularly fruitful as it allowed actors to acknowledge the difference in meaning of the

concept for twelve specific urban fields of action or existential fields.[3] The approach "shows the complexity and multidimensionality of social cohesion as a *problématique*, a discursive field dwelling on the paradox of apparently opposite aspirations of belonging and differentiation. It systematizes social cohesion as an 'open concept', distinguishing between its socioeconomic, cultural, ecological and political dimensions" (Novy *et al.*, 2012, p. 1873). The consequence of this approach is that, as a problématique, social cohesion escapes the simple problem-solving strategies usually linked to conventional policy domains, but reorders problems and therefore solutions according to logics negotiated across stakeholders and researchers.

Another crucial aspect of the Social Polis understanding of social cohesion is the strong *urban dimension* of this problématique. The city has been approached from different perspectives: as an agora, a market place, a territory of collective consumption, the core of a division of labour and a public space of political deliberation. The city is the place where the desire for individualization interacts with the need for social cohesion. This explains the necessity for urbanites to participate in different roles in practice-oriented or practice-based research on social cohesion and connected collective action, as the city is the place where the strongest social inequalities and segregation mechanisms are concentrated and where actors have room for developing socially innovative strategies.

2.3 The challenge of stakeholder involvement in Social Polis

Social Polis was built from a scientific community (a scientific core composed of eleven institutions – lead partners according to European terminology – plus a broader researchers' network) and a very broad practice and policy community, involving more than two hundred stakeholders. Considering the size of the project, the width of the fields covered and the problematization approach that is used, the challenge of stakeholder involvement is very ambitious, as many of the problems reported in the literature on transdisciplinary research could (and did) occur, thus creating obstacles to the project.

In Social Polis, the general objectives negotiated with the European Commission were translated into operational objectives and adapted to the different working realities by the actors involved. For community-based organizations, collaborating in the platform was also a way to obtain small amounts of funding for their own projects in the field of social cohesion and to access researchers working on urban social cohesion. For researchers, it was a unique opportunity to cross academic boundaries, to learn about practitioners' knowledge and try out new methods of problem formulation and participation. The integration of representatives of city administrations in the transdisciplinary endeavour was more difficult because they are used to contracting out applied research in order to solve particular, clearly definable problems. Transdisciplinarity, however, problematizes and poses questions in a different way, due to multiple perspectives and the valorization of diverging interests of actors. This process requires time and a willingness for reflection and for questioning the assumptions about the world that have until that point been guiding actions (Miciukiewicz *et al.*, 2012).

The most significant problems in stakeholder cooperation, as experienced in Social Polis, include: heterogeneity of participants (institutions, NGOs, research bodies, each with different approaches, different goals and different time frames); physical distance between the participants; abstractness/breadth of the research topic (which can be a hindrance if stakeholders do not see a concrete gain from the participation process); communication barriers; and unequal distribution of resources. How these problems emerged and how they have been tackled is discussed in later sections of the chapter.

2.4 Overall structure of the platform and the logic of stakeholder involvement

Social cohesion is a global issue. Consequently, the Social Polis network includes participants from all over the world, but is mainly rooted in Europe. As the literature stresses, the geographical structure of the network should be as close as possible to the spatiality of the phenomena that are addressed – also crossing institutional boundaries and combining different spatial scales (Novy *et al.*, 2013).

The Social Polis platform organization began with the 'scientific community', which *unrolled* its relations and fields of interest to other communities (communities of practice, policy communities, etc.). The practice and policy communities have become involved with Social Polis in four main structured forms (Social Polis, 2008):

- 1st form – Stakeholders Network 1: the stakeholders with whom the core scientific partners had traditionally worked through joint research, action-oriented research, policy analysis, consulting, etc. The Stakeholders Network 1 includes members from different sectors, concerned with a range of themes and operating within various institutional and governance frameworks. They are users known to the core scientific partners through effective cooperation in previous research projects (privileged witnesses, policymakers and evaluators, policy panel members, and grassroots representatives).
- 2nd form – Stakeholders Network 2: stakeholders with similar expertise as Stakeholders Network 1, but who had had a looser relationship with the scientific core before the project started or/and were involved through indirect contacts of the researchers network and the Stakeholders Network 1.
- 3rd form – inner circle of stakeholders: a group of Social Polis stakeholders from different sectors, but with skills complementary to those of the scientific community and those of the 'practice' and 'policy' community.
- 4th form – practice and policy subcontractors of Social Polis: stakeholders who organized workshops or delivered papers, reports and educational resources, and produced audiovisual materials under Social Polis grants.

This complex structure was coordinated by a coordination team in the sense defined earlier. Not all cooperation went smoothly. For instance, some stakeholders who became involved after the project started, especially smaller stakeholders, were not always able to keep up with the group process. Occasionally, the platform structure had to be adapted to provide room for new stakeholders. The platform structure was designed as an initial guideline, new roles were decided during the process and some flexibility was needed for implementing new ideas as, for instance, in the creation of the role of stakeholders as authors and editors of some of the call texts, or as designers of blogs or policy-oriented memoranda.

To facilitate the analysis of the highly interlinked dynamics of urban social cohesion and look for better matches between stakeholder interests and their role in Social Polis, most stakeholders were attached to one of twelve existential fields which Social Polis had identified in urban life. Twelve existential fields divide the large urban field of social cohesion and facilitate the organization of the research work in thematic working groups. 'Field' refers to the dynamics of the relationships within each field (e.g. between actors in housing systems) but also among fields (e.g. housing and urban ecology).

The *first phase of the project* served for initial brainstorming and expression of the variety of research needs arising from different communities of practice and geo-regions, and involved a large-scale workshop and the intensive use of broadcasting-like modes of online communication.

Conversely, the communication with the stakeholders in the *second phase*, which had been thought of as a phase for focusing the research agenda and institutionalization of the platform, consisted of small-scale stakeholder workshops, meetings in small groups, personal e-mail communication and a large international conference in Vienna.[4] Through the Vienna conference, feedback from a wide range of stakeholders was brought to the fore; but some participants who had no time to read all the preparatory material sometimes found the discussions difficult to follow and experienced difficulty linking their concerns to the agenda. For them, small workshops seem to be an easier form of participation to contribute to the research agenda. In fact, most stakeholder contributions were collected during small workshops rather than through electronic communication or during large-scale events. Local stakeholder workshops offered an opportunity for refining the research agenda, enriching conceptual debates on social cohesion and linking reflections on different urban existential fields. These workshops also supported the strengthening of local networks and helped with discussing local problems while connecting them to Europe-wide issues. Nevertheless, it should be noted that the participation of stakeholders in research theme selection and priority setting was less intensive than their involvement in expressing research needs in the first phase. In other words, stakeholders were much more active and interested in proposing topics than in elaborating and developing them.

The *third phase* focused on strengthening bonds within the platform and collaborative production of the challenges and topics which were later to be proposed to the European Commission as potential call themes for subsequent work streams in the Seventh Framework Programme. The collaborative writing process was organized in small transdisciplinary groups; these groups prepared transversal challenges and topics[5] on urban social cohesion, drawing upon research needs which had previously been expressed (phase 1) and then refined (phase 2) by the wider community of stakeholders. This third phase secured actual editing of the topics by the most committed stakeholders of Social Polis and specialists on relevant issues. But it was also the period in which internal bonds within the platform were strengthened, and trans-sectoral teams were formed which would build new consortia to respond to research calls relating to 'Cities and Social Cohesion'. In the end, one challenge and one topic were integrated into the call texts of FP7 (7th Framework Programme for Research), SSH (Socio-Economic Sciences and Humanities research).

2.5 Communication

Transdisciplinarity literatures stress the need for clear communication of research goals, in order to prevent false or unclear expectations of stakeholders, and thus help with averting disappointments. A broad scope of interests, as in the case of Social Polis, may not always be clear to all parties involved. In order to avoid disaffection, research questions for a project should be not only theoretically interesting but also clear and relevant for policy and practice (Antrop and Roggea, 2006).

The *practice communities* involved with Social Polis did not always have a clear idea about the benefits from the collaboration with the academic world and the European Commission. Although the ideas, goals and expected outcomes of Social Polis were clear to the stakeholders, the final purpose and the actual use of the research agenda needed further clarification. The agenda-building process was sometimes perceived as too abstract and too distant from concrete local concerns.

Strong organizational incentives (Stokols *et al.*, 2008) and intermediate advantages, as well addressing key social issues and applications in local settings, can be of help here. The consortium

incentivized the delivery of intermediate results and worked to clarify, as well as renegotiate, the project's goals, activities and implications for the stakeholders. The decision to fund workshops genuinely organized by stakeholders and to commission some practitioners to produce short papers on specific themes was much appreciated by the stakeholders. The workshops, which provided an arena for face-to-face discussion of the proceedings of Social Polis, not only became a motivational factor but also played a key role in making the complex research agenda more comprehensible to practitioners and for stakeholders to take new initiatives on their own (e.g. local training sessions on cohesion policy in particular cities).

Regular meetings and occasions for *informal gatherings* (e.g. social dinners) are vital for team building and the establishment of trusting relationships between the different project partners. Examples of other helpful communication tools might be the creation of an *interactive website*, an *intranet*, small *publications in native languages* accessible to regional stakeholders, the *translation* of the executive summaries of deliverables of particular practical relevance, as well as the establishment of a stakeholder-friendly database in order to keep stakeholders regularly informed about research progress. Knowledge produced in transdisciplinary research will be used not only by practitioners but also by researchers. Therefore, the whole logic of dissemination as a linear process has to be abandoned and substituted by a *cumulative-circular approach of mutual learning* (Miciukiewicz *et al.*, 2012). This way of working does not sit easily with traditional academic hierarchies.

The newsletter and the mailing lists proved to be efficient tools for broadcasting news about Social Polis, as well as for circulation and publication of intermediate working documents. Many stakeholders gave positive feedback about the newsletter, as it regularly informed stakeholders about the evolution of the project, reducing the feeling of being a stranger in a process whose evolution and outcome are not always completely clear. Indeed, the more individuals, groups and organizations are involved in a multilingual and pluri-professional community of stakeholders, the larger the need for, but also the more difficult, customized communication becomes. Standardized messaging among large numbers of network members often results in growing numbers of misunderstandings and circulation of unwanted messages.

The first Social Polis website in particular, which was meant to be designed as an innovative tool for collective discussion, failed as a discussion platform. Maybe this ambition was illusionary, as it is very difficult to produce a website or a forum that draws large numbers of people to engage with it and contribute: "living" websites are updated frequently with fresh information and popular forums are animated by several members intervening every day. The form of the online forum was probably not so familiar for the actors of the platform who, for long-distance exchanges, are more used to personal e-mail communication, Skype and mailing lists. The experience of Social Polis proves that face-to-face communication and local events are more effective in actively involving broader networks of practitioners. Nevertheless, ICT tools proved their usefulness for long-distance collaborations that started previously as face-to-face contacts, or among people who had already created a link of trust through physical meetings, but they exhibited weaknesses as tools for igniting collaboration.

2.6 Time, organizational and financial constraints

Small non-governmental organizations (NGOs), which operate under strict financial and time constraints, have to deploy their resources in the first place where urgent issues for their clients arise. Broad debates on European research agendas are only of secondary importance to them. It is absolutely necessary to make sure that non-academic stakeholders, and small organizations

from the NGO sector in particular, receive funding beyond reimbursement of travel costs for collaborating in the platform. Social Polis addressed this issue through a substantial increase of the initial budget for projects – workshops, papers and audiovisual materials and educational resources – realized by stakeholders under the Social Polis small grants schemes. These schemes were really successful and greatly appreciated by stakeholders, but future transdisciplinary research projects should find more solid forms of remuneration and valorization of stakeholder inputs. Providing appropriate funding schemes to NGOs is one way to conciliate the broader perspective of a large project with intermediate and more concrete results, in the transdisciplinary spirit of conciliating scientific issues with practical concerns of stakeholders. It reinforces the role of users, giving the opportunity for a more decentred functioning of the project. Furthermore, this solution partly balances the economical asymmetry between academic partners who are paid for their involvement in a research project and non-academic partners who often get their funding elsewhere.

3. Prospective for transdisciplinarity

To sum up, the growing complexity of present urban realities and the uncertainty of possible futures, wherein social problems and challenges are too multidimensional and ill-defined to be dealt with by a single discipline or profession (Thompson Klein, 2004a), create both a need and an opportunity for transdisciplinary research and practice. The increasing prominence of ideas of social cohesion that are put at the heart of political agendas calls for a transdisciplinary problematization of environmental, social and economic dimensions of urban and regional life. Burning societal issues such as poverty, uneven development, malnutrition, ageing, environmental injustice or restructuring of health care systems can be addressed only by broad cooperation between social, economic, natural and technical sciences, and policy and practice communities organized at different spatial scales (Novy *et al.*, 2013).

In light of the theoretical and case-based reflections on transdisciplinarity and relevant societal issues we presented in the previous sections, Thompson Klein's so-called *problem solution* approach to social science holds important observations on transdisciplinarity (Thompson Klein, 2004b). First, we are mindful that many 'problems' do not exist by themselves, but are constructed and enacted through particular (ideological) viewpoints or lenses. This does not mean that problems constructed in contrast to 'self-emerging' problems would be less important, but that to appreciate them at their real value their (social) construction process should be retraced. This is, for example, carried out in a Sociology of Knowledge Approach, as put forward by Moulaert and Van Dyck (2013).

Second, the inclusiveness of transdisciplinary networks should not be conflated with the ability to produce uncontested knowledge, and transdisciplinary research should undertake meta-ethical reflection on values and imaginative speculation upon other possible ethical choices relating to different values. This would also allow one to compare value systems as part of the societal and ideological climate of their time, and to figure out to what extent these value systems have an impact on public policy and collective action.

Third, search for imaginative and socially inclusive responses to societal problems in transdisciplinary research requires imagining alternative futures (Hillier, 2008) on the one hand, and finding a balance between immediate, intermediate and long-term research outcomes and proposed policy directions on the other.

Fourth, a focus on societal challenges in transdisciplinary research should not repress methodological reflection on the transdisciplinary methodologies used to bring different people

together in trans-sectoral networks and to enact knowledge in transdisciplinary research processes and outputs. In fact, research methodology is as much a priority of transdisciplinary research as is dealing with societal questions; it is indeed our experience that methodological progress can be quite instrumental to successful cooperative research among agents from a diversity of science and practice communities.

Fifth, transdisciplinary research needs a clear strategy with respect to policy making. The translation of transdisciplinary research outcomes into visible policy results that are of interest to involved members of practice communities and laypeople is a *condicio sine qua non* of successful transdisciplinary endeavour. At the same time, successful transdisciplinary research achievements may be inspiring to scientists and encourage them to take up transdisciplinary research.

Sixth, transdisciplinary networks, which are successful in involving senior members of the policy community and delivering policy solutions, may with time transform into think tanks; when this happens they should make sure to enhance a reflexive governance system, checking the influence of its most powerful members and thus keeping the network from turning into an exclusive, hegemonic think tank.

Last but not least, due to limited sources of funding there often exists a tension between the need for establishing greater sustainability of existing transdisciplinary networks and the formation of new networks. Time and sufficient resources are absolutely crucial for building mutual trust and capitalizing on evolving social bonds and synergies.

Notes

1 A social platform is a network of civil society organizations, institutional and academic actors, functioning as a forum for discussion, dialogue, participation and co-production of social values and products – or any significant contribution to social innovation.
2 See the special issue of the journal *Urban Studies* on 'Social cohesion and the city' (July 2012).
3 See Miciukiewicz *et al.* (2012) for details.
4 www.theworldcafe.com/twc.htm.
5 A challenge is a broader research topic, with a larger budget than a topic.

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5.4
RESEARCHING FOR POLICY RELEVANCE

Critical reflections on government-sponsored research

Deborah Peel and Greg Lloyd

Introduction

Research skills are not simply the province of academic institutions and private study but the bedrock of public policy design and implementation. Governments, for example, commission independent and applied research in order to improve the process and execution of policymaking (Bridgman and Davis, 2003). Incorporating a strong research discipline as part of a policy cycle is held to enable governments variously to identify policy options; assess the likely effectiveness of proposed interventions; monitor and evaluate progress of policies and instruments towards stated ends; promulgate best practice in policy implementation; and test – or indeed legitimate – the appropriateness of policy priorities. From such a positivist assertion, a rigorous research craft lies at the very core of government and governance. A study undertaken for the Scottish government which examined the range of research activities engaged in by practitioners in local authorities, for example, identified certain key areas where it was considered that further research skills training was necessary, including: questionnaire and survey design, general research methods, statistical techniques, evaluation and qualitative research techniques (Lightowler, 2007). Those findings not only highlighted the range of research methods necessary in planning practice but also confirmed the importance of planning and development professionals acquiring a robust research craft.

The importance of high-quality research skills in policymaking has been further legitimated by a deliberate turn to evidence-based decision making (Solesbury, 2001), a movement which has contributed to "reviewing existing evidence, commissioning new research, piloting initiatives and programmes, evaluating new policies, and inviting experts to advise on specialist areas" (Bullock *et al.*, 2001: 18). In contrast to this positivist research tradition, however, there exists a robust argument for planning research to contribute to an "enlightenment" model where society is informed by research evidence in order to debate and determine contextual change, policy options and possible actions (Davoudi, 2006). The need for critical reflexivity with respect to the research discipline highlights that research activity and the interpretation and use of evidence

are not politically neutral and involve policy learning. Following Canessa *et al.* (2007), such thinking signals the need for research data to be converted into policy wisdom if research is to be meaningful in practice. Policy wisdom, however, requires careful and deliberate nurturing so as to realize any potential benefits from specific research studies. As Young *et al.* (2002) suggest, policy wisdom invites consideration and questioning of the direction and appropriateness of research policy, challenging established research power relations, and opening up the potential for new practitioner behaviours with respect to the interpretation and use of data and what is then held to be the evidence-base for particular planning actions.

Weighting of evidence and acceptance or rejection of what is deemed to be relevant to specific planning decisions assume particular importance in planning and development activities, given the likely diversity in the range of stakeholders involved in whatever is being socially constructed as in the public interest. These observations are pertinent to strategic planning policymaking and individual decisions relating to the regulation of development, and are equally relevant to the design and execution of government research agendas. For example, what are the motivations and intentions underpinning a particular research programme and individual research projects? What are the practical ways in which governments specify, commission and steer research? How are research governance arrangements configured? In what ways might researchers respond to what is, in effect, a research environment organized according to the principles of contract?

This chapter uses a government-sponsored research project involving the authors as a case study for reflection on the experience of undertaking commissioned policy-oriented research. In contractual terms, the research was designed to scope the potential of the use of model forms of planning policy in development plans and to make recommendations to the Scottish government about the most advantageous topics for model wordings of selected planning policies. From this practical perspective, the chapter outlines the research questions and objectives, and the methodology used. The chapter critically reflects on some of the issues involved in adopting an academic approach to undertaking government-sponsored research, incorporating a theoretically informed conceptualisation of the problem. Client-funded research involves particular institutional, organizational and political characteristics which differentiate it from independent, academic-funded studies. In practical terms, for example, the language, format and style of research outputs may likely be prescribed by the client and require specific recommendations for action. Attention to the rigour of the research discipline may also support contributions to academic theorising in scholarly journals, for example. The chapter comments upon the dual role of academic researchers in both discharging practice-based research for government and identifying lessons for general theorising of planning.

Government research agendas

Political devolution in the United Kingdom provides a particular context for critically exploring statutory land use planning in Scotland and its modernisation and reform. The (then) Scottish Executive (1999) announced its intention to initiate the "modernisation" of planning to facilitate its enabling role as well as its regulatory functions. The ambition was distilled from a general public consultation exercise and articulated as a political imperative to make the planning system work better. An iterative and layered process of reform of planning institutions and organizations involved extensive commissioning of research from a range of private sector and academic bodies, consultation with stakeholders and the wider public, deliberation through the publication

of government policy papers, and associated parliamentary scrutiny procedures (Peel and Lloyd, 2007b). Significantly, the modernisation process was explicitly accompanied by a comprehensive research programme encompassing strategic planning, development planning and management, enforcement, civil engagement, economic development and the provision of infrastructure. A practical research agenda was underpinned by appropriate processes of due diligence in relation to research procurement and management. This included invitations to tender; allocation of competitive awards to undertake the research; identification of steering group membership to oversee, manage and advise individual projects; deliberate dissemination strategies; political scrutiny through parliamentary committees; and publication schemes. Taken together, public consultation and a substantive programme of research were presented and used in tandem as a way to legitimise a political agenda, inform and provide evidence for the direction of planning reform, and, importantly, to secure active engagement as part of a wider commitment to advance cultural change (Peel and Lloyd, 2006a). In other words, planning research may here be understood as integral to making the case for transforming the planning system and particular ways of "doing" planning.

In practice, those working in planning and development may be involved in a range of different research activities from collecting data, undertaking statistical analyses of available secondary data, monitoring performance, evaluation, policy or literature searches and reviews; to disseminating information through preparing fact sheets or bulletins, for example; or organizing or responding to consultation exercises. Research may be a core or a relatively marginal activity for those involved in different aspects of planning practice, and may range from providing *ad hoc* support to developing analytical research tools, knowledge management or commissioning research projects (Lightowler, 2007). It follows that even if one's primary role is not as a researcher one might contribute to research in a number of ways, such as being an interviewee, survey respondent or focus group participant. It is arguably critical therefore for planning practitioners to understand both the mechanics of the research process and the political and policy environments in which research is prioritised, commissioned, steered and disseminated in the wider public domain.

Reflecting political realities and understanding practical research environments are all important (Davoudi, 2006). In terms of this case study, and at face value, two principal objectives underpinned the comprehensive review of the statutory land use planning system in Scotland – namely, securing greater efficiency and effectiveness and enhancing transparency and inclusivity in its decision making (Scottish Executive, 2001). Government clearly intended modernisation of the planning system to be integral to a broader programme of political and cultural change in institutional and organizational processes of central and local governance relations in Scotland. The nature of the research it commissioned needs to be understood within the context of that programme of change.

An explicit ambition of planning reform was to secure improved effectiveness in the preparation and content of land use development plans, particularly in relation to their currency and consistency in the incorporation and interpretation of national policy at the local level. In practice, the focus on enhancing local planning policies was intended to secure greater certainty and confidence for stakeholders on a Scotland-wide basis. Scoping the potential for introducing "model" planning policies formed a key strand of the reform agenda. Model policies were intended as involving statements of common text applicable over geographical space. It was anticipated by the Scottish government that creating a bank of model policies could potentially offer greater certainty and consistency for users of the planning system working across Scotland's thirty-two individual local authorities. This deliberate intention was based on harnessing the

perceived strengths of existing examples of policies deemed to "work" and harmonising national policy intentions. The idea was also promoted as a way to speed up development plan preparation, by providing a central resource of model texts upon which local government policymakers could draw. It was anticipated that efficiency gains would then arise from reducing duplication of effort in policy writing by avoiding "reinventing the wheel", minimising repetition, reducing legal argument and debate at public inquiry over individual policy wording, reducing the overall length of development plans, and enhancing policy interpretation on a more consistent, pan-Scotland basis. The intention was not to reduce the capacity of local planning authorities to deviate from the "norm" or devise locally appropriate policies, but rather to encourage policy sharing in cases where there existed a strong policy steer from government, or where policies addressed issues experienced in common across different Scottish authorities.

Research commissioning

Initial evidence from the earlier consultation paper (Scottish Executive, 2001) provided the basis for the government's design of the scoping study reported here since the findings suggested that there were many "basic and common planning policies" which were being "reinvented" by the local councils in Scotland, and there were also examples of "differences in wording between policies on the same subject in adjoining local plan areas in the same authority" (Scottish Executive, 2001: 9). From the government's perspective there were efficiency gains to be secured. Moreover, a relatively blunt analysis of the responses (Table 5.4.1) suggested general support for introducing model planning policies. This summary suggested that there was "widespread agreement that model policies could potentially confer a range of benefits", including "greater policy consistency across the country, reduced duplication between national and strategic policies set out in plans, time savings in plan preparation and approval as well as in public inquiries, where there is often much debate about the detailed wording of policies" (Geoff Peart Consulting, 2002a: 22). This set the context for the research study.

In practical terms, an invitation to tender was circulated to those organizations that had previously submitted an expression of interest to undertake research for the Scottish government. The research questions devised by the Scottish government were practically oriented:

1 What is the scope for model development plan policies, in type, number and applicability?
2 Can some generic examples be put forward for discussion as part of this research?
3 What are the practical concerns of users and service providers?
4 What approaches to drawing up such policies would offer the most advantages?
5 How can model policies, once drawn up, be kept responsive to changing circumstances across Scotland?
6 Are there any ways that guidance or advice from central government (e.g., on policy form and content) might be adjusted to help?

A number of general points may be made about the research design. First, it is clear that the research parameters were determined by the government's general political agenda for effecting planning reform. Second, the interpretation of the results of the initial government consultation exercise by an independent consultant was highly influential in devising the details of the research questions. In short, the study focus was articulated by civil servants seeking to meet pragmatic political and practical targets which, in colloquial terms, were defined as "what works". In other words, the research project was intended to advance practice rather than theory.

Table 5.4.1 Summary of stakeholder views from the digest of responses

Stakeholder Groups	*Yes*		*No*		*Mixed*		*Share of Responses*	
	No.	*%*	*No.*	*%*	*No.*	*%*	*No.*	*%*
Local Authorities	25	29	4	36	5	31	34	30
Public Bodies	9	11	2	18	1	6	12	11
Businesses	15	18	1	9	1	6	17	15
Professional & Academic Bodies	15	18	3	27	5	31	23	20
Public & Voluntary Sector	21	25	2	9	4	25	27	24
Totals	85	75%	12	11%	16	14%	113	100%

Research design

In identifying and teasing out the practical concerns of service users and service providers, and identifying potential practical and relational issues involved in drawing up and maintaining a bank of model planning policies, the authors' research design involved a qualitative-interpretive-attitudinal methodology dealing primarily with perceptions and experiences. The tender document proposed a research methodology which would collect the required evidence, triangulate views across contested perspectives and devise a practical way forward (Figure 5.4.1). A mixed methods approach combining inductive and deductive approaches was advocated which involved triangulating existing responses to the consultation exercise with primary data to be derived from face-to-face meetings with users, partners and service providers through a series of cross-sector focus groups.

In addition to a literature review in relation to policy formulation, desk-based research included reviewing a cross-selection of government documentation and policy guidance and examining a sample of "real-world" development plan policies at different scales based on the topics previously identified by government (Scottish Executive, 2001). The final selection was subsequently agreed upon by the government-appointed steering group for the study. Taken together, these methods create a particular form of research design and research culture which are relatively typical of a government-commissioning research environment.

There are a number of points to be made in relation to undertaking research of this nature. Given the practice-oriented nature of the study and the predetermined research questions, the methodology was of necessity attitudinal in approach and principally focused on soliciting views on how policy formulation in local development plans might be enhanced. From this perspective, the research methods were pragmatic, intended to serve a practical purpose in a cost-effective way. Focus groups, in particular, were used to bring together a range of interested parties in different planning contexts across Scotland to share practical experiences. It is worth noting that engagement of such a broad constituency of interests is intentional. It may be argued that such a strategy provides central government access to local government information and practice, can be promoted as serving end users, and potentially helps legitimate the findings by making those participants involved party to the study results and recommendations. A more fundamental question turns, however, on the conceptualisation of the study and the analytical framework used by researchers to frame focus group discussions and to interpret and present the evidence collected. The theoretical framework used in this example to examine and analyse the discussions drew on the researchers critically reviewing the international scholarly literature on

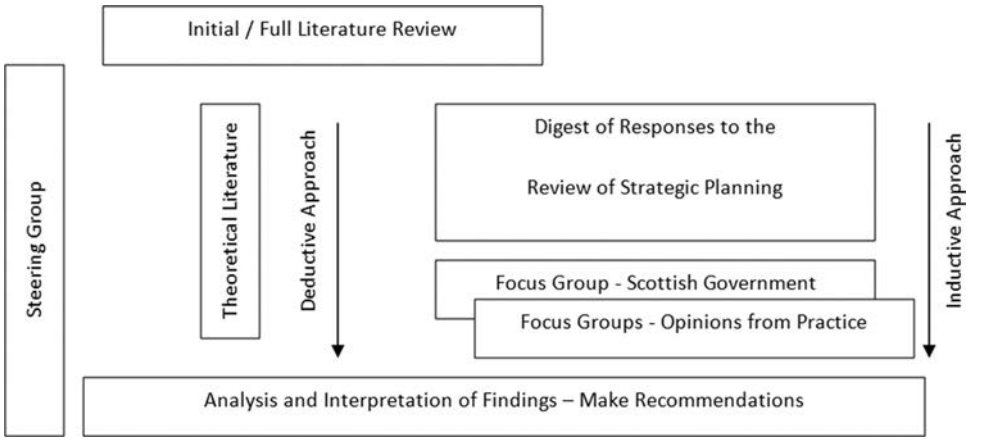

Figure 5.4.1 Research methodology.

policy transfer and critiques of the public policy cycle. Asserting the importance of, and ensuring the inclusion of, a critical conceptualisation in research design is illustrative of informed academic contributions to government-sponsored research which tends to be solution-oriented. As will be discussed ahead, and in contrast to more academic studies, such theorising is not necessarily deemed to be a requirement by government and civil servants.

Methodology in action

Government-sponsored commissions tend to involve compliance with certain protocols. A research steering group was appointed by the Scottish government, comprising a mix of public-private, central-local government organizations and agencies, to oversee the study. Members came from legal, planning, local government, private developer and civil service backgrounds. As such, pragmatic interest in securing particular efficiency gains was evident, even though this was differentiated since membership spanned central, local, development and regulatory agendas. The group generally had some research experience, including in commissioning, executing and using research. The group's role was to guide and assist in the design and execution of the final methodology, particularly around the appropriate balance of practical and conceptual considerations, and nominated policy topics. Regular meetings between the group and the academic researchers involved robust conversations, notably around concepts, definitions and constructions of a "model" policy, the underlying normative stance of promoting a bank of model texts, and the interpretation of findings. Interim reports and presentations were used throughout the study to inform the client of progress and the nature of its preliminary and final findings. This supported an iterative research process.

A comprehensive digest of responses to the government's original consultation paper (Geoff Peart Consulting, 2002b) provided an initial, rich secondary data source. The study began with a detailed qualitative analysis of the initial consultation responses relating to model policies. Table 5.4.1 presents particular interest groups. Table 5.4.2 summarises a re-interrogation of the consultation responses and provides a finer classification of stakeholder groups and views than that previously used in the more comprehensive digest. This more detailed analysis revealed an alternative distribution of perceived benefits and practical concerns associated with model policies

across different planning and policy communities, highlighting the ways in which the interpretation of data can be contested. Indeed, closer interrogation of the consultation responses indicated the goal of consistency in policy wording was not supported by all respondents. Specifically, concerns pointed to limitations in such a "one-size-fits-all" approach to planning and the relevance, applicability and transferability of model policies across differentiated urban and rural contexts. A fundamental issue voiced by certain interests related to a possible breach of subsidiarity in decision making at the local level which could potentially arise from imposing a Scotland-wide adoption of model texts. The question of subsidiarity was raised as an important argument in planning contexts since it confirmed the convention of retaining autonomy and discretion at the local level. Since this more in-depth analysis provided a more nuanced appreciation of perceptions on the ground across different groups, this made developing a consensus and a bank of model policies for central government potentially more difficult.

Table 5.4.2 Characteristics of planning policies and research methodology

Group	*Comments*
1. Local authorities	Twenty-eight (of thirty-two) local authorities responded. This is an incomplete geographical coverage of Scotland. Cautious support evident for model planning policies, particularly with respect to their implementation.
	Perceived benefits included: clarification, consistency, certainty, assisting national developers and organizations, reducing legal argument and length of plans and time spent on preparation, a streamlining of the system and an efficient use of scarce staff resources.
	Concerns included: policies should reflect local circumstances, be subject to a clear review process and that local planning authorities should retain the power to depart, and a concern about the erosion of local autonomy.
2. Non-departmental public bodies	Nine non-departmental public bodies (east and west of Scotland responses are identical and the three water bodies have subsequently merged) broadly welcomed model policies.
	Perceived benefits included: a consistent and proactive approach to planning, greater consistency and faster process of plan preparation, improved transparency of policy, savings on duplication of effort and eased anticipation of relevant issues.
	Responses presented a particular interpretation of model planning policies (i.e., best practice, guidance), how they might be disseminated and how model planning policies should be open to modification.
3. Other public bodies	Two "other public bodies" were sceptical of the potential benefits of model planning policies.
4. Development industry	Six developers (house-builders) responded. All were in support of model planning policies, though with the caveat that they need to be viewed flexibly.
5. Mineral operators	The two respondents were strongly in favour due to their perception of the difficulties of applying national priorities at the local level.

Group	*Comments*
6. Other businesses	Three of the four respondents were in favour.
7. Professional organizations	Two of nine professional bodies give unqualified support to the proposal of model planning policies. Contrasting perspectives supported the argument that model planning policies are not necessarily the solution to the problems being identified. Concerns included: 'ownership' of policies and their interpretation.
8. Academic/research units	The three groups who responded were all in favour. Model policies were suggested as appropriate in the context of contentious cross-cutting issues in the national interest. Principal concerns included: issues of transparency.
9. Planning consultants and lawyers	Nine respondents provided very mixed views. Distinctions are drawn between guidance and more prescriptive models for particular issues, in particular national priorities and the environment. There was less support for the extension of (a particular interpretation of) "model policies" for all types of land use planning policy.
10. Community councils	Three community councils provided a spread of views. These highlighted wider roles of land use planning within a changing context and placed model planning policies alongside other forms of policy instruments. One view promoted a protectionist role for model planning policies.
11. Voluntary organizations	Of the fourteen respondents grouped in this category, a majority believed an interpretation of model planning policies would be beneficial.
12. Private individuals	Four of the five "private individuals" who responded expressed some support for model planning policies. Contrasting views were evident.

Examination of the detailed consultation responses confirmed that developing a bank of model planning policies means different things in different areas, and that the application of a national policy might reduce a sense of local ownership in policy formulation, potentially reducing commitment to the individual policies themselves. Crucially, for some respondents, the very existence of a model approach might lead to a "ritualistic application" or "aping" of policy, a reduction in local distinctiveness and policy relevance, or simply invite an acritical "cut and paste" approach. A very real fear was that the existence of a model "solution" might inhibit local policy innovation. Nevertheless, whilst the original government consultation paper had suggested a relatively modest indicative list of potential model policies, certain respondents identified a wider range of potential topics. These included: affordable housing, archaeological/ancient monument protection, listed building/conservation areas, nature conservation designations, energy efficiency/renewables, flood risk, green belts, landscape protection areas, sustainable urban drainage and telecommunications. Notwithstanding specific practical caveats, this suggested a very real interest in some quarters in the potential of the model policy idea. Given the objectives of defined planning interests and localised concerns, this was to be expected.

The individual consultation responses were triangulated against primary evidence drawn from a number of focus groups. The focus of each meeting was to probe understanding of the model text idea, interrogate practitioner views on implementation and critically debate the potential of model policies in practice in light of the wider concerns raised. Here, the principles of policy transfer provided a disciplined framework for the discussions. Following Morgan (1996), the focus turned on the practices and attitudes towards the preparation of development plan policies and the potential for incorporating model texts in local plans. The use of focus groups provided opportunities to explore practical benefits and to address concerns relating to the potential interpretation and implementation of a bank of Scotland-wide model policies. Group participants were deliberately mixed and selected on the basis of having responded to the consultation paper, with additional, named contributors nominated by the steering group. A total of seventy-three organizations and individuals were invited, with a maximum of twelve participants for each focus group. Six regionally dispersed meetings and one dedicated session with the Scottish government ensured an appropriate urban and rural balance, with care given to time, place and management considerations. The management of each focus group was designed to ensure consistency of approach through using the same researchers, following the necessary research governance and ethics protocols in relation to anonymity and confidentiality in the presentation of the findings. No meeting exceeded eight participants, giving sufficient time for critical discussion. In aggregate, the focus groups captured the views of thirty different planning organizations involved in development plans. A full spectrum of policy communities was reflected, comprising national, local authority, non-departmental public bodies, development industry, professional organizations, planning consultants and lawyers, voluntary organizations and academic bodies.

The second strand of the study involved a detailed, desk-based comparative analysis of policy wording in published development plans and national policies in Scotland. This involved sampling existing policies from the existing development plans at the time to determine the extent and nature of policy similarity and the potential for further harmonisation. This sampling was restricted to those development plans available online and was agreed upon by the steering group. This also reflected the pragmatic and practical nature of the study.

This account points to a number of questions relating to power relations and representation of interests when engaged in government-sponsored research. The composition of the steering group, its perceived responsibility to the needs of government, its advocacy with respect to research design and implementation, and its normative influence on the direction of the study clearly raised important considerations for the academic researchers. Notwithstanding the practice imperative of the client as defined in its normative, solution-oriented approach, the authors argued that there was a need for appropriate definition of terms and concepts, interrogation of the rationale for the approach and questioning of the potential dis-benefits of model planning policies. In essence, an important academic contribution to the government-sponsored study was to ensure a balanced critical perspective so as to avoid potential but unintended consequences. Moreover, the management of the focus groups was undertaken in a way that facilitated discussion of the potential benefits, disadvantages or potential unintended consequences.

Analysis of findings

In triangulating the evidence from a theoretically informed and critical perspective, four main points emerged. First, perspectives on model policies were highly differentiated, offering alternative potential benefits to various interest groups. Second, the intended purpose and scope of

model texts varied, depending upon their authority and sponsor. Third, the intended nature, form and format of generic policies, and their relationship to other policy instruments, varied in practice. Fourth, the perceived value of model policies differed according to the user group. In light of this, it became important for the study to present the findings in a way that highlighted these nuances and differences more clearly than the initial advocacy of model policies.

On the one hand, focus group respondents were clear that in certain policy fields any scope for local discretion was severely limited by statutory authority, particularly where the policy sponsor was international, such as the European Union. On the other, policymakers defended the need to generate policies sensitive to place and locality. Consistent with wider debates around international lesson-drawing in planning which caution against uninformed transfer of policies between contexts (Lloyd and Peel, 2007), this perspective reflected a concern that a reductionist approach to policy formulation may prove to be relatively insensitive to context, provenance, capacity and variability. Based on the focus group and consultation data, an analytical matrix to differentiate potential model policy areas was then generated to indicate in what circumstances model planning policies may be capable of generic expression (Table 5.4.3).

Table 5.4.3 suggests that international and national environmental designations could benefit from expression in model form. Such a generic format is unlikely to be appropriate in those contexts where local issues prevail that require greater customisation and specificity in policy expression (Peel and Lloyd, 2006b). The typology served as a sifting mechanism for government to refine the potential focus of topics that could be devised in generic terms.

Specific policy examples investigated were sites subject to the Ramsar Convention, flooding, telecommunications and sustainable urban drainage. These topics revealed some potential for generating partial or full model texts, although testing for local relevance and application remained a critical issue and informed a next-steps investigation (Scottish Executive, 2006). The scoping study was initially disseminated through the Scottish government website by means of a short, easy-to-read research briefing paper (Lloyd and Peel, 2004a) and the full final report (Lloyd and Peel, 2004b). Both followed a standard government template and format and the final contents were subject to scrutiny and discussion by the steering group and the Scottish government. This involved negotiating language, balance and emphasis in relation to an academic

Table 5.4.3 Stakeholder breakdown of whether model policies should be drawn up

Derivation	*International*	*National*	*Local*
Authority	Legislation/directive	Legislation/strategic policy	Practice
Sponsor	International body/EU	Scottish executive/ Agencies	Local planning authorities/ bodies/community
Purpose	Protectionist	Protectionist/ developmental	Protectionist/ developmental
Focus	Specific	Strategic/specific	Strategic/locality-specific
Pan-Scotland?	Yes	Yes	No
Expertise	Specialist/expert	Generalist/specialist	Generalist/holistic
Content	Generic	Generic/specific	Generic/specific/detailed/ locality-specific
Scope for departure	No	Variance	Yes
Capable of generic expression	Yes	Yes	No

Lloyd and Peel, 2004b: 16.

emphasis on the need clearly to articulate the theoretical and critical stance adopted in analysing the evidence.

Based on the initial quantitative analysis of the consultation exercise, model policies might have been rolled out nationally. The scoping study, however, involving a more theoretically informed and detailed, qualitative and face-to-face methodology, questioned the initial conclusion and highlighted the need for a more sensitive approach. A robust policy discipline, drawing on international planning policy experience, allowed for a deductive analytical assessment of the potential for model policies to counterbalance the inductive approach of the consultation exercise. Here, the contribution of a more academic approach can enhance policy thinking in terms of both process and practice and add to a general body of international planning theory. The significance of the research thus extended beyond generating evidence for a particular project and may be understood as an integral component of planning modernisation at large, since it enabled active deliberation around evidence for and against change, and the wider purpose and functions of planning.

Critical reflections on undertaking government-sponsored policy research

This chapter confirms that research and information literacy are core skills for planners working in a public policy context. Research engagement potentially involves a spectrum of activities that may be defined as relatively core and leading or participatory and contributory. An increasing emphasis on evidence-based policy working – although contested – extends the breadth and diversity of the research community. Planners may thus be directly involved in undertaking research – through surveys, for example – or they may inform findings as a consultee, interviewee or focus group member, or serve on a steering group. Here, they must be aware of the technical skills required and the political and normative contexts in which the research is being conducted. Based on this experience of undertaking a government-sponsored project, this final section considers the use of research evidence, the associated motivations and intentions underpinning government research programmes, and the practical ways in which governments specify, commission, steer and govern research. It concludes by reflecting on how researchers use theory in applied research and how they might respond to a contract-based research environment.

In general terms, government-funded studies tend to have a practical imperative, driven by a political need to provide solutions to perceived problems through policy recommendations. This must be distinguished from more academic studies, which may be theoretically driven and certainly theoretically informed. Yet experience here shows that government-sponsored research still requires appropriate conceptual grounding alongside rigorous research methods. This is because data can be gathered, analysed and interpreted in different ways. How finely or coarsely grained each analysis is in practice will depend on the data and resources available and the intellectual prism used. The methodology adopted may "open out" or "close down" different viewpoints. The analysis will have implications for how different views of planning are presented and interpreted. The nature of the published findings may be more or less complete.

Planning involves distinct power relations arising from a range of different stakeholders and competing interests. How these are classified and grouped has wider implications as perceptions and standpoints may vary considerably. Identifying and understanding these relationships must be an integral part of any study. In practical terms, open-ended questions can provide large amounts of data which will require condensing and synthesising. How this is done requires considerable sensitivity so as not to lose important nuances in the evidence. Steering groups can be helpful in terms of providing access to data and potential informants, and respecting established

time frames. Such governance arrangements, however, can also imply a particular set of controls and power relations in terms of achieving project expectations and making recommendations. It is important to establish research parameters at the start of such commissioned work to define terms and concepts, retain researcher objectivity and clarify intellectual property rights. This is particularly important where academic interests may wish to generate scholarly articles from the data generated.

Planning is a political activity and context is all-important. Modernisation of planning in Scotland is ongoing and remains a contested process for the various state, market and civil interests involved. Research is integral to this dynamic process and to informing the spirit and purposes of modernisation. From a pragmatic perspective, this case study scoped the potential of model planning policies as part of the Scottish government's ambitions to modernise and enhance the planning system, but it also raised questions around democratic engagement and the balance between centralised and localised control (Peel and Lloyd, 2007a).

Undertaking government-sponsored policy research entails a number of fundamental parameters. The motivation for central government to undertake research is highly political, informed by a raft of external and internal influences and requiring prioritisation of funding to support a given policy area or project. In this example, the decision to initiate a programme of research around land use planning was informed by certain criticisms concerning the prevailing system and the opportunities afforded by political devolution to address these. This agenda reflected a wider societal acknowledgement that modernisation of planning was necessary to secure political ambitions around efficiency and effectiveness, and also to facilitate greater public engagement. In operational terms, the political agenda defined the research questions in practical terms of type, number and applicability – that is, questions relating to what and how, rather than why, who and for whom. Following Davoudi (2006), this suggests a tendency to effect and manage instrumental policy research satisfying a perceived response to generating evidence-based policy to meet political objectives.

An initial concern of the researchers in this case study was to define the concept of a model policy at the outset so as to establish a common understanding amongst the steering group and research team. This definitional aspect reflected a concern that the proposed study was being commissioned, managed and directed in a linear, pragmatic way to meet predefined political and administrative objectives. Theories of international lesson-drawing helped to inform this position by reinforcing a resistance to reductionist assumptions about the relevance and application of generic policies in site-specific contexts without due respect to context, relevance and transferability (Wolman and Page, 2001). This questioning of the underlying rationale for the study exposed tensions around attaining an ideal – or "model" – policy environment. In other words, whilst the technical requirements for the study could be met by generating a set of words, normative questions as to the validity of a model policy in all – and highly differentiated – contexts remained. On the balance of the evidence, the authors' conclusions emphasised the importance of supporting policymakers with a robust and critically reflective policymaking discipline which could support innovative, proactive and relevant policy design, rather than production and maintenance of an archive of model and predetermined policies (Lloyd and Peel, 2004a). This critical contribution tends to be a characteristic of an academic approach to research. Importantly, local government practitioner concerns turned on the potential unintended consequences of creating a one-size-fits-all suite of policies that might potentially serve to stifle policy sensitivity and responsiveness. Designed as a scoping study, this project was able to highlight a number of important qualifications with respect to the anticipated potential of model policies.

Finally, when tendering for and executing government-sponsored research it is essential to be clear about the conceptual foundations of the study, in addition to practical considerations such as time frames, resources, costs and project management. Government research programmes are governed by strict timelines and protocols which tend to involve following prescribed formats and processes to deliver achievable recommendations for action. In this instance, it was the academic researchers' countervailing assertion of the need to conceptualise, define and justify a model planning policy approach which created a critical strand to the study. Yet advocating a theoretically informed analysis of policy action may challenge the very ideological and normative basis of a study. Taken together, political/pragmatic parameters and critical/conceptual concerns create a particular client-researcher dynamic. The contractualised relationship for executing and delivering the research then presents a research paradox where laying bare potential disbenefits, unintended consequences and caveats may be perceived by the client as undermining consensus for action. The underlying practical expectations of those commissioning research may be challenged, for example, creating potentially uncomfortable research management relations but nevertheless generating robust research findings and providing a better basis for shaping policy practice.

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5.5

USING THE CASE STUDY APPROACH TO INFORM PLANNING PRACTICE AND RESEARCH IN AFRICA

James Duminy

Introduction

This chapter describes one attempt to influence planning practice in Anglophone sub-Saharan Africa through a project to promote case study research methodology in African planning education. The project was operated by the Association of African Planning Schools (AAPS) from 2009 to 2010 and was driven by the conviction that African planning occurs in a context characterized by a shortage of data on urbanization, outdated planning systems – often more or less unchanged from the systems put in place by colonial legislation – and a lack of political and professional will to deal with urbanization in any sort of sustained and progressive manner (Watson and Odendaal, 2012). In this context, AAPS identified the case study research methodology as a strategic approach to enhancing and shifting planning practice.

The argument for such an approach rests on an assumption that there are at least three links between the promotion of case study research methodology in planning education, and the development of practical competencies in the profession. The first link is that case study research outputs can provide practitioners with data and insights to help them understand in greater detail the dynamics and needs of urban contexts and communities. The second point is that the process of undertaking in-depth case study research, or participating in a case study–based teaching project (especially those involving real communities and development problems), can foster the development of skills and competencies that are closely aligned to those required for effective and inclusive planning practice in contemporary African urban contexts. These include the capacity to communicate and collaborate with a wide range of local actors, to analyse and understand complex urban processes, and to translate theoretical knowledge into action through the enhanced 'practical common-sense' or 'know-how' termed *phronesis* by Bent Flyvbjerg (2001). It follows that training in case study research methodology conducted as part of university curricula can be of lasting benefit to planning practitioners in their daily activities, as they seek to intervene in highly complex urban problems. Finally, and of particular importance in the African context, the experience of engaging closely with local communities in the course of a case study research or educational project has the capacity to change student values

and mindsets towards poor urban groups living 'informally'. As future practitioners, it is essential that planning students enter the workplace with the skills and values suited for inclusive and context-relevant planning practice.

This chapter is arranged in two main parts. Firstly, it describes the background and rationale leading AAPS to identify case study research as a key means of shifting planning pedagogy and research in Africa, focusing on how the benefits of this methodological approach were viewed in relation to the complex substantive trends and issues framing African urbanization and potential planning responses. With current thought about African urban spaces and societies highlighting their fluid, mobile and ephemeral character, case study research offers a robust methodological approach to study and conceptualize urban phenomena, through both quantitative and qualitative analysis. Secondly, the chapter describes the projects through which AAPS sought to promote case study research, before identifying and discussing some of the key outputs from this process, and reflecting upon its potential to inform future planning practice in sub-Saharan Africa.

Why shift planning education and research in Africa?

Trends and challenges for African urban practice

The pace and consequences with which African urban transitions are unfolding are difficult to pinpoint and predict (see Potts, 2012). While there is general consensus that African primary and secondary cities are growing rapidly (UN-HABITAT, 2009), a major impediment to developing an adequate understanding of African urbanization is a lack of data on the rate, scale and trajectories of these processes (Pieterse, 2010a). In most cases, these data simply do not exist. In others, national survey instruments are not calibrated to provide useful or in-depth information on complex urban changes in different places (ibid.). Local governments seldom have access to reliable data collected on a city-wide scale. When it is available, it is rarely consistent enough to allow for comparative urban analysis across national or regional boundaries.

Hard data on key African urban demographic and economic trends is therefore a critical area in need of development (ibid.). But planners, policymakers and decision makers on the continent also urgently require detailed, substantive knowledge of how people live, identify and survive in the city, and how various systems and practices of settlement, land management, economic production and service provision relate to and produce one another. A growing corpus of scholars has called for African urban research to engage with the various and specific rationalities that frame the decisions and actions of ordinary urban actors (e.g. Mbembe and Nuttall, 2004; Simone 2004; Pieterse, 2008). The quest to "understand and appreciate the terms on which they seek to make viable lives for themselves" is increasingly seen as a prerequisite for developing more effective ways of conceptualizing and responding to African urban dynamics (Beall *et al.*, 2010: 198). As such, even if up-to-date and reliable census and survey information was ubiquitously available, qualitative methods are still key to developing a nuanced understanding of African 'cityness'.

To pick one of the many challenges facing African planners, with few exceptions future graduate professionals will be required to work in urban contexts marked by various practices of 'informality'. Originating in the 1970s to describe forms of autonomous, unregulated, small-scale and often illegal forms of urban employment, 'informality' increasingly refers to a variety of activities relating to settlement, self-employment and service provision, as well as collective political organization and action. Probably the most obvious manifestation of

this process in recent years is the growth of various forms of informal settlement and the ongoing "informalization of formal settlements" (Myers, 2011: 73). It is also demonstrated in the course of everyday urban social life through the "apparently rising importance of unregistered social networks in the built environment, livelihood strategies, social reproduction, cultural organization, or political mobilization" (ibid.). As African cities grapple with their political-economic marginality and legacy of structural adjustment, all kinds of relations, including those between state and civil society actors, become sites for informal negotiations and exchanges (Beall *et al.*, 2010).

These observations relating to modes of settlement and livelihood have their parallels in ideas surrounding the emerging political subjectivities of African urbanisms. For AbdouMaliq Simone (2010), the experiences and objective realities of structural peripherality and urban marginality lay the platform for 'anticipatory urban politics'. Here he is interested in how the city becomes the site of various 'practices of anticipation', or "the art of staying one step ahead of what might come, of being prepared to make a move" (Simone, 2010: 62). Maintaining the possibility of movement and mobility becomes a key practice within the experimental engagements that constitute the 'worlding' of African cities, as urban residents seek to dissolve or tap into larger circuits of migration and exchange (Simone, 2011).

Planning as a professional activity faces severe challenges in addressing issues of poverty in complex urban spaces involving a broad range of highly mobile, anticipatory acts and actors. However, developing effective systems and practices of intervention is problematic in contexts where general shortages of data on urbanization is compounded by a lack of political will to accept and deal with the realities of urbanization. Policy inertia is fostered by a "widespread denial" of the realities of urbanization amongst African political leaders, creating a "policy vacuum" that leads to unmanaged urban processes (Pieterse, 2010b: 8). One side effect is that planning in many anglophone African contexts operates within legislative systems that have been inherited, more or less unchanged, from earlier colonial governments. Colonial-era planning law has proved to be particularly resilient and difficult to change in many African countries (see Watson, 2011; Berrisford, 2011). Changes to African planning systems, which often operate in a highly exclusionary way, have thus failed to keep pace with changes in the rate, scale and nature of urbanization on the continent.

In line with this policy and legislative inaction, planning education in sub-Saharan Africa typically follows a vision of planning practice as a technical and value-neutral affair (Diaw *et al.*, 2002). Many planning departments remain largely unaffected by the waves of postmodern, feminist and radical critiques that have profoundly affected the way that the purpose and process of planning are conceptualized and executed elsewhere. Conventional training in research methods for planners tends to concentrate on survey-based data gathering and analysis or, more recently (and if the facilities are available), GIS analysis. But in most cases qualitative research skills, including in-depth interviewing or document analysis, are not addressed. Neither are oral or written communications skills. The majority of planning researchers and practitioners, with some notable exceptions, therefore rely extensively upon survey-based methods and statistical techniques.

The role of case study research in revitalizing planning practice in Africa

In this context, there is an urgent need to produce African urban and regional planning graduates with a greater capacity for more effective and inclusive planning practice. Planners working in African cities need particular types of skill sets and competencies – especially those relating

to the capacity to work with and resolve the interests of many different actors and institutions – alongside a more general critical capacity to define, analyse and intervene in complex urban problems. The imperative of engaging with, understanding and reacting productively to 'informal' systems and actors, in all their various guises, remains a significant challenge to ensuring the future relevance and effectiveness of planning practice on the continent. Yet shifting planning thought and practice in Africa towards an advocacy-based upgrading agenda is not simply a matter of introducing new content into existing planning curricula. It demands a shift in the sensibilities, values and techniques carried by practitioners in Africa: a shift from the planner as an apolitical, expert technician to the planner as a technically proficient, critical intermediary between many different formal and semi-formal actors and institutions.

Case study research methodology, as a broad set of ideas, theories and methods, is one means of changing the course of planning practice in Africa through the dual media of research and education.[1] The argument presented here has been influenced by that of Flyvbjerg, who sees case study research as a way of reorienting planning towards a pragmatic, rather than normative or utopian, position and of challenging the 'rationalist' approach inherent in most dominant schools of planning thought. His argument for a 'phronetic planning research' agenda is, therefore, an argument for a disciplinary refocus on issues of practical judgement, the values that drive practice, and especially on issues of power (Flyvbjerg, 2004). In this view the real practical value of the case study is its capacity to show what has actually happened in a given setting, and how. Given this close attention to empirical detail and process, case study research is well suited for the analysis of complex causality and power relations, as well as the practical ethics and judgements that inform real-world planning outcomes. Flyvbjerg himself has shown how case study research can be used as part of planning practice and public advocacy, contributing to the budgeting and management practice of large-scale infrastructure projects, for example (Flyvbjerg, 2009). Often, the biggest benefit of the well-chosen and well-constructed case study is its capacity to challenge or 'falsify' a taken-for-granted principle or understanding of a problem in the public domain (also see Flyvbjerg, 2001). From the perspective of learning, a good case study enables "the development of a nuanced view of reality", and produces the concrete, context-dependent knowledge and experience, which lie "at the very heart of expert activity" (Flyvbjerg, 2011: 303). Such ideas constituted the starting point for a series of projects operated by the Association of African Planning Schools (AAPS), designed to promote case study research and teaching amongst African planning academics.

The AAPS case study research and publication project

Founded in 1999, the Association of African Planning Schools (AAPS) is a voluntary, peer-to-peer network of African institutions of higher education that educate and train urban and regional planners. At the time of writing, its fifty members are drawn from nineteen countries, located in all regions of Africa. As a knowledge network, it aims to facilitate the exchange of information between African planning schools, primarily through digital communication and social networking tools. In 2007, AAPS secured a grant from the Rockefeller Foundation to pursue a project entitled 'Revitalising Planning Education in Africa'. The project sought to address a perceived disconnect or 'gap' between the skills, knowledge and values that are taught in African universities and the actual issues that planners face in practice (also see Watson and Odendaal 2012). AAPS hosted its first meeting of planning schools in 2008 in Cape Town, where this disconnection or 'gap' was once again emphasized. Case study research was proposed as one means of bridging this gap.[2] This led AAPS to embark on a project aimed at advancing

the use of the case study method in teaching and research. Starting in 2009, again with financial support from the Rockefeller Foundation, the project had a number of objectives, fitting within the larger AAPS agenda of promoting relevant and contextualized curricular reform within African planning schools (see Odendaal 2012). The first main objective was to enhance the research skills and methodological knowledge of planning academics and future practitioners (in the form of students). The second objective was to promote the production and distribution of published research on urban planning in Africa.

Generally speaking, AAPS saw case study research as beneficial on at least two levels. The first concerned the *type of knowledge* produced by case study research and its relationship to questions of learning and praxis. Case study research has the potential to generate the concrete, contextual data that is necessary for enhanced practice, by fostering a nuanced understanding of why certain phenomena exist, and 'how it came be to that way'. This sort of knowledge is well suited to feed back into education and teaching courses, where it can be used to develop skills in complex problem analysis and creative decision making (Barnes *et al.*, 1987). The second set of benefits concerned the *process* of doing case study research, specifically that which encourages the researcher to engage with many different actors, especially local communities and low-income urban groups (see Peattie, 1994). This means that, firstly, methodological training for case study research can provide the graduate planner with a set of intersubjective competencies (including communication skills) directly related to those required in the workplace and, secondly, undertaking case study research provides planners with the opportunity to engage with daily urban realities, and thereby reassess their attitudes towards informal urban practices.

AAPS organized three regional workshops on case study research and teaching methodology (in Western, Eastern and Southern Africa), each three days in length.[3] They emphasized the development of qualitative research skills, while maintaining that the case study generally offers opportunities for mixed-method research approaches. Skills in in-depth interviewing, narrative writing and the use of direct quotations of actors were specifically targeted. The facilitators argued the need for planning researchers to 'get their shoes dirty' through in-depth field research, and highlighted the situated, bodily practice of research. The case studies written by Flyvbjerg (1998) on Aalborg in Denmark, Watson (2002) on Cape Town in South Africa, Lerise (2005) on Chekereni and Nnkya (2008) on Moshi Town, both in Tanzania, were used as methodological exemplars. All four had used the narrative writing approach to explain complex processes of planning change and 'failure', and specifically sought to capture the often overlooked roles played by ideas, values and power relations within the local breakdown of policy intentions. Furthermore, they all employed a sophisticated case study research design, such that the narrative of real-world events and actors could speak to more general theoretical ideas about planning, power and values of professional practice.

Outcomes of the AAPS projects

The AAPS projects surrounding curricular reform and case study publication resulted in various outputs, all informed by the idea that current and future African planners require an acute, experience-based understanding of the complexities of the institutional and urban contexts in which they are expected to operate.[4] One set of outputs took the form of online thematic 'toolkits' to assist planning schools with revision of their curricula to be more attuned to the realities of contemporary African urbanization, and appropriate planning responses thereto. Each toolkit consisted of an overview of the key concepts pertaining to a particular subject, suggested syllabi and a set of case studies to be used in the course of teaching to illustrate various issues and

problems relating to the subject matter. For example, the 'actor collaboration' toolkit emphasized the growing disjuncture between approaches to planning developed in the global North, largely based on positivism and communicative action theory, and the messy realities of contestation, poverty, inequality, informality and spatial fragmentation that characterize the cities of the global South. Three teaching case studies were included in this toolkit. One sought to demonstrate the immense complexity and potential for conflict associated with state attempts to engage with and formalize 'the informal' within the African city (based on the experiences of the Joe Slovo informal settlement in Cape Town). Another discussed how rational, technocratic and rules-based planning may become joined in the service of state oppression, as with Operation Restore Order/*Murambatsvina* in Harare. The third looked at the opportunities of incremental informal settlement upgrading through community organization, as illustrated by the activities of Pamoja Trust and the slum dwellers movement known as *Muungano wa Wanvijiji* in Huruma, Nairobi.

AAPS also produced a toolkit specifically aimed at developing capacity in case study research and teaching. This was designed as a flexible resource, consisting of a series of modules that could be combined in various ways to build different teaching or training products. It was primarily aimed at urban planning postgraduate students and academic researchers interested in conducting case study research, but could equally be useful for practitioners interested in developing their methodological skills through the conduct of a short workshop. The toolkit was intended to enhance both theoretical and practical understanding of the case study research method. It included many of the practical insights offered by the AAPS workshop facilitators, as well as various responses to issues and questions commonly raised by participants. Copies of the toolkit were widely distributed to AAPS member schools, and an electronic version is freely available for download on the AAPS website. To date, the toolkit has proven to be popular amongst postgraduate students undertaking their dissertation research design.

Workshop participants themselves produced an impressive array of case studies, many focusing on 'informal' modes of economic activity, revealing the harsh punitive means by which street traders, recyclers and others are dealt with by government agencies, and the subtle ways by which informal operators engage flexibly and strategically with government and civil society actors. For the facilitators, working with the participants to refine their research ideas and writing techniques was a learning process, offering insights into the institutional challenges and skill shortages affecting the research intentions of planning educators on the continent. Grounded, qualitative research and narrative writing techniques are skills that need to be practised, yet in many cases the economic and infrastructural constraints of professional life at many African planning schools make research-oriented initiatives, such as the AAPS project, difficult to effect. These constraints include low staff salaries (meaning academic incomes often have to be supplemented by consultancy work), limited access to standard books and journals, and, where it does exist, very poor access to the Internet. Research and writing skills may simply not be in place or, following training in the empiricist tradition at the master's or doctoral degree level, they may have been left aside in favour of well-funded consultancy projects and other research opportunities. The AAPS workshop facilitators-turned-editors therefore worked closely with the authors and texts, providing successive rounds of detailed comments concerning the structure and writing style necessary to create case study research with enhanced relevance to practical knowledge in planning.

Several workshop participants chose to reflect on their experiences with case study teaching, rather than produce empirical case studies. The 'live' case study or studio was identified as a particularly rewarding teaching approach, in contrast to what is more commonly recognized as the 'case teaching method', as exemplified by the Harvard Business School (Barnes *et al.*,

1987). Whilst the Harvard method is recognized globally as an effective educational approach, the fact remains that it depends upon simulation – the classroom situation is used to simulate real business cases, prepared beforehand by the class facilitator. A 'live case' approach, however, encourages learners to engage with real planning problems in the field, and work with local communities and residents to produce planning analyses and solutions. Such projects enable students and teachers to conduct in-depth fieldwork and thereby to develop skills in negotiation, facilitation and conflict resolution – skills that are undoubtedly essential for effective practice in informalizing urban contexts.

The idea that planning students should engage with local communities through case study research was a primary motivation leading AAPS to sign a memorandum of understanding with the international advocacy organization Slum/Shack Dwellers International (SDI) in 2010. Over the past two years, this agreement has sought to establish collaborative partnerships between particular SDI country-based affiliates and AAPS member schools, whereby planning students, as part of their curricular requirements, work with local SDI federations and community representatives in performing community enumerations and local planning procedures. To date, these collaborative community-based upgrading studios, running for approximately one month each, have proven relatively effective in co-producing local planning strategies, according to the needs and interests voiced by informal communities, and in leveraging support from local governments. Encouraging signs are emerging that the studio projects provide a platform for a transformation of skills and mindsets on the part of students and practitioners. For example, a studio project implemented by Makerere University in Uganda saw students work in partnership with National Slum Dwellers Federation of Uganda (NSDFU) to produce informal settlement enumeration reports, as part of a national slum upgrading agenda operated by the Ugandan Ministry of Lands, Housing and Urban Development through a country programme funded by Cities Alliance. The project has subsequently led to the creation of a formal partnership between the university and NSDFU to promote joint project work in the future. One student reflected on their learning experience as follows:

> I came to understand that the current teaching curriculum is not practical to current planning problem solving in most of the African countries and it is estimated that it might be this teaching curriculum that is causing the rampant development slums in these cities, since the approaches are not applicable to the problems; for example a top-down approach which should change to a bottom-up approach if the problem of slums is to be solved.[5]

This student will graduate from Makerere University within the next two years, and will most likely work in a local or national government department in Uganda. Clearly, the studio experience will have imparted a set of competencies enabling him or her to communicate with and work effectively alongside those people most affected by planning intervention – groups of the urban poor. The student will be disposed towards engaging with local informal communities, seeking to understand, accommodate and empower the dynamics and needs of the latter. It is precisely these sorts of reflexive changes in the skills and mindsets of planners that AAPS sought to achieve in the course of its project work.

Conclusion

This chapter has described an attempt by AAPS to inform and reorientate planning practice in Africa by promoting the use of case study research methodology in planning education on

the continent. The project, operated from 2009 to 2010, was motivated by the conviction that processes of African urbanization are poorly understood, and that as a first step to responding to the continent's significant developmental challenges, planners require detailed, contextualized knowledge of how contemporary African cities actually grow and change. Case study research not only offers the possibility of generating substantive theoretical knowledge of urban phenomena but also can inform planners' capacity to intervene in complex developmental processes, by promoting a phronetic mode of learning and imparting sets of skills and competencies relevant for inclusive and innovative planning practice. AAPS also sought to explore the potential of case study teaching approaches for the training of ethically reflexive planning practitioners, committed to bringing about sustainable urban development through inclusive practice.

The various outputs of the AAPS projects have straddled these research and educational agendas, seeing both the process and products of case study work as key to driving a reorientation of planning practice on the continent, which often sustains a value-neutral, apolitical and sometimes outright anti-urban professional identity. The Association has come to see the case study methodology as a vehicle to address conceptual, advocacy and learning concerns hand-in-hand. Although the project has faced challenges, it has also revealed the profound transformative effect that in-depth learning experiences, based on researching real-world development problems, can have on the mindsets and practical skills of planners. It is hoped that this chapter provides a basis for further reflection on the critical skills required for effective practice in urban processes of Africa and the global South.

Notes

1 Here I wish to refer to 'case study research methodology' as a particular methodological approach, specifically that developed by authors such as Robert Yin (1994) and Bent Flyvbjerg (2001, 2011). It is an approach that is associated with narratology as a way of presenting the research. I am not referring to the more common and general understanding of 'case study research', which can refer to any study employing a bounded unit of analysis, and would therefore include the majority of African master's and PhD studies produced by students in disciplines including planning, development studies and geography.

2 Case study research was recommended in particular largely due to the fact that several key individuals involved in the founding of AAPS had applied the method extensively in the course of their own research. This ensured a disposition towards the benefits of case study research when AAPS members conducted their early discussions on educational reform.

3 The facilitators for the first workshop were Bent Flyvbjerg (University of Oxford), Jørgen Andreasen (retired, Royal Danish Academy of Fine Arts) and Fred Lerise (formerly of Ardhi University). Using material prepared by Flyvbjerg, the second and third workshops were facilitated by Andreasen, Lerise and AAPS staff.

4 These resources are all freely available on the official AAPS website, at www.africanplanningschools.org.za.

5 Extracted from a report submitted (unrequested) to the SDI and AAPS secretariats by Sam Nuwagira in 2012.

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5.6

URBAN MASTER PLANNING IN CHINA

A case study of policy and practice in Hua County

Guanzeng Zhang, Baoyu Wang and Xinyan Jiang

Introduction

The preparation of plans is a key part of any planning system, although the nature and character of these plans vary with each planning system. Some of the more structural aspects of plan making – such as the principle of survey-analysis-plan – cut across these different systems. Yet the detailed aspects of plan making are context-specific and these will imply a particular series of plan making and research methods. Some of the methods used in plan making in practice resemble methods that will be familiar to those engaged in academic research, comprising surveys, interviews, focus groups and analysis of a multitude of secondary data sources, including census information and demographic surveys. These methods are, however, adapted and applied with a different purpose, with plans seeking to establish clear strategies for action by a range of stakeholders over varying time frames. This chapter highlights some of the specific methods used in plan making in China, focusing on the preparation of strategic master plans (Qian and Wong, 2012). A key argument put forward in the chapter is that there is a need for plan-making methods to evolve from their traditional characteristics in order to address both some of the challenges facing Chinese cities and some of the weaknesses of established methods of plan making.

The prevailing method of urban planning in China is blueprint planning. This form of planning is based on government statistics about population, land-use index and related local regulations. The physical planning methodology embodied in blueprint planning is often complemented by SWOT analysis methodology to provide a better understanding of the physical and social background for planning projects. There are several factors that make it an urgent task to renew and update expertise in planning methods used in practice, including: rapid economic growth and consequent large-scale population flows; the sharp increase in the number of private cars and the increasing mileage undertaken on highways and high-speed railways; the need to reduce pollution without losing competitiveness; and finally the demand for more sustainable and socially inclusive urban planning (Song, 2007, 2009; Zhao, 2011; Qian, 2013). This chapter starts with a brief description of the evolution of the planning system in China, before using an example of a master plan to better understand these

blueprint planning methodologies and the key issues they address. This case study, together with the authors' experience, identifies some future directions for changes to the planning system in China.

Planning policy in China

China has one of the earliest and longest traditions of urban planning of any country in the world (Guo, 2005). The capitals of Zhou Dynasty – West Zhou from the eleventh to the eighth century BC and East Zhou from the eighth to the third century BC – were built according to strict regulations and designs founded on an etiquette society and deeply rooted in ancient Chinese philosophy and social ethics. All the East Asian countries, including China, inherited these principles in the following two thousand years and developed various urban patterns with strong cultural similarity (see Steinhardt, 1999; Wu, 2013). These similarities can be seen in the cities of Japan, Korea and Vietnam.

The earliest planning theories and methodologies in China were characterized by:

- Balance: an emphasis on harmony between man and nature, which was the key factor determining the siting and the size of cities;
- Stability: the adoption of a strict and orderly urban layout to ensure the prolonged political stability of a hierarchical society, as exemplified by the axial, symmetrical structure of Beijing;
- Aesthetic value: a conception of urban beauty as a whole, with no especially prominent or peculiarly shaped structures permitted to be built inside the city;
- Everlasting: significant attention to long-term strategy and sustainable development. Consequently, many Chinese cities, and to a certain extent also traditional Japanese and Korean cities, have been flourishing for more than one thousand to two thousand years.

Since the establishment of the People's Republic of China in 1949, urban planning has experienced many setbacks and reversals, including the strong influence from the Soviet Union in the 1950s and serious economic crisis in the 1960s. The promulgation of the *City Planning Law of the People's Republic of China* in 1989 set off a new upsurge in urban planning and large-scale urban construction. All planning in mainland China over the past twenty years has been based on this law and implemented accordingly. This urban planning law regulated planning procedure, the approval process and the related legal safeguard. The administrative arrangements in China include four levels: the state level (Ministry of Housing and Urban-Rural Construction); the provincial level (Department of Housing and Urban-Rural Development); the prefecture-city level (Urban and Rural Planning Bureau); and the county level (County Urban and Rural Planning Bureau). The administrative department in charge of city planning under the State Council is the highest organ to formulate, conduct and approve the urban planning system in terms of the whole country and all the provinces. The planning of provincial capitals, municipalities directly under the Central Government or appointed by the State Council is formulated by the related municipalities, approved by the State Council. Planning of other cities is approved by higher levels of government.

In China, urban planning consists of several elements: urban system planning; urban/town master planning; detailed regulatory planning, which was first adopted in the 1980s; and detailed construction planning. The planning area of the urban planning system is defined according to the administrative region, and the planning period is normally twenty years. Urban/town master planning is formulated on the basis of the urban planning system of each respective region,

and is also valid for twenty years, although an amendment is often made every five years, with some exceptions made for some important events. This master planning focuses on the strategic development of the city and the integral structure of urban space.

Detailed regulatory or construction planning is the final planning phase in order to implement the intentions of the master plan with concrete design alternatives. However, detailed regulatory or construction planning seems to trigger confrontations between planning administration and developers/construction organizations during preparation and implementation stages. While higher province- and state-level administrative departments have the legal powers to issue the permission for construction projects – including *Construction Project Site Submission*, *Construction Land Use Planning Permit*, and *Construction Project Planning Permit* – many developers, either having a local government background or being driven by economic benefits, often do not control the scale or the floor area ratio of their construction projects in compliance with the regulations. This is especially the case in smaller cities, where governments often come to terms with developers in the interests of economic development. The still-evolving legal system also creates opportunities for developers to promote irregular and unauthorized development. Consequently, many plans and permissions simply become empty words. Understanding the methodological options regarding map making, regulatory options and interaction of different departmental agencies involved in master planning in China will help to understand and develop new approaches to research design and methodology. These new approaches have the potential to advance the Chinese planning system to a new level that reduces confrontation between organizations and increases certainty when implementing plans.

The master plan of a medium-sized city: Hua County

Introduction

According to the *Urban-Rural Planning Law of China*, the *Draft of the 12th Five-Year Plan (2011–2015) of Hua County Government* and other related regulations, the strategic planning of Hua County is worked out on the basis of SWOT analysis, the forecasting of population and economic growth, the optimized framework of urban spatial structure and the proposed temporal development. Hua County is a provincially administered municipality in Henan Province of China. The present population of the county is 1,271,207, of which 192,925 are based in the central area; there are twenty-two small towns, the total area is 1780.96 km^2, and this county features high-quality green farm products and a rich labour force (see Figure 5.6.1).

The planning process is initiated with the application of a SWOT analysis methodology and eight thematic studies covering: regional development strategy; distribution of industries; industrial organization structure; selection of economic models; population size; comprehensive transportation system; ecosystem and greening; and, finally, urban identity and culture. These studies clearly state the conceptual basis for planning of the city, combined with the practical, physical and socio-economic characteristics of this city. The conceptual master plan is subsequently developed in order to implement the agreed strategy.

SWOT analysis

The SWOT analysis compares and contrasts the strengths, weaknesses, opportunities and threats against a set of criteria that are based on the nature of county-level cities,[1] the urban system and urbanization level, the size of the urban centre and the development orientation of Hua County. The analysis conducted as part of this exercise includes the existence of different

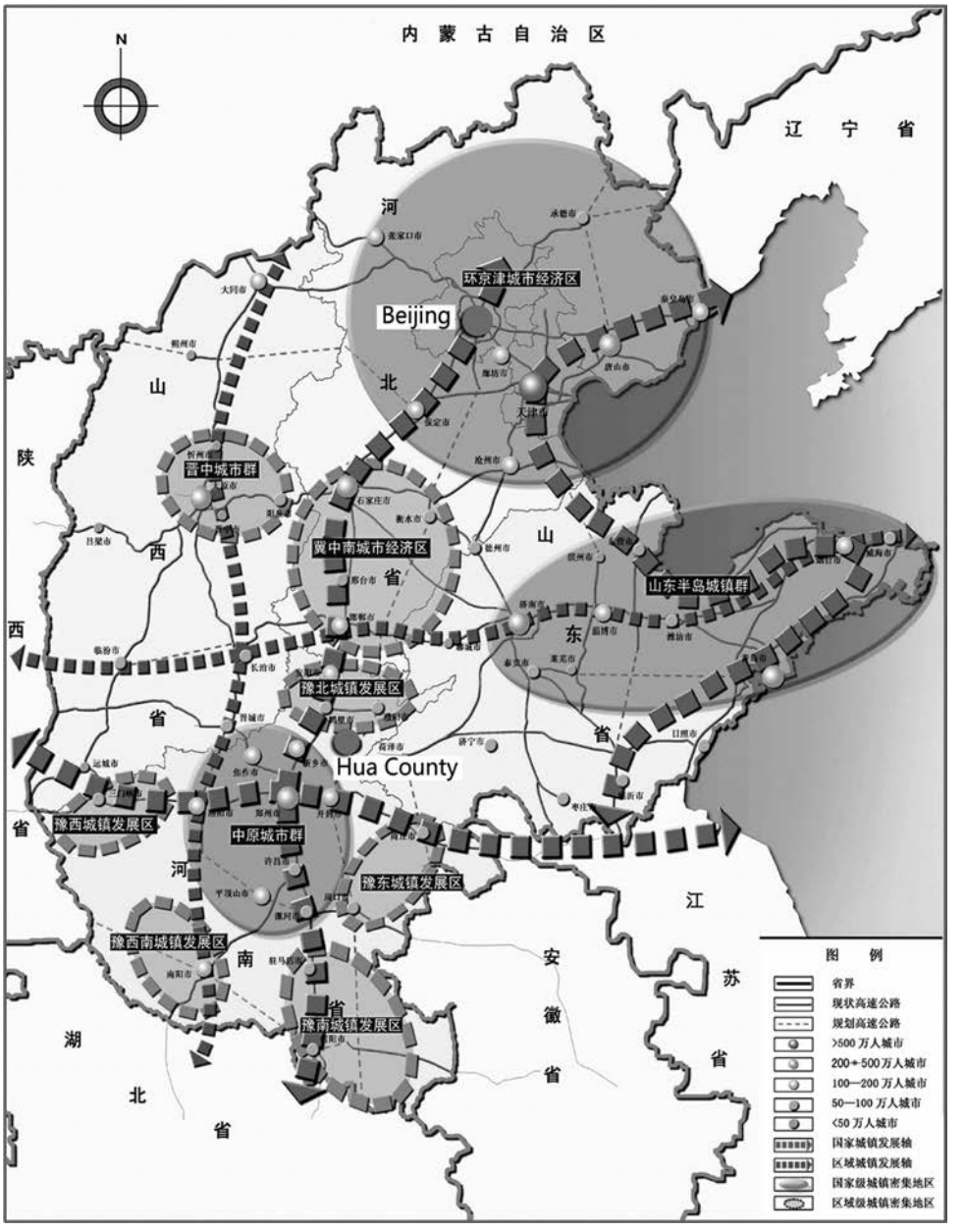

Figure 5.6.1 Location of Hua County among metropolises in East China.

clusters, sub-centres, axes and the size of population, etc. Land use patterns are the most important factor in the master plan, which will balance the relation between urbanized areas and rural areas, and between industrial areas and agricultural areas, as well as between the central districts and the suburbs, so as to create a harmonious integration of urban streets and spaces in both the new and the old centres. It also aims to realize a smooth transition from the old district to

the new ones. Finally, all the planning methods will correspond to the practical needs of Hua County, such as the spatial structure, infrastructure, heritage preservation and the reservation of land for future use.

The main conclusions of the SWOT analysis point to the following: Hua County is located at the edge of the Central Plain City Group of Henan Province (nine main cities with Luoyang-Zhengzhou-Kaifeng as the central axis), which means that Hua County is far away from the developed regions, with rather weak secondary and tertiary industries. The urbanized area and size of the population are also considerably small. Up to 2009, the urbanization level was only 25.6 per cent, lower than the average of Henan Province (37.7 per cent) and the national average (46.6 per cent). Besides, Hua County is encircled by four main highways which form a #type, with Hua County approximately in the middle, and transport conditions are not very good. As a result, the degree of agglomeration in Hua County is rather low and the power to effectively promote and deliver urbanization in the surrounding areas is not sufficient.

Environmental conditions are fully considered in the master plan, with an analysis of the geographical location and urban spatial structure. Also, any obstacles to the development and potential of the city are summarized as the basis for planning, including the natural resources, the regional conditions, the present and the expected political and economic position of Hua County in Henan Province. In summary, the master plan needs to make it very clear what goal is to be achieved from both macroscopic and microcosmic angles. Since the ecosystem of Hua County is rather fragile, to preserve and expand the green area is considered key to bringing forth a new scene for the city. Therefore, the spatial structure needs to provide coordination between the natural and built environments, focusing especially on highways, the high-speed rail network and airport.

Though invested with comparatively poor natural resources, Hua County is one of the richest agricultural counties in China and boasts a number one position in grain yield for eighteen years running in Henan Province. Also, Hua County has ample labour force and the potential for fruit and vegetable production. What is more, the planned development axis between Zhengzhou City as the capital of Henan Province and Jinan City as the capital of Shandong Province will pass through this city. This is a key factor in developing favourable conditions for attracting the transfer of industries from the coastal cities, which is one of China's macro-policies for the development of hinterland areas. For this reason, Hua County has been promoted by the Henan government to a higher administrative level – *provincial county* – and will as a consequence enjoy more favourable policies, more financial support and the benefits of an independent local treasury (Figure 5.6.2).

Planning concepts

The master plan determines the strategic goal and the supporting means for a city, which requires an overall understanding of the regional resources through a process of regional analysis, regional positioning and master planning, and a platform of urban development upon which the spatial structure and layout of a city are drawn. This master plan sets out the need for Hua County to break through the cramped structure of the old administrative centre, to form a fully extended structure with an east-west axis connecting the city with one of the main state north-south arteries – namely, the Daqing-Guangzhou highway. The spatial development strategy includes two main directions of development: the eastward development of Hua County in order establish closer connections with the Beijing-Tianjin economic zone by developing new service industries; and westward development designed to merge into the Central Plain City Group of Henan Province.

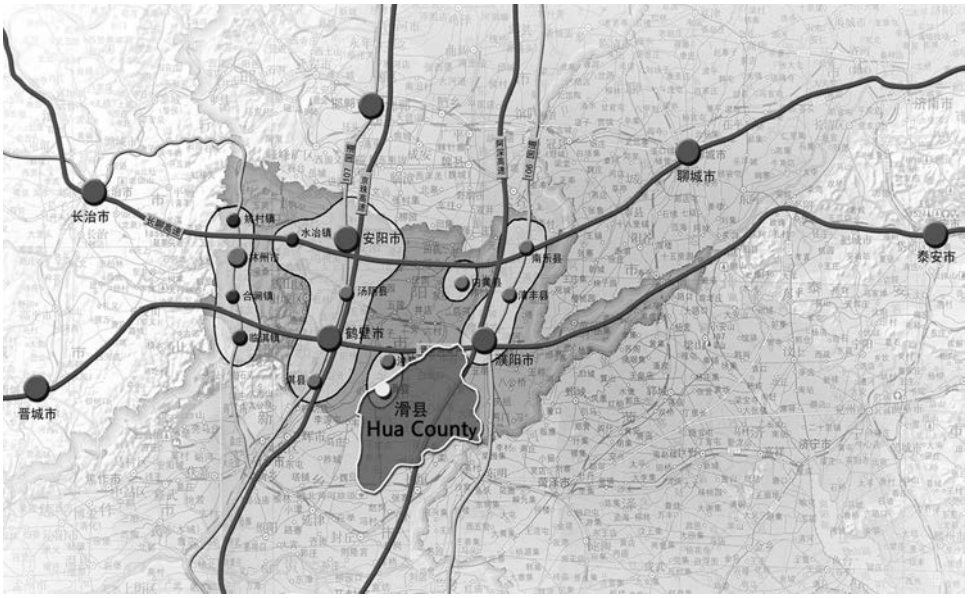

Figure 5.6.2 Location analysis of Hua County.

Hua County needs to take positive actions to achieve this goal, including, for example: attracting the transferred industries from the east coastline cities (encompassing food processing, garment processing and related industries); providing support industries for larger cities like Beijing and Tianjin (in electronic information, machinery and equipment manufacturing industries); promoting local and traditional industries (like food-processing and sheet metal, etc.); and enhancing the attractiveness of cultural tourism and holiday leisure industries for the surrounding groups of larger cities. In the end, Hua County will capitalize on its advantages in agricultural production and farming, and fulfil its role as a backyard garden and kitchen for cities of the northern part of Henan Province of China.

Another concept to be used in the master plan is *concentric zone* theory.[2] The plan aims to solve problems related to the spatial structure, transport network, the balance of land uses and the development of new towns and new industrial zones. Concentric zone theory is used in the plan to respond to and solve these existing problems by dividing Hua County into three ring areas: a core layer, a compact layer and a radiation layer. The first ring area is to define the centre and development axis, and reorganize the inner structure of the old city downtown. The second and the third ring areas will form a rational road system, increase the highway density and improve the grade of the existing roads. All three ring areas are directly related to the balance of land use between the central town and rural area, between different industries (including agriculture and services), and between the built environment and the natural landscape. Especially in the old city downtown, new residential areas and industrial zones are planned to increase the urban density, given that, at present, there is only one town in every 82.5 km^2. Through improving the municipal infrastructure and reserving areas for future development, this plan is to construct two important bases: first, to support the production of high-quality agricultural products and enable the emerging base of the food industry in China; and, second, to realize a smooth transition from the old urban structure to the new one.

The master plan process

The first step in the planning process is to make a forecast of the population. In 2009, the population in Hua County was 1,271,207, with a population density of 714/km^{2}and an urbanization level of about 31.5 per cent, both some 6 per cent lower than the average of Henan Province. Using the methodologies of *element regression*, *integrative growth* and *economic law*,[3] the total population of Hua County is planned by 2015 to reach 1,350,000, and up to 1.5 million by 2030. As for the urbanisation level, through *trend extrapolation and calculation* methodologies, it is planned to be 40 per cent by 2015 with the urban population of 540,000, and about 60 per cent with an urban population of 900,000 by 2030. By that time, all the data will be close to the average level of Henan Province. A further prediction of population change identified that there were 177,926 people in the central area in 2009, with this expected to increase to 270,000 in 2015 and 580,000 in 2030. The present built-up scale is 20.8 km^2 with 208 m^2 per capita, and in 2030 it will be 65 km^2 with 112 m^2 per capita (see Figure 5.6.3).

The second step is to adjust the spatial structure. Using the concepts of *module space and group development*, a core area and three ring areas are planned. This plan is made on the basis of Hua County development and its present conditions. Historically, Hua County was built along a branch of the Great Canal with a typical grid structure. After 1949, following the establishment of the People's Republic of China, the city wall was knocked down and the area stretched both east and west. This resulted in Hua County adopting an olive shape. Then, in the 1990s, the city

Figure 5.6.3 Hua County and the administrative area.

area was further expanded to a size four times its previous size (see Figure 5.6.4). These significant physical changes to the spatial structure create a fundamental problem. Since the old city centre is located in the north-western part of the county, very close to the neighbouring county, making it difficult to promote the economic growth of the whole county area, and also leaves no space for further development (see Figure 5.6.3).

In the master plan, the new core area forms a dual-nuclei structure made up of Old City Downtown and Liugu Town. Liugu is the second largest town in Hua County, with a population in 2009 of 75,435. Liugu grew very rapidly in the recent years due to the planned high-speed railway between Henan Province's capital of Zhengzhou and Shandong Province's capital, Jinan. Liugu will become the gateway of Hua County, open to the surrounding larger city groups. Liugu Town is also close to Daqing-Guangzhou Highway (the State 7918 Project, an important N-S artery), that helps to lay a foundation for local logistics and industrial development. In the plan, a rapid urban transportation corridor is planned to link the two towns, and will take the BRT model for future intra-city commuting. To strengthen the agglomeration of the twin-town structure, the industrial land is planned to increase to 22.57 per cent of the total area, public facilities to 15.27 per cent and land for roads and squares to 17.12 per cent. The significant growth anticipated in the master plan will effectively reduce the smaller villages that are dotted in the centre of the city and greatly hinder the urbanization process of Hua County (see Figure 5.6.5).

In China, especially in the hinterland, resource and labour-intensive industries always become the main impetus for the growth of local cities. In the plan, the core of the strategy is based on the development of food-processing and service industries and founded on the concept of local urbanization and the advantages of agricultural production. As a consequence the second ring area in the master plan is planned as a compact zone. This second ring area will contain six central towns for the development of commerce, organic agriculture and tourism. The main function of this is to produce a compact city area with functional districts, with an eco-corridor developed based on the natural waterways and creeks. The third ring area is the radiation layer in the master plan and contains thirteen towns. The main industry within the third ring is still agriculture, non-staple food production and food processing. This third circle will maintain the economic stability and natural landscape of Hua County, but with a higher urbanization level (see Figure 5.6.6).

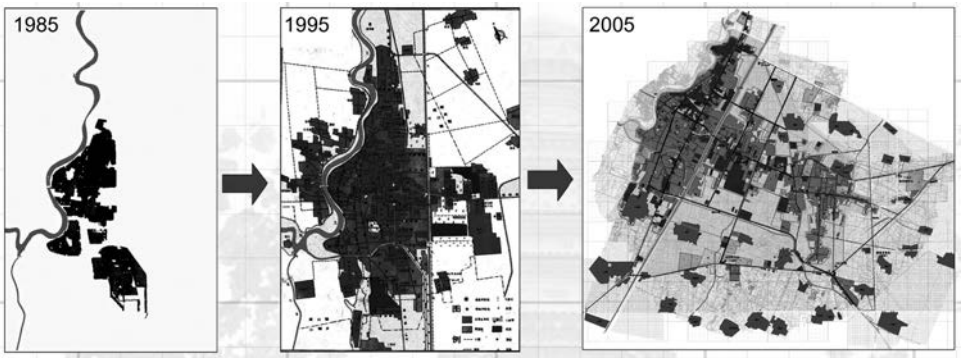

Figure 5.6.4 City area expansion from 1985 to 2005.

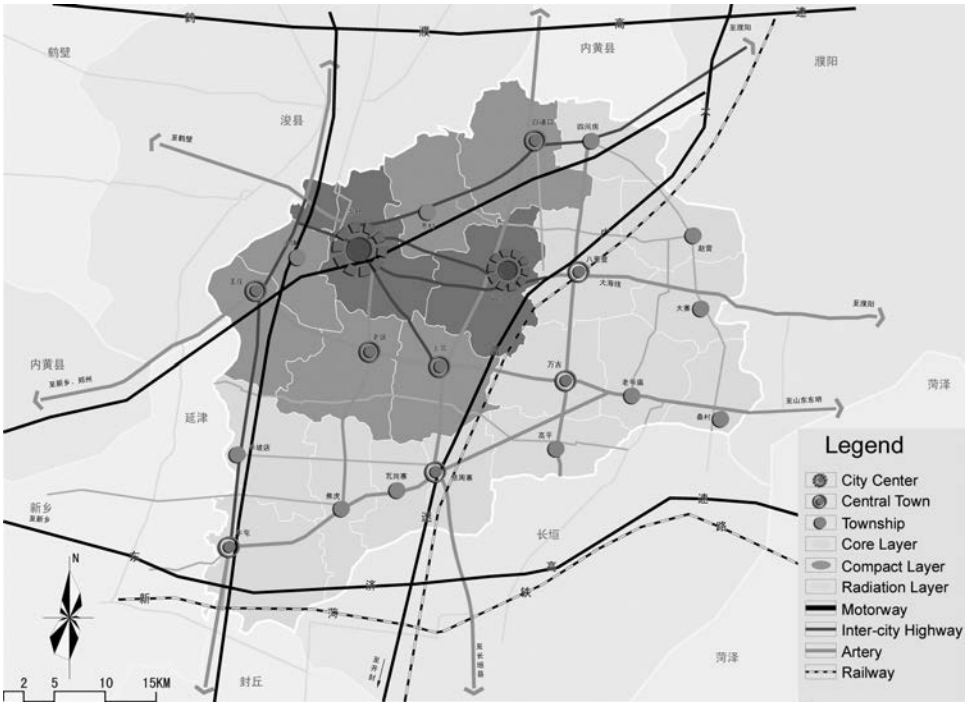

Figure 5.6.5 Urban system planning in Hua County.

Figure 5.6.6 Three ring areas of towns and highway planning.

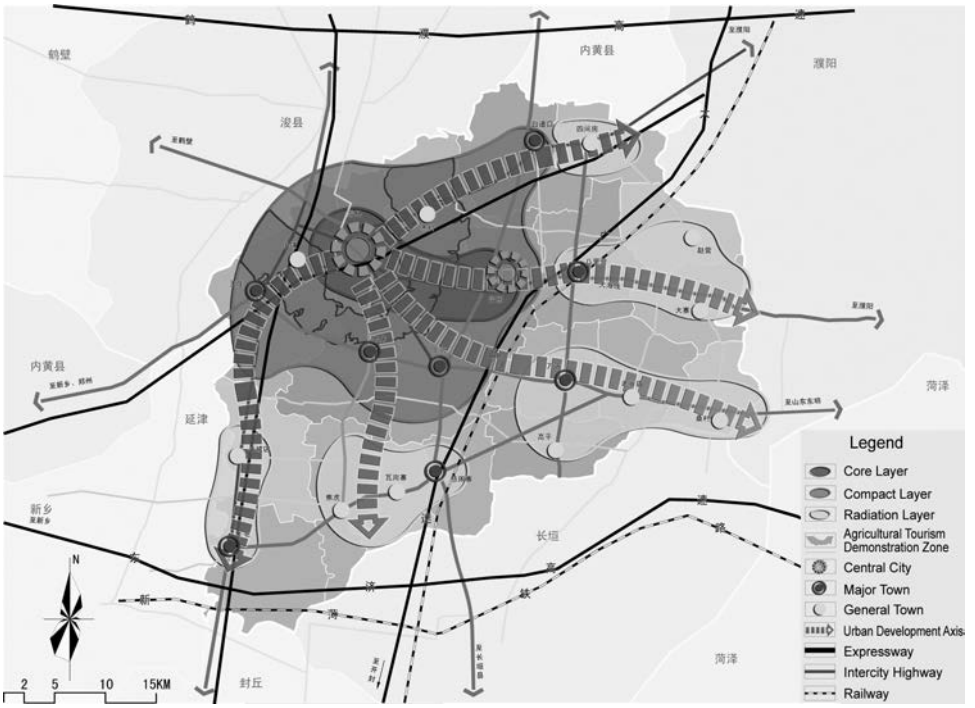

Figure 5.6.7 Transport planning in Hua County.

A new road system is planned to support the development of the three zones. At present, there are six provincial highways in Hua County with an operational coverage of 178.87 km, as well as 1,014.17 km of rural roads. The road densities are 70.1 and 56.9 respectively, and both are about 50 per cent of the average in Henan Province. In order to support the development of the new road system, road development directions are first defined. These appear just like a human hand stretching five fingers from the central downtown to every corner of Hua County. The five main traffic corridors will link ten important towns and villages with the objective of providing more convenient routes for traffic. There is already a planned urban rapid transport corridor between the two cores of the Old City Downtown and Liugu Town, which will form a major section of the east axis (see Figure 5.6.7).

Strategic planning for the urban centre

There are now approximately 177,926 people living in the built area of the Old City Downtown, an area of approximately 20.8 km^2. Nevertheless the layout of the downtown area is rather confused without a clear division of functions and a rational space structure (such as the urban centre villages, insufficient green land and poor supporting infrastructure). In the plan, the new administrative centre will contain two corridors: the central urban corridor and the green corridor, and four functional zones: the old city centre, the new residential area, the industrial zone and the logistics zone. The built area is approximately 20.8 km^2, with a land use of 208 m^2 per capita (see Figure 5.6.8). The long-term planning of the area to 2030 anticipates a land use of

Figure 5.6.8 The present land use.

112 m^2 per capita and an expansion of the total central area to 65 km^2. This expected growth needs to be accommodated in a proper urban pattern and structure. The new urban centre will make full use of the natural waterways and creeks to form a county site with agricultural uses. The central urban corridor and the east-west green corridor will provide citizens with the benefit of better working and leisure opportunities that the county has to offer.

All land is developed based on the principle of rational and economic use. Residential areas in the Old City Downtown and the New Town Area will be sheltered from unwanted uses, and traffic as public transport and walking are advocated in the plan. Environmental protection is also identified in the plan as particularly important. In addition, the plan states that the surrounding areas of the administrative centre will form six important bases for environmentally friendly industries, logistics, markets, convention and exhibition facilities and office buildings. The land use is to be rational and the scale of construction is strictly controlled (see Figure 5.6.9).

Green corridor planning

In modern cities, people increasingly expect a relaxed pace of life and to establish a close connection with nature through the use of green spaces. In the master plan, the water system – which includes Hua County's main rivers, the Wei River and Dagong River – is utilized to support the development of the ecological system in the centre. The planned *Urban Central Corridor* will represent the planning concept of "low rhythm and happy urban life". A series of parks will be constructed on a north-south alignment: a forest park, a sports ground, a leisure

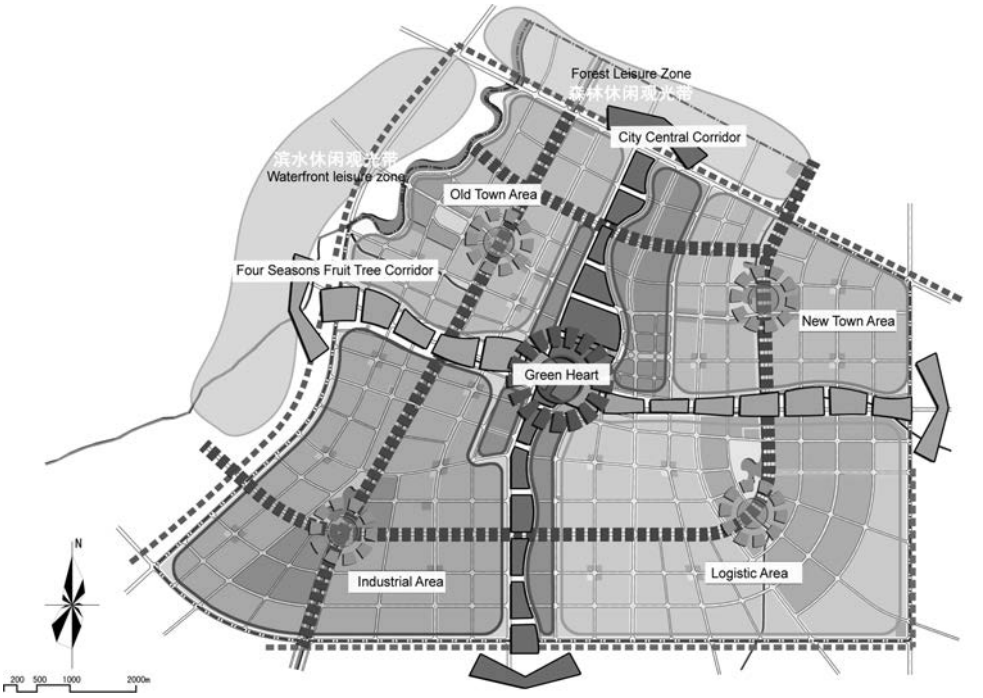

Figure 5.6.9 The planning structure of an urban centre.

zone, a waterfront park, a food and beverage culture park, a wheat production exhibit centre and fruit and vegetable eco-gardens. All of these facilities will adopt the traditional technologies inherited from Chinese classic gardens, aiming to improve the natural landscape of the city and citizens' quality of life. Along the green corridor, local trees and plants, including peach, pear, date, pomegranate and willow trees, will form a special landscape with strong local flavour. The corridor adopts an important ecological protection principle and will present different features with changes in the seasons. A protective green belt along rivers and main roads will take more than 65 per cent of the land to increase the provision of green space designed to improve the quality of urban life. Together with the green heart, the new urban area will represent a better living, working and leisure environment (see Figure 5.6.9).

Development sequence

Finally, a temporal development plan is proposed, with the goal of providing a list of significant projects to be completed in a short and intermediate period. Therefore, all the planning projects will be implemented according to a strict time sequence. In the short-term plan for the period 2010–2020, the construction of the Dual-Nuclei Core Area will commence first, including the renewal of the Old City Downtown, the expansion of the new residential area and the land arrangement for the two corridors, but the urban construction scale must be controlled within 60 km^2. Priority will be given to service facilities, municipal infrastructure and the comprehensive land use for road and greenbelt construction. The finger-type axis of roads and the functional ring areas will be key developments in this early phase. In the short term, the Old City

Figure 5.6.10 Landscape planning.

Downtown will be regulated and rearranged and, at the same time, the new centre of Liugu Town will be expanded to the size needed and the rapid traffic corridor on the east axis will be constructed. For the long-term plan, over the period 2020–2030, the finger-type road system will be completed to support the development of the third ring area and other towns' outer adjacent areas in order to promote the connection with other city groups and, even further afield, with the Beijing-Tianjin metropolis (see Figure 5.6.10).

This form of planning is defined as conceptual master planning, which places emphasis mainly on the strategic and spatial structure, and consequently the urban spatial structure is rather idealized in its presentation. In the following master plan, some parts will be further adjusted according to the practical situation of Hua County, including the integrated land use plan (see Figure 5.6.11).

Conclusion: balancing the fast-evolving reality with the demands for planning

Past exercises in urban planning in China have unfortunately encountered several significant problems, some of which relate closely to the methods traditionally applied in plan making in China. These problems can be summarized as follows:

- The excessive speed and rapidity of the expansion of cities and towns (see Duonfang, 2006; Logan, 2002) have been caused by the impractically high indexes of urban land and population established by some local officials. For example, the total planned urban population of all the cities in China would have been two billion by the end of 2010,

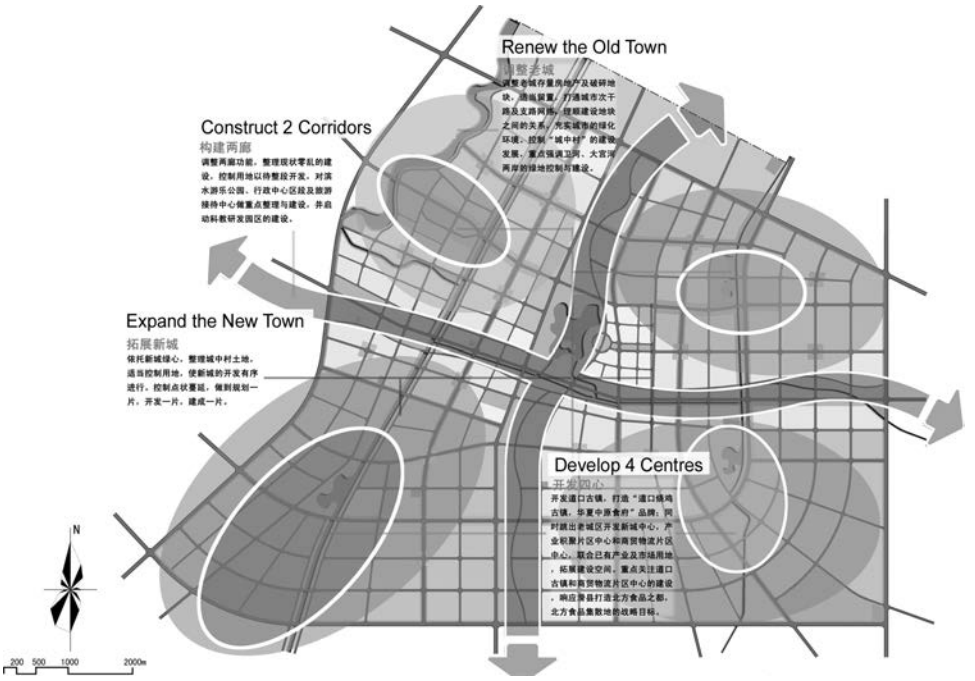

Figure 5.6.11 Time sequence for development (2010–2020).

but the total population of China was only about 1.3 billion. Similarly, the city and town areas increased by about 60 per cent between 2000 and 2010, which exceeds the growth of the population by a significant margin.

- The contents of plans are often changed at will by some local authorities. Normally, a newly empowered official, especially the chief executive, will change the direction and content of the plans made by the former official in spite of the validity of laws. Leaders at a higher level also frequently intervene in planning within their jurisdiction, thus making planning a product of individual will.
- Some plans are not made on a scientific basis, despite the identification of real conditions and needs. Some cities, particularly small and medium-sized ones, have adopted through experiment and blind imitation the same patterns of urban sprawl by extending suburbs and building ring roads, in the "One Image for All Cities" phenomenon.

The Urban and Rural Planning Law of the People's Republic of China was established in October 2007, and it was the first time that urban planning and rural planning were expounded in one law. This law aimed at solving the state of confusion in urban planning and rural planning which caused a significant wastage of land resources and duplicate construction of similar projects. Yet the law failed to solve problems such as large-scale population movement, the urbanisation of rural areas and irrational energy distribution (see also the chapters in Wu, 2007, for an account of these problems arising from intense urbanisation). This law was made to promote the coordinated development of cities and villages and, at the same time, to set strict standards for planning procedures, making the preparation of plans more transparent and open. It also

Figure 5.6.12 Land use plan.

promoted public participation and scrutiny in the preparation of plans in the hope that urban and rural planning would become more scientific and effective in its operation.

Six years have now passed since the implementation of the *Urban and Rural Planning Law*. The planning mechanisms for addressing large-scale development and significant migration of population have improved, yet many problems still remain unresolved. For historic reasons, complex and complicated patterns of land ownership and rights over real estate continue to hinder the preparation and implementation of efficient and effective plans (Ma and Wu, 2005; Wu et al., 2007). What is more, earlier urban planning episodes were considered primarily as technical exercises, and consequently political, economic and social concerns were often neglected as part of these. But now, concern for citizens' well-being (Qian, 2013) occupies a prominent position and is supported by the new government's commitment to planning. This requires the government and planning departments to pay more attention to the sustainable development of a city, and to the social stability and unity directly related to the interests of the masses. For urban planners, their task is not simply to follow the instructions of the officials, as they historically did in the past (see also Leaf, 2005). They now instead have to consider how to eliminate the interference of local officials as far as is possible, particularly that created by those who regard urban planning as a means of facilitating their vanity projects in support of good, administrative performance. This will be nevertheless be a long-term and insistent target for urban planners.

Another important issue in contemporary urban planning is urban regeneration and conservation. In the past thirty years, large-scale urban construction projects have caused great damage to the traditional features and the spatial pattern of many Chinese cities. Many of these cities have lost much of their cultural and historic characteristics, and newly developed, built-up urban

areas often seem to be copies of one or two famous models, with a resulting lack of character and distinction. Many local governments are now aware of the importance of conserving the historic built environment and preserving their heritage. Yet a significant number of local governments have adopted this as an opportunity to stimulate local tourism, and their so-called conservation planning and protection constitute no more than a new era of destruction. The rapid disappearance of traditional streets and lanes, such as *Hutong* in Beijing and *Linong* in Shanghai, is testament to the ongoing and continued destruction of built heritage.

In summary, the rapid increase in population and energy demand and supply, and the resultant land resource shortage are still the main issues that need to be addressed in urban planning, especially in large-scale, developing countries such as China (Ma and Wu, 2005). These issues present many methodological challenges for plan-making practice, particularly if such plan making is to deliver on the twin objectives of greater transparency and a more robust, scientific approach to planning. There is scope for innovation and experimentation with a variety of plan-making methods, with the aim of better addressing the challenges continuing to face Chinese cities.

Notes

1 The lowest in the administrative hierarchy of China: (1) central government, (2) provincial capital city, (3) prefecture-level city and (4) county-level city.
2 This concept is described as the emphasis on the relation between urban center and the surrounding non-agricultural areas.
3 These methods are described as the consideration of variable factors that influence urban population and economic growth in Hua County.

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5.7

CONCEPTUAL AND EPISTEMIC UNCERTAINTY IN PLANNING

Research for the renewal of industrial areas in Sweden

Anders Törnqvist

Introduction

Practitioners are often faced with the following question when addressing practical problems which are characterised by uncertainty: "What kind of problem is this and what do I need to know to solve it?" Planning problems are often "wicked problems" (Rittel & Webber, 1973). There may be difficulty in defining the problem (Schön, 1983). There is a need in planning practice to distinguish between *conceptual* and *epistemic* uncertainty. There is often uncertainty in planning about both goals and means – defined here as *conceptual uncertainty* (Friend & Jessop, 1977; Rolf, 2007; Simon, 1997). There is lack of empirical evidence for evaluating properly the consequences of planning alternatives – *epistemic uncertainty* (Faludi, 1987; Davoudi, 2006). Research in the planning field is often undertaken to help reduce both kinds of uncertainty. This chapter argues that exploration of the concepts and understandings that different actors use in practice can help with identifying practical solutions to real-world problems.

Swedish experiences of research focused on such issues are presented ahead to show how research helps to address both conceptual and epistemic problems. Who are the stakeholders? What conflicts are there? Are these conflicts of perceptions or of interests? What evidence is there to support these perceptions, interests and arguments? What can be learned from examples of renewal projects characterised by significant efforts in conflict management, negotiation and argumentation? Typical examples can be found in planning for renewal of old industrial estates. These estates are often located in semi-central areas, sometimes at waterfronts, which makes them commercially attractive for redevelopment. Offering low-cost premises in central locations, they are also valuable to current users, mostly small businesses, often turning out to be an important part of the urban and regional economy (Amin & Thrift, 1992; Green and Foley, 1986; Jacobs, 1969; Schoonbrodt, 1995). Full-scale renewal of these estates may be economically favourable in the long run, but can be difficult and risky in the short run. Successive, small-scale

renewal may show the opposite picture (Fothergill *et al.*, 1987; Hall, 2002). How should planners and decision makers handle these goal-conflicts and implementation problems?

The research studies presented ahead have used several methods, including detailed surveys of firms and buildings in specific industrial estates, collecting quantitative data on property values and migration of small firms between different urban locations, space syntax analysis of three estates, interviews with small business entrepreneurs, cluster analysis of perceptions of industrial environments among planners and entrepreneurs, and analysis of examples of conflict management in planning for renewal. This research was undertaken during 1985–1996 at Chalmers University of Technology in Gothenburg, under the leadership of Joen Sachs, professor of workplace planning, and later at the Institute of Technology in Karlskrona by Anders Törnqvist. The research was financed mostly by grants from two Swedish research councils and in close cooperation with planners in five Swedish towns.

These studies have contributed to both conceptual and epistemic clarification. Although these buildings may seem run-down and inadequate in the eyes of some beholders, they often represent improved conditions for a growing firm. Spatial configuration of industrial estates, as articulated by spatial syntax analysis, and not only the standard of individual buildings, seems to be an important quality for small business. A picture-sorting study indicated that planners and entrepreneurs to some extent share the same perceptions of industrial environments, but have different interests and priorities. Planners need to be sensitive to these different interests and priorities. It has been assumed that such partly shared perceptions facilitate dialogue. Examples of such negotiation have been studied in order to evaluate different approaches to conflict management for resolving conflicts and reaching an acceptable settlement of planning issues. Identifying relevant aspects in the renewal of old industrial areas, as in the studies mentioned earlier, gives examples of *conceptual clarification*. Surveys of larger populations of firms and planners, indicating the extent and frequency of migration and the presence of common perceptions, and evaluating different approaches to conflict management, contribute to *epistemic clarification*.

Research for practice in Sweden

Many towns and cities in Sweden face problems of decay of older industrial areas. The planning authorities seeking to improve conditions and promote local economies are faced with many questions. How, for example, do small businesses select and use premises in old industrial districts? Why do they select such locations in spite of the seemingly low quality of the buildings?

The Swedish planning system is characterised by comparatively autonomous local authorities. The current Planning and Building Law was first established in 1987 and restricted the power of central government over municipal spatial planning to dealing with a reduced number of defined issues: protecting areas with environmental and cultural heritage qualities, safeguarding health and security and serving the interests of national infrastructure and military defence. Local authorities have a 'planning monopoly', meaning that private developers are dependent on local authority consent to start planning development schemes. Following such consent, the local plan (*detaljplan*) produced by the local authority is often worked out in cooperation with the developer, detailing development rights and environmental restrictions, building design guidelines, etc.

Proposals for local plans must be exhibited and subjected to public consultation. Legally recognized stakeholders may appeal planning proposals to higher administrative and judicial levels. The legality of the provisions of the plan is checked. National government can intervene and invalidate the plan, if specific national interests are jeopardized. The local authority, after hearing the views of stakeholders, must explain in a public document its decisions when judging

between opposing interests. The decisions of the local authority are strengthened when appeals are made if they can be shown to conform to an adopted comprehensive plan (*översiktsplan*), which covers the whole of the municipality, but is not legally binding. After the local authority has approved a plan and complaints have been overruled, developers can apply for building permits. If applications conform to the regulations of a local plan, which has attained legal status, they cannot be rejected.

The Swedish planning system seems to be clear at a general national level. How it is operationalised depends on local circumstances. It is difficult to draw conclusions from general information about planning at a national level, even if a certain planning problem is shared by many municipalities. Local conditions, power-balances, restrictions and possibilities for action are different. Research on planning problems with a focus on dialogue and conflict management needs to consider the specifics of local situations. It seems reasonable, therefore, to focus on specific cases when starting to study a specific planning problem.

There is a strong tradition in planning of using case studies as the basis for a research strategy.[1] Case studies can be used as sources both for qualitative and quantitative data. The purpose of case studies can be *evaluative*, measuring degrees of success or failure in a certain case, or *exploratory*, learning more about problem aspects and cause-effect relations. They can be used for both generating and testing hypotheses (Thomas, 2011; Flyvbjerg, 2011). They are especially useful in addressing 'how' and 'why' questions such as those noted earlier (Yin, 2008). They can therefore be seen as an important component of a research strategy that addresses both conceptual and epistemic uncertainty. In the research reported ahead, practice-generated questions are explored through a range of case study examples.

Research to inform the renewal of industrial areas

Small businesses in central Gothenburg were worried in the late 1980s. The new comprehensive plan for the city designated the small, centrally located industrial estate of Kungssten for total renewal, to be replaced by offices and housing. The firms on the estate – established in 1945 and now housing some thirty businesses – formed a local business association, which contacted the Business Council of the city administration. The Council was sympathetic to the views of the Kungssten entrepreneurs. Some planners in the City Planning Department were also critical of the comprehensive plan. They formed a project group which contacted researchers at the Chalmers University of Technology and the University of Gothenburg, who secured funding from the Swedish Council of Building Research.

A research team conducted a thorough investigation of the buildings and businesses on the Kungssten industrial estate. Planners had observed derelict buildings on the estate; streets were in bad shape. Business analysts suspected that several firms were stagnant, low-profit enterprises in 'overripe' sectors, like car repair shops, plumbers and welders. They based their perceptions partly on the findings of a statistical survey of industrial areas in Swedish towns (Johansson & Strömquist, 1979), indicating a relation between old, run-down industrial areas and low productivity, profitability and wage levels. The study investigated businesses in hundreds of Swedish towns, mining public statistical data on property values and business performance, using postal area codes to relate the two sets of data, identifying old industrial environments and their locational relation to low-performing businesses. An important limitation of the study was that economic data was not available for the smallest businesses with less than ten employees.

The research team's detailed study of buildings and mostly small firms in the Kungsten estate showed a slightly different picture. There were indeed low-standard buildings and stagnant firms on the estate, but there was no obvious correlation on a micro-scale. Stagnant firms had

buildings in good shape and survived by letting space to expanding businesses. Many firms in low-standard buildings were expanding and had moved to the estate from premises elsewhere in even worse condition. Several quite small firms turned out to have specialised skills and a regional, or even a national, market for their products and services. Workplace environments and their impact on the surrounding environment were surprisingly satisfactory according to government inspections. These findings eventually led the city to invest in technical infrastructure in the area and modify the comprehensive plan. Instead of designating the Kungssten business estate for total renewal, the modified plan identified the estate as a valuable environment for growing businesses.

Four research questions emerged from this exploratory study (Törnqvist, 1995):

- What is the extent of the mobility of small firms and what are the incentives for small businesses to move from one location to another?
- What could explain the obvious differences in the evaluation of small business environments between entrepreneurs and planners?
- What are dimensions of "attractiveness" of the physical environment in the view of small business entrepreneurs?
- How can planning conflicts concerning land-use and environmental quality between businesses and other stakeholders be resolved successfully?

There was an opportunity to address the three first questions when planners of Trollhättan, a medium-sized town not far from Gothenburg, approached the Chalmers research team. Trollhättan planners needed to find a strategy to deal with several old industrial estates with abandoned, heavy industrial plants, as well as expanding old and new business environments for smaller firms. Three studies were carried out in Trollhättan: a migration study of some four hundred businesses in nine industrial estates, a picture-sorting study involving entrepreneurs and planners, and a spatial syntax analysis of three estates, trying to explain the differences in attractiveness of alternative locations for migrating entrepreneurs. The fourth question was addressed in case studies of conflict management in three other medium-sized Swedish towns: Växjö, Norrköping and Jönköping. The research questions, asking "what", "why" and "how", represent efforts in *conceptual clarification*, and a first step towards finding methods to manage the complex task of planning renewal of old industrial estates.

The migration study

A database of 190 properties and nearly four hundred companies in eleven industrial estates in Trollhättan was compiled for 1989 and 1992, supported by the municipality's planning office. The purpose was to acquire more empirical data to address the first three research questions derived from the exploratory study. The data sources were several. Property sales are recorded in the Land Registry Office, and property values are available in the tax registers. Trollhättan planners painstakingly surveyed local business registers of the municipal Business Council, accessed registers from large property companies renting space to businesses, and traced migrating tenants by comparing address and phone books from the two years studied.

The nine largest estates were selected for closer study, since preliminary findings indicated that migration to and from smaller clusters of firms in the town was negligible. Figure 5.7.1

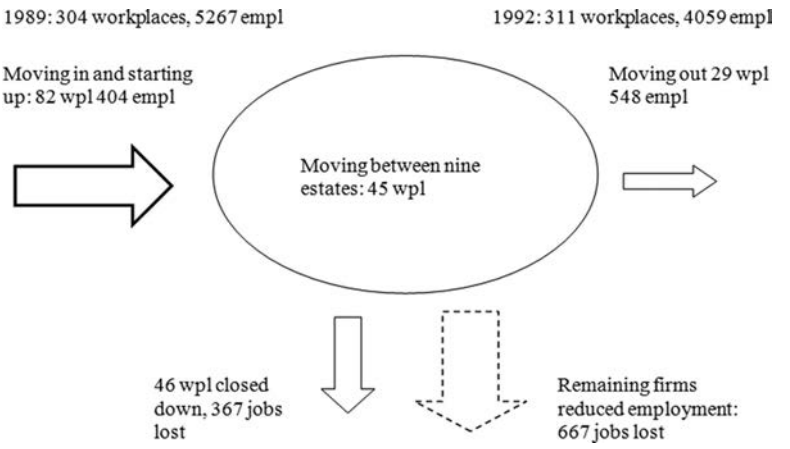

Figure 5.7.1 Migration flows of nine industrial estates in Trollhättan 1989–1992.

summarises the dynamics of migration and employment. Several firms closed down during this period, which included economic recession and a financial crisis in Sweden. Firms generally reduced employment. Bigger firms moved the Trollhättan branch to other towns to cut costs, but start-ups and small firm expansion partly made up for the losses of employment. This phenomenon was replicated elsewhere in the Swedish economy at this time (Davidsson *et al.*, 1998). In the late 1980s, some 15 per cent of all Swedish companies closed down each year and a slightly larger number were established, creating a net gain of some forty thousand new jobs. Analysis of the database showed that about half of the premises in the nine estates changed use through businesses moving during the survey period, averaging an annual change of 17–18 per cent. Telephone interviews and studies of property tax register data showed that a large majority (70 per cent) of the circa 130 migrating firms moved purposefully to improve their premises, whatever their starting level.

An example of *conceptual clarification* emerging from this study is that, contrary to common perceptions of planners and economists, the small firms in this population did *not* move to old premises to cut costs, trying to survive on reduced profit margins. They moved instead to expand and improve the conditions for their business. In some cases, large and relatively inexpensive premises stimulated the growth of new production activities. The relatively large number of firms in the survey and the amount of quantitative data to support this view are, of course, an example of *epistemic clarification*.

An example of space syntax analysis

Migration data also revealed that some estates were more attractive to firms than others. The Halvorstorp estate had recently been established close to a major road with good advertising opportunities for firms erecting modern, attractive buildings. Another popular estate, Stallbacka, was on the contrary an old estate with abandoned, heavy-industry buildings. A small real estate developer had acquired the land and built a new street connecting the estate with a major road,

and a new office building at the entrance advertised the estate. The developer renovated the old industrial buildings and could provide a wide range of premises of different size, quality and cost. Halvorstorp (forty-nine firms in 1989) made a net gain of sixteen firms during the period. Stallbacka (thirty-four firms) made a net gain of ten firms, while another estate, Nohab (thirty-five firms), lost four firms.

Nohab was originally a plant for heavy industry. Small firms had moved into the subdivided, large, old brick buildings but at the time of the study also moved out. In interviews, entrepreneurs complained that customers had difficulties finding their premises in the large buildings. It was difficult finding the way from the entrance to the estate to the many small alleys between buildings. This suggested a hypothesis to be tested in more detail – namely, that the spatial configuration of the estates affected their attractiveness.

Spatial syntax analysis was selected therefore to explore further these suggestions (Hillier & Hanson, 1984; Hillier, 1999). The theory and method of space syntax analysis are based on the idea that 'natural movement' – the aggregated movement of large populations, pedestrians and motorists in urban space – is influenced by spatial configuration, quantifying topological relations between streets and other public spaces. As a basis for analysing urban spaces *axial maps* are established. An axial line is drawn on a map, showing how far one can see along a street or open space that is also physically accessible. Software then calculates a number of values, measuring the relationships between all axial lines.

Integration measures how many turns one has to make from a street segment to reach all other street segments in the network, using the shortest paths. Another term for such turns is "syntactic step". A street segment needing fewer syntactic steps to connect with other streets and public spaces is considered more "integrated" than ones with more steps. Global integration of a space is based on the total number of steps of a street segment to reach all other public spaces in the urban district selected for analysis. Local integration values are calculated by limiting the number of steps – to three, for example.

Integration values are interpreted to represent the perceptual and cognitive complexity of reaching different parts of an urban district, if one does not have previous knowledge of how to find one's way (Penn, 2003). The ratio of global and local integration in the analysed urban district is related accordingly to the ability of strangers to find their way from any one location to other locations in the area. The study indicated a correlation between spatial configurative qualities and attractiveness of the estates (Törnqvist & Ye, 1995). Halvorstorp and Stallbacka showed high ratios of integration. The low integration ratio of Nohab, with firms moving out, could be interpreted to support the views of the firms there that it was difficult for visitors to find their way (see Table 5.7.1). Other space syntax values for the estates confirmed their configuration differences.

Table 5.7.1 Space syntax analysis of three industrial estates

ESTATES	*SIZE (no. of axial lines)*	*INT(3):INT*
Halvorstorp	27	0.7794
Stallbacka	29	0.8868
Nohab	33	0.2193

INT= Global integration value
INT(3) = Integration value of spaces, considered at three steps' depth

The picture-sorting study

A picture-sorting study was conducted to discover what small business entrepreneurs find attractive in the built environment (Törnqvist & Corander, 1995). This technique involves showing respondents a number of pictures and asking them to sort these in different groups and explain the reasons for doing so.

The advantages of sorting procedures for exploring concept formation and evaluation of environmental qualities have been outlined by Groat (1982). Compared to semantic differential techniques (see Osgood, 1979), the sorting procedure does not require pre-specified constructs. Using semantic differentials, the respondent is asked to rate a picture or a phenomenon on a scale between two bipolar adjectives (e.g. 'adequate-inadequate', 'new-old' or 'high cost – low cost'). In contrast, the sorting technique leaves the respondents' judgments uncontaminated by the investigator's preconceptions.

The study's focus was on identifying the verbal constructs used by the respondents when sorting and describing groups of pictures of different industrial environments. This was done in order to *clarify* what *concepts* were used by stakeholders when describing qualities of industrial buildings and settings. Similarities or differences in the use of concepts between clearly identified groups of planners and entrepreneurs would in addition contribute to *epistemic clarification*.

Entrepreneurs (N=26) and urban planners (N=20) in Gothenburg and Trollhättan were asked to sort twenty photos of industrial and business environments. The selected photographs showed a wide range of buildings, from simple workshop sheds to modern office buildings. Respondents were selected among entrepreneurs moving to and between the nine industrial estates in Trollhättan and interviewed about their reasons for doing so. They were representative of the total population in the respect that they were businesses in manufacturing, repairs and private services (non-retail), with between one and sixty employees.

Respondents were asked to sort the photographs in groups according to some kind of similarity and then characterize the environments grouped together. No restrictions on the number of groups were given, nor were any clues provided as to the criteria that could guide the sorting. Only one sorting was made by each respondent, and extensive notes were taken of all the terms and expressions he or she used when describing the sort. In most cases the sortings were quickly made, and many entrepreneurs were surprisingly quick in characterizing the different groups. They could also quickly choose the group to which their current premises corresponded and also the group corresponding to accommodation they would consider moving to in the near future.

The original assumption was that there is a significant difference in the way entrepreneurs and planners perceive, describe and evaluate industrial environments. A small pilot study with 5–6 entrepreneurs and planners seemed to give some support to this and indicated that the difference could be related to the tendency of each group, respectively, to use concepts describing either the physical qualities of the built environments or the businesses likely to use them. This generated two hypotheses for further investigation:

> First hypothesis: *There is a significant difference in the way entrepreneurs and planners use verbal constructs in sorting and characterizing pictures of an industrial environment.*
>
> Second hypothesis: *Planners tend to use constructs describing the properties of the built environment as such, and entrepreneurs tend to use constructs referring to the businesses likely to use the buildings shown.*

The first task when analysing the material was to identify the constructs behind the respondents' terms. Terms such as 'old buildings' or 'newer accommodation' were easily categorized as a construct referring to *building age.* 'Family business in manufacturing, or repairs' indicated a construct referring to *building use.* The majority of the range of constructs clearly referred to either the physical, technical and economic qualities of the built environment or the potential business users of these environments.

Several statistical techniques were used to analyse the distribution of constructs used by the respondents – cluster analysis, lattice analysis and multidimensional scaling analysis.[2] All techniques yielded results that tended to support the two hypotheses concerning differences in the use of constructs by entrepreneurs and planners respectively. Here the main findings are summarized with particular attention to the results of the multidimensional scaling analysis.

What primarily explains the clustering of planners and entrepreneurs in two fairly distinct groups is the entrepreneurs' much more frequent use of constructs referring to different *branch classifications.* A branch classification construct such as *manufacturing* summarised a much greater number of different terms used by the entrepreneurs (nine terms) than by the planners (three terms). In addition, entrepreneurs differ from planners in preferring the general construct *building type* (factory, office, warehouse) to other, more developed building constructs.

A cluster analysis was also made of the sorted pictures in order to identify possible similarities. In contrast to Groat's (1982) study, it was not one of the purposes of this study to explore the respondents' ability to identify certain characteristics in the pictures presented. It is natural to expect, however, that obviously similar pictures of old buildings, for example, would be put in the same group by several respondents. Possible differences in the sortings would also be of interest, particularly if the differences could be related to the type of respondent – entrepreneur or planner. On the other hand, the absence of significant differences in sorting would highlight differences in the use of constructs between the groups of participants.

On the basis of clusters of pictures sorted, measures of association between entrepreneurs and planners were calculated. One measure is *the proportion of clustered pairs* of pictures similarly classified by participants belonging to the two different groups. This value, which can vary between 0 and 1, was equal to 0.83, which means that a high proportion of the pictures were similarly classified by entrepreneurs and planners.

In conclusion, the study supported the first hypothesis concerning significant differences between entrepreneurs and planners. The differences are most prominent between entrepreneurs and the Trollhättan planners, whereas the Gothenburg planners show greater individual variations. The study also supported the second hypothesis, with the modification that it is mainly in the frequent use of branch classifications that entrepreneurs differ from planners. Entrepreneurs tended to describe the type of business the building was suitable for – a small family business in the construction sector or a high-tech firm, for example. Planners tended to describe the physical building – an old brick building in bad condition or a modern office building, for example. Their descriptions thus reflected their professional perspective. These characteristic differences between the ways entrepreneurs and planners describe and interpret pictures of industrial environments are further enhanced by the fact that according to the cluster analysis both groups tend to perceive the visual similarities between the pictures as such and sort them accordingly. These findings have practical relevance and indicate the potential for dialogue. Planners and entrepreneurs actually share some common perceptions of industrial environments and see similarities and differences in the premises for small firms. They evaluate them differently, however, according to their professional perspective and priorities.

Conceptualisation as a basis for dialogue and conflict management

The picture-sorting study suggests that the visual *attractiveness* of old industrial estates is partly, but not completely, in the eye of the beholder. Planners and entrepreneurs observe and classify industrial environments in similar ways, but evaluate them differently. The migration study showed that when small firms move, which they often do, they typically move to bigger and better premises. This indicates a need for *diversity*, in size, cost and location of premises for small firms, perhaps greater than many planners realize. Complete redevelopment of old industrial environments can be compared to eliminating the lowest rungs of a ladder: vital for small, newly established firms with the potential to move upwards, growing in size and profitability. The importance of *spatial qualities* of small-firm environments, as measured by space syntax analysis, is supported by empirical evidence on location preferences in the migration study. High integration ratios of an estate indicate high accessibility and orientability and make the estate attractive for firms dependent on new customers. Space syntax analysis can consequently also be used to identify and provide spatial *diversity*, in the sense that some firms with bulky and untidy production could preferably be 'hidden' in a less accessible and less expensive part of an estate.

How then can these research examples of conceptual and epistemological clarification be used to improve planning for small firms? Our research suggested that the findings could be used as tools and evidence in promoting collaborative interaction between stakeholders – an enlightened dialogue (Davoudi, 2006; Forester, 1989, 1999; Healey, 1997). There was an opportunity to explore this idea through a grant from the Research Council of the Swedish Association of Local Authorities to Blekinge Institute of Technology, Karlskrona. We set out to examine the conditions of successful conflict resolution in additional studies in three medium-sized Swedish towns (Törnqvist, 2006). These towns were considered representative of towns, where industry was being gradually replaced by cultural services, commercial services, and housing. The research team had had previous personal contacts with the towns' planning officials, which facilitated the studies. Geographical accessibility also contributed.

The number of examples was increased to reduce the effects of local conditions and broaden the quantitative base for analysis – supporting *epistemic clarification*. Planning cases were found by asking planners about recent planning cases concerning workplaces with manifest conflicts between stakeholders: local authority planners, businesses, resident neighbours and environmental protection agencies.

Typical conflicts in these towns, as elsewhere, concerned whether to allow new businesses or the expansion of existing ones in central locations, with risks of subjecting resident neighbours to environmental disturbances, such as noise pollution, sometimes exceeding existing legal regulations. The objective of facilitating businesses was also linked to political goals to protect and increase employment opportunities, not least in the vicinity of problematic housing estates with high rates of unemployment. The nine cases selected for study typically concerned proposals to change the local plan to allow for other types of activity, such as private services instead of only manufacturing, for the expansion of existing businesses, and also to allow for the establishment of workplaces in residential areas. To protect other stakeholders, technical performance criteria that limited environmental disturbances were sometimes included in the proposed plan.

Stakeholders were interviewed concerning their views and reasons for or against the proposals. Planning documents were analysed in order to classify the modes of conflict management. These *modes* formed one axis of a matrix in which the cases could be placed. The other axis classified the *outcomes* of conflict management (see Table 5.7.2).

The classification of modes of conflict management

The classification itself was drawn from the work of Faludi (1987), Forester (1989), Sager (1994) and Healey (1997). Under *decision-making rationality*, the decision maker should consider all the alternatives open to her in a certain decision situation. She evaluates the consequences following from each alternative and selects that alternative, the probable consequences of which would be preferable in terms of her most valued ends. When analysing the nine planning cases in this study, we considered such a mode to be present if at least three decision alternatives were considered, including the zero-alternative of taking no action. This is admittedly a crude criterion. It succeeded, nevertheless, in discriminating between the cases. The mode of *communicative rationality* was defined drawing on the work of Sager (1994) and Forester (1989). This mode was considered to be present in the cases if, through a flexible approach by planners, a *dialogue* was opened between the parties in which minimum levels of *comprehensibility, truth, sincerity* and *legitimacy* could be verified (Forester, 1989).

In view of the discussion of whether these Habermasian prerequisites of an "ideal speech situation" could ever be met, this approach was perhaps naive. In the actual cases it seemed possible, however, to apply low-key versions of these criteria of communicative rationality to discriminate between the cases.

The interdependence of communicative and decision-making rationality

A conflict resolution, which is considered acceptable by all the parties, is not necessarily rational in the classical sense. It may be short-sighted and opportunistic; relevant alternatives may not have been considered and some factual truth neglected. Sager (1994) recommends reference to *planning principles* to prevent opportunism in flexible conflict management. In the form of *strategic goals*, for example, to promote employment opportunities in environmentally friendly branches and locations, planning principles can be seen as an indication that a wider range of alternatives have in fact been considered and their consequences evaluated. In this sense such principles and goals serve to uphold decision-making rationality according to Faludi (1987). *Technical performance criteria* in the plan or building permit, limiting, for example, levels of acceptable emissions from industry, is another way of preventing opportunism and damage to third-party interests (Healey, 1993). So, in addition to observing the modes of decision-making and communicative rationality in the studied cases, note was also taken of references made in planning documents to strategic goals and technical performance requirements.

Problems of rationality

Even if decision-making rationality and communicative rationality are rewarded by success in resolving conflict, this may not have been an obvious or expected outcome beforehand. A flexible approach, striving for innovative solutions in trying to resolve conflict, may not be rationally justified. Elster (1987) highlights another risk relevant for planners considering the potential benefits of entering a dialogue with uncertain outcomes. The risk is not only wasting resources without any results to show for it but also being *blamed* for the failure. This can lead to playing safer than the actual odds of succeeding may justify (Elster, 1987, p. 32). Professional reputation is a precious asset and more easily hurt than strengthened. Both bold risk taking and prudent conservatism may therefore lack rational justification and entail risks of professional blame.

The classification of outcomes

Sager (1994, p. 152) suggests a scheme for classifying outcomes of conflicts as *solutions or settlements*. In our study, we developed the following definitions. *Settlement* means a state of manifest conflict, but where *manipulation* is no longer used. Manipulation is used here to mean the deliberate holding back of useful information, concerning preferences and strategy in negotiations, or trying to influence a decision by appealing to other actors than the ones directly involved in the negotiations. An example of *settlement* is where a decision has been made by the local authority, going against a party with objections to a planning proposal, but where this party does not pursue the matter, for example, by appealing to a higher judicial or administrative level, although arguments of *persuasion* are still current. *Solution* means that *manipulation* and also *persuasion* have ceased, usually implying a satisfied consensus among the parties. The parties are no longer arguing or negotiating but have reached an acceptable compromise.

The results of this analysis indicated that successful conflict resolution in the studied cases can be related to application of *rationality*, both decision-centred as well as communicative. But there is a paradox involved, which is illustrated by the anomalous case of Växjö Bakery (case number 7 in Table 5.7.2), where no mutually acceptable *solution* was found, in spite of the application of rationality and extensive mediating efforts. There was only cessation of protests and appeals, or *settlement*. This case illustrates the aforementioned risks that planners take when venturing into a potentially fruitful but time-consuming dialogue with stakeholders – risks of being blamed for

Table 5.7.2 Overview of conflict management modes and outcomes in nine planning cases, in three Swedish towns

Modes *Outcomes*	*Decision-making rationality*	*Communicative rationality*	*Strategic goals*	*Technical performance criteria*
Solutions				
(1) Risängen – changing local plan	Yes	Yes	Yes	Yes
(2) V. Mark changing local plan	Yes	Yes	Yes	Yes
(3) I11 informal comprehensive plan	Yes	Yes	Yes	Yes
(4) Navestad Youth hostel – temporary building permission	Yes	Yes	Yes	Yes
Settlements				
(5) Bankeryd endash changing local plan	No	Yes	Yes	No
(6) Araby shops – allowing temporary use	Yes	No	Yes	No
(7) Växjö Bakery – changing local plan	Yes	Yes	Yes	Yes
(8) Araby Catering – allowing temporary use	No	No	Yes	Yes
(9) Navestad workshop – allowing temporary use	No	No	No	No

failure and waste of resources. In summary, some degree of *conceptual clarification* was achieved, relating different concepts of rationality as tools for conflict management to satisfying outcomes. There is a need, however, for further conceptual clarification of paradoxes and problems involved, perhaps by introducing in continued studies the concepts of 'institutions' and other social structures for reducing uncertainty and risk (March & Olsen, 1988; North, 1990; Healey, 1999).

Conclusions

This chapter has presented a sequence of research studies, which have progressively aimed at conceptual and epistemic clarification as a basis for planning policy. An exploratory case study of a small business estate in central Gothenburg was initiated jointly by the business association for the estate, city planners and researchers at Chalmers University of Technology. The detailed study indicated that the physical standard of buildings and the economic performance of the businesses in this estate were less problematic than assumed. This result in turn led eventually to modification of the city comprehensive plan. Instead of designating the small business estate as ripe for total renewal, it was identified as a valuable environment for growing businesses.

The study further led to four research questions, indicating the need for both conceptual and epistemic clarification when addressing the complex problem of planning for renewal of industrial estatates, while also promoting adequate environments for small, growing businesses. The four research questions were pursued in studies carried out in four medium-sized Swedish towns.

A survey of some three hundred businesses in nine industrial estates in Trollhättan, a medium-sized town not far from Gothenburg, indicated high mobility among these small firms over a period of three years. Interviews among migrating entrepreneurs indicated frequent movement with a large majority thereby improving the size and quality of their premises. In a period of economic recession this partly made up for close-downs and reduced employment in larger firms, an observation supported by larger, macroeconomic studies – a contribution to *epistemic clarification*.

Some estates proved more attractive than others when firms migrated to improve their premises. Spatial syntax analysis and a picture-sorting study helped in understanding aspects of the attractiveness of industrial environments, contributing to *conceptual clarification*. Spatial configuration qualities, such as physical accessibility and ease of orientation, partly explained why some estates were more popular than others, according to this analysis.

Entrepreneurs tended when sorting pictures of different industrial environments to describe the type of business the building was suitable for – a small family business in the construction sector, for example. Planners tended to describe the building as such – an old brick building in bad condition, for example. Their descriptions thus reflected their professional perspective. Entrepreneurs rated building age and building standard differently from planners, which indicates the need for planners to be more observant about the total supply of environments for small firms. A dynamic perspective seems necessary, with the goal to provide and protect continuously a broad spectrum of locations and premises, where small firms can grow and develop.

Both entrepreneurs and planners tended to perceive visual similarities between the pictures as such and sort them accordingly in largely similar groups. Partly similar perceptions but different perspectives and priorities among stakeholders – entrepreneurs, planners, neighbours, the general public – are assumed to make *dialogue* both possible and necessary. The modes and outcomes for such dialogue were on the basis of this assumption studied in a variety of planning

cases, providing examples of manifest planning conflicts. The results indicate the value of flexible approaches, criteria-driven evaluations and the application of both decision-making and communicative rationality, and can be interpreted to confirm the usefulness of *conceptual clarification*. The role of conceptual clarification as a condition for effective conflict management also raises the issue of how planners should be trained in negotiation and argumentation. This issue has been addressed in a later study testing methods of teaching skills in this area by the use of software and other educational tools (Törnqvist, 2011). As others in this volume have commented (see Harris, Chapter 1.3; Campbell, Chapter 1.5), there are many ways in which teaching can be infused by, and contribute to, research inquiry.

Notes

1 See the introductory chapter of the book and selected chapters in part 3.
2 Lattice analysis is described in technical detail by Corander (1996). For cluster analysis and multidimensional scaling, the reader is referred to Arabie *et al.* (1996) and Green *et al.* (1989), respectively.

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5.8

COST-BENEFIT ANALYSIS IN PARTICIPATORY PLANNING

A critical perspective

Tore Sager

Introduction

Two very different approaches can be used in planning and decision making. One might employ an algorithm allowing calculation of 'the best solution', or one might discuss the matter and try to reach an agreement. Planning can be algorithmic or communicative, and the chapter heading indicates that even hybrids are possible. The use of formal evaluation methods in the preparation of significant and large-scale investment projects is mandatory in many countries. However, even well-established evaluation methods, such as cost-benefit analysis (CBA), need to be adapted to the type of process in which they are to be applied, and guidelines for such adaptation are usually lacking.

This chapter presents a critical view of CBA in participatory planning and addresses some of the questions that participants in planning processes may raise in relation to the application of CBA. Every theory and method in the social sciences can be criticized from some relevant perspective, and CBA is no exception (Beukers *et al.*, 2012; Næss, 2006; Sen, 2000; Wegner and Pascual, 2011). It should be stated at the outset that knowledge of valid criticism does not imply that one should abstain from using the method. The criticisms of CBA within this chapter are based on a sympathetic interpretation of the method, rather than an imaginary and caricatured portrayal of CBA. The purpose of this chapter is to show that standard CBA employs techniques and procedures that may demotivate lay participants. The chapter also suggests how the drawbacks of CBA techniques can be ameliorated by methodological simplifications and by examining recent developments in theory and practice, such as deliberative monetary valuation.

Planning processes can differ widely in character, ranging from top-down strategies organized by the state at the national level to local, bottom-up empowerment efforts initiated by grass-root movements. The problems of selecting the best methods and adapting well-known analytic techniques to participatory processes have been pondered for decades, as have the best means of using cost-benefit analysis (Sager, 1979, 1982). Since the 1970s, much progress has been made on problems that are highly relevant to the theme of the present chapter. For example, progress has been made on: how small-group problem solving and dialogical planning

processes can form and yield preferences; distinguishing types of preferences, and the potential and limitations of stated preference techniques for eliciting preferences that are appropriate for collective decision making; and deliberative monetary valuation of environmental consequences.

CBA is understood in this chapter as an economic evaluation method which is used in the preparation phase of planning and related projects to calculate in monetary terms the net benefit to society from an infrastructure investment, a plan or a policy (Mishan and Quah, 2007). The focus here is on the philosophies and techniques for establishing the entries on the list of costs and benefits expressed in monetary metrics. The part of the evaluation dealing with consequences that are not transformed to pecuniary figures is not discussed. Participatory planning is conceived as preparation for democratic decisions by means of processes in which the citizenry are involved and can debate a planning proposal with each other and with other stakeholders, including developers, public planners, and other bureaucrats. Relevant objections to the use of CBA in participatory planning include theoretical, practical, and political inadequacies of the method. There are, however, limits to meaningful critique:

1 Critique should be in line with the purpose of the analysis. For example, the ambition should not be for analytic method to provide final answers in a democracy, as that would make elected politicians superfluous (Saitua, 2007, p. 29). CBA should not be blamed for providing an incomplete basis for making decisions. CBA findings can have a legitimate role as an input into, but not as a substitute for, political deliberation.
2 Critique should not be utopian. CBA is a tool for practical planning and decision making in the real world, so suggestions based on assumptions of a perfect society or reaching for unachievable ideals are of little use. For example, one objection to the use of CBA in participatory planning processes might be that one should instead ask people how well they like the project or plan (Osborne and Turner, 2010). However, to yield answers comparable with CBA, this assumes people have much more information than they actually possess. The answers would not tell us if the project contributes to the economic efficiency of society.
3 Critique should be directed towards state-of-the-art practices, not towards misconception or careless use of the method. For example, double-counting of benefits occurs frequently in CBA evaluations. This happens when the same attractive consequence is hidden in several entries on the list of benefits. The entries 'better accessibility' and 'improved transport standard' in road project assessments can both be valued partly because of the travellers' time savings, which would then be counted twice in a carelessly conducted analysis. Double-counting is not an inherent weakness of CBA.
4 Critique put forward in this chapter does not deal with the way single variables are gauged or the way parameters are estimated. For example, the economic value of reducing CO_2 emissions by one tonne and the correct size of the social discount rate in long-term environmental projects are both controversial. Current practice will nevertheless not be discussed here.

The next section explains selected concepts from moral philosophy that help when considering what is reasonable to demand from evaluation methods in processes with citizen involvement, and when responding to participants' critical questions about CBA.

Philosophical background for critique of CBA

Planning processes with broad participation are likely to include people with very different motives, values, and principles. Some will see opportunities to reap advantages, where others will see breach of principles or self-serving violation of values. Such conflicting positions often have philosophical counterparts. The philosophies of deontology and consequentialism are only sketchily outlined here, as the modest aim is to give just enough background to understand why they help to explain different attitudes to CBA.

Deontological ethics determines the value of an action (project, plan, policy) based on its moral value and not primarily on its anticipated consequences or welfare effects. A road project that interferes with a vulnerable ecosystem can be rejected regardless of economic costs and benefits based on a duty to protect the natural environment. A gentrification plan regarded by some as entailing an encroachment on the rights of working-class inhabitants of the regeneration district can be voted down by people feeling a duty to defend rights regardless of economic considerations. For some people, deontological ethics requires that certain rights should be respected not only for humans but also for animals, plants, and ecosystems (Francione and Garner, 2010; Norton, 1982). Duties and rights are often treated as absolutes, while CBA assumes that anything can in principle be traded off, as each positive and negative consequence is given a price that is not infinite. This can alienate deontologists in the planning process and lead to protest responses in the valuation process.

Consequentialism is an ethical position holding that the consequences of an action should be the ultimate basis for judgment about the rightness of that action. It is morally right to implement a project, plan, or policy if it is expected to produce an overall good net outcome – a tenet that is endorsed in CBA. Consequentialism is usually contrasted with deontology, although the distinction may be less clear than it appears at first glance. Sen (2000) contends that anticipated violations of rights can be regarded as consequences, and thus be incorporated in a consequentialist CBA.

The consequentialist position allows for a wide range of assessment rules. Only rules differing along the equity dimension are mentioned here. Several evaluation approaches that emphasize equity and fairness more than economic efficiency put heavier weight on those who are worst off or stand to lose because of the proposed action (prioritarianism). For example, Rawls' (1971) difference principle takes the form of making the worst-off members of the society as well off as possible. This implies a radical breach with the 'everybody-counts-equal' principle and takes us a long way from classical utilitarianism. Classical utilitarianism subjects a proposed action to the test: 'will it produce a greater balance of benefits over harms than any competing course of action?' It is right to perform that action which will be productive of the greatest happiness of the greatest number, which will have the greatest utility (MacIntyre, 1977). In calculating the greatest utility, the standard utilitarian practice is to let everybody count for one and nobody for more than one, which is in line with the CBA procedure of adding up individual benefits without weighing them differently. CBA may be regarded as an operational definition of what is implied by basing a public policy on a utilitarian calculus. There will most often be some losers, but the plan is nevertheless recommended if there is the theoretical possibility of fully compensating the losers by costless redistribution of money – the Kaldor-Hicks criterion. In the following, I shall assume that standard practice of CBA is in line with classical utilitarianism. Utilitarianism requires that consequentialism be combined with another pair of ideas. These are

utility as a measure of value, and sum ranking, meaning that the ranking variable is the sum of the individuals' net utilities. The next section is less philosophical; it considers some democratic qualities that can be requested from evaluation methods.

Demands on evaluation method for use in participatory planning

This section deals with the following characteristics of evaluation methods, which seem to be attractive in participatory processes. I comment on the points ahead in the same sequence as they are listed:

- a methodological basis reflecting democratic values;
- transparency;
- procedures to display consequences for each affected group;
- ability to deal with preference change;
- openness to values and preferences articulated by participants in the planning process.

A basic premise of CBA is that of consumer sovereignty, meaning that the analysis respects individual preferences. Government decisions should reflect what the citizens want their government to do. 'The will of the people' is a problematic concept, but other things being equal, the mere fact that a citizen prefers an option counts in its favour (Richardson, 2000, p. 991). In addition, total benefit is the unweighted sum of individual benefits (weight 1 for each individual). This gives CBA the appearance of being a fair and democratic analytic tool for preparing collective decisions, even if willingness to pay depends on how the respondent is blessed by the existing income distribution. However, if we do not believe that an extra dollar (marginal income) is of the same importance to everyone, equal benefit-weights imply that:

> CBA gives a systematically *higher* emphasis to the interests of those who care *little* for the extra dollar . . . If the marginal utility of income is indeed decreasing in income, cost-benefit analysis systematically favors the interests of the rich at the expense of the poor.
>
> *(Nyborg, 2012, p. 47, italics in original)*

When CBA is used as informational input to a democratic decision-making process, it can be a problem that the method is not politically neutral. Moreover, its democratic character is diluted by the relatively low score of CBA on some of the other earlier points.

An evaluation method can advance transparency by lifting choice criteria and value trade-offs from inside the head of the planner to a text available to the public. Here, however, transparency concerns the ease with which participants in the planning process can unlock the 'black box' of expert analysis and figure out what the algorithms of CBA are really doing, and how the results of the analysis are correctly interpreted. The evaluation method should use procedures and criteria for valuation that are easily understood and accepted both by laypeople and political decision-making bodies (Nyborg, 2000). The purpose of several computation routines that make CBA hard to penetrate for laypeople is to transform quantified environmental consequences from physical units to monetary metrics (Vatn and Bromley, 1994). Other algorithms that may be conceived as complicated make adjustment from private to social costs, discount future costs and benefits, monetarize time savings and accidents, forecast future demand, and derive individual preferences from stated preference approaches, such as contingent valuation (which is a survey-based technique for estimating the willingness to pay for non-market

resources). Participating laypeople who are unable to play any meaningful role in this work may suffer reduced motivation to participate further, affecting their attitude even when eventually there is some real decision-oriented content to discuss.

The evaluation method should be general enough to consider consequences separately for initiators of the project, groups of project users, nearby residents, and workers and others in the vicinity. It is of special importance in controversial planning projects that evaluation deals properly with those who bear the disadvantages of implemented projects. It would be preferable, when addressing a politically diverse public, if CBA were flexible and able to highlight the aspects of economic valuation of particular interest to the different stakeholders and affected groups. This need must be balanced against the disadvantage of complicating CBA by including ever more hard-to-value social and environmental variables, which makes the interpretation of CBA results problematic (Sager, 2013a). It speaks in favour of CBA that, in situations with many conflicting interests, and thus with fragmented presentation of the consequences of the plan, decision makers are most likely to request an aggregate assessment: is the plan desirable for society as a whole?

Preferences are not exogenous to the planning and decision-making process of the project being analysed, and are not likely to be stable for the time frame in question. For instance, big highway projects often have a planning period of ten years or more. People do presumably have the capacity to reformulate ends and aims in light of what emerges about the costs and benefits of proceeding with a plan, and their preferences for the various planning alternatives will change accordingly. Such reconsideration is essential to using resources wisely and effectively, but CBA takes individual preferences as given and stable and lacks procedures for incorporating revisions (Richardson, 2000). The analysis in effect supposes that all significant practical reasoning has already taken place, or else there would still be room for revision of preferences.

Use of information from the participatory planning process itself should be an invariable rule. It is surely the case that dialogue and deliberation in planning can be distorted by manipulation, lies, threats, and other power games, and – consequently – preferences can also be distorted and deviate from the real interests of the person who holds them (Adler and Posner, 2000). But the solution is not to ignore preferences articulated in planning forums and place all confidence in preferences revealed by market transactions. Firstly, this is usually infeasible, as some environmental items on the list of costs and benefits are not traded in the market. Secondly, preferences revealed by transactions can also be distorted. There is a huge industry of public relations and marketing aimed at affecting purchasing behaviour and thus preferences.

Self-reflection, response from others, and the need to make one's own arguments sound reasonable to others can all make deliberators change their preferences. This is an important political reason for letting extensive deliberation processes precede final decisions, whether they are made by popular vote, legislative assembly, or government agency. Even if deliberation and dialogue do not lead all the way to consensus, the legitimacy of the final decision can be greatly improved, and thus also the willingness of the citizenry to comply with it. The recent trend among scholars is to recommend that these political rewards be sought through deliberative monetary valuation (Niemeyer and Spash, 2001; Söderholm, 2001; Spash, 2007; Vatn, 2009). This approach is an interplay of analytic technique and social deliberation based upon values, interests, and policy options.

Several deliberation techniques have been proposed, such as focus groups, citizens' juries, consensus conferences, and deliberative polls (Niemeyer, 2011). They share the principle that laypeople develop preferences about complex policy issues through informed discussion. Planners should not push hard for consensus in the valuation exercise. Conflicting views on

environmental values can give useful information to decision makers, and consensus can be repressive, particularly in communities with cultural diversity and historically excluded minorities. According to Chilvers (2008), Lo (2011), Price (2000), and Spash (2008b), deliberative monetary valuation in small groups seems to work best when:

- the important interest groups have their representatives in the deliberative valuation;
- countermeasures are taken against manipulation and domination in the small-group process;
- silent parties are encouraged to have their say;
- participants have a common set of rights and capabilities;
- communication between group members is comprehensible, factually true, sincere, and appropriate within the normative context of public planning (Sager, 2013b, pp. 4–8).

Small-group deliberation faces problems of inclusiveness, representation, competence, and manipulation, so deliberative monetary valuation is no panacea. The deliberative approach can nevertheless answer some of the criticism against contingent valuation. Most notably, the deliberative outcome is not limited by narrow definitions of rationality which result in exclusion of interlocutors' judgments. This is different from contingent valuation, in which some stated preferences can be excluded on the suspicion that respondents have been acting strategically, protesting, or just violating the accepted constraints of economic valuation. Questions of equal treatment and communication about preferences are followed up in the next section, which takes a closer, critical look at CBA from the perspective of lay participants in planning.

Questions that may be posed by participating groups

This section explores the capacity of CBA to deal with the form of direct democracy institutionalized in many countries as citizen participation in planning. Lay participants will presumably expect at least some of their viewpoints to be incorporated in the formal evaluation in a way that they can recognize. The section answers five hypothetical but pertinent questions that might well be raised by sceptical citizens involved in a planning process that uses CBA to provide background information for public debate.

Why don't you just ask us?

Like other evaluation methods, CBA disaggregates the future impact of the project into a number of consequences and then adds up again all these costs and benefits. Some aspect or by-product of the project may be lost in the way the totality is split into separate items and then put together again. We do not know that a monetary assessment of the project as a whole would be equal to the sum of the entries in the CBA account, and the concern goes beyond double-counting. Planners may, for example, *impute* that the local users of a new road will obtain a positive net utility from the project because of time savings, fewer accidents, reduced driving costs, etc. In principle, these users might nevertheless be opposed to the new road. The reasons may be their conviction that:

- some politician promised in the last election campaign that the road would be postponed to protect nature;
- the money would be better invested in some other public project;

- they have been let down in the planning and decision-making process;
- the project is in conflict with the rights of some group;
- the project is of poor aesthetic appearance or does not fit with the character of the locality;
- the project should be further examined before a decision is made;
- the funding of the project should have been organized differently;
- some unpopular landowner or investor stands to gain from the project.

The list could be expanded, but makes the point: there will very likely be considerations extraneous to the CBA which contribute to citizens' overall assessment of projects. CBA is not meant to give a complete picture of the viewpoints that form people's opinions. Instead, CBA answers questions about efficient use of society's resources, which are not clarified by asking for citizens' opinions. This is not a weakness of CBA itself.

We have other goals than economic efficiency. Will CBA take them into consideration?

Academics can handle a problem in different ways. They may be able to change reality and solve the problem, or they may try to change people's conception and interpretation of reality so that the problem no longer seems to be important. Academics sometimes model the problem away, making it hard for people to see as long as they comply with the way the academic frames reality. CBA provides an example: many people see unfair distribution of economic welfare as a real and important problem. But the more attention given to CBA as the normative basis of decision making, the less likely we are to deal with the equity problem, as standard CBA models it away by complying with the Kaldor-Hicks criterion and therefore does not require factual compensation of losers. CBA is principally a summation of willingness to pay for good things, minus summed willingness to accept compensation for bad things. Analysis founded on preferences deduced from revealed willingness to pay raises serious worries about equity goals, given the unequal endowments among members of society. Willingness to pay is affected by ability to pay, and as we live in a market society, what we can do is constrained by what we can afford.

Transfers between inhabitants of the country cancel each other out in the national summation of costs and benefits. CBA is therefore not well suited for evaluating policies which aim at redistributing economic activity between regions, such as relocating state agencies from the capital to peripheral cities. For the same reason, CBA may not be the best method for evaluating measures improving universal design, which aims to produce buildings, products, and environments that are inherently accessible to people with disabilities. The main objective in many universal design projects is fairer treatment of people with reduced ability to master the transport system. The wish to increase their access to a range of destinations is founded more on justice than on the anticipation of economic benefits.

Equity is not the only goal to be inadequately treated by CBA. The results of CBA can be meaningful to decision makers and citizens involved in planning only if it makes sense to them to put a monetary value on each consequence included in the analysis. Issues of rights and social values associated with respect, dignity, and identity are not suited for inclusion (Lutz, 1995). Several environmental goals are closely connected to ethical values and are better catered for in deontological than in consequentialist analysis. Projects that aim primarily to affect goal variables of sustainability, ecosystem management, biodiversity loss, and global climate change, for example, might not be adequately assessed by CBA.

When we state our preferences, will they be built into CBA at the expense of market information?

CBA calculates profitability on the basis of individual preferences. This is an attractive feature in participatory planning, as it is regarded as democratic that people's input about what they like and dislike is applied in the evaluation. Nevertheless, there have been objections of at least two types. The first relates to the characteristics of individual preferences; their knowledge base, independence, stability, and consistency (Kahneman and Tversky, 2000). I concentrate on the second type of objection to the use of individual preferences for making collective decisions, questioning the way preferences are elicited. Different elicitation procedures can produce dissimilar orderings of options, so individual preferences sometimes seem to provide a weak basis for imputing prices expressing how consequences included in CBA affect our wellbeing.

Where market prices are available, standard CBA procedure is to use them for establishing pecuniary measures of costs and benefits. When market imperfections are caused by externalities, for example, market prices should be corrected. Even with corrections, prices deduced from preferences revealed through choices similar to market transactions may well differ from prices deduced from 'stated preferences'. Stated preferences are elicited from individuals who fill in elaborate interview forms. The respondents state their choice between a number of hypothetical options which are designed to enable the planners to estimate the monetary value that the respondent puts on some cost or benefit component in the CBA.

There may well be a difference between the private preferences people reveal when buying goods and services in the market and the 'laundered' preferences stated in interviews (Goodin, 1985). The first reflects their selfish desires as consumers. However, when co-deciding on a public good that will serve numerous people, they might aim to act morally superior to the standard they manage to keep in day-to-day private affairs. They might want to act in a public spirit as good citizens, with an 'other-regarding' attitude. Preferences for collective decision making can thus differ from those that can be inferred from willingness to pay in market transactions.

Individual preferences are seldom exogenously given. They are rather formed in the planning process designed for exchange of information, debate, and consensus building. The private preferences of participants in open and inclusive planning are influenced by the social and interactive character of the process (Niemeyer and Spash, 2001). Participants must be prepared to defend their viewpoints and arguments against critique from groups with opposing interests. It is usually assumed in communicative planning and theories of deliberative democracy that the initial, private preferences will be characterized more by ignorance, malevolence, envy, and revengefulness than the resulting laundered preferences.

CBA can be used for assessing street lighting, roads, parks, sanitation systems, and water purification facilities, among many other kinds of public goods. We buy toothpaste without any need to know what others are willing to pay for the tube. However, when asked for the amount of money we will contribute to a public good, the answer depends on what others are expected to pay. Contributing to a public good is more of a moral decision, and even if they do not want to pay too much, most people do not want to be blamed for freeriding. Uncertainty about others' contributions affects the estimated utility of environmental conservation projects, as well as man-made public goods. For example, the relative value of noise abatement compared to other aspects of a road project depends on the organization of the planning process with more or less dialogue between parties, and thus varying formation of mutual understanding and empathy. Psychological and economic literature on public goods experiments shows that communication between potential contributors tends to increase their willingness to pay (Meier, 2006). CBA

can take into account preferences other than those revealed in markets, but even stated preferences can insufficiently reflect the preference 'laundering' taking place in participatory planning processes.

Does CBA respect that we know what's best for us?

Lay participants know that decision-making politicians are not bound to comply with their wishes. Government can set default rules and take certain other limited actions against individual preferences when government believes that such measures are in most individuals' real interest – for example, concerning prevention of climate change or prohibition of building on ground prone to landslide or avalanche (Mandel and Gathii, 2006, pp. 1054–1055). Participants may still worry whether expert tools such as CBA do justice to their opinions and preference input. We shall see that several lines of reasoning open for conducting CBA in ways that can lead to paternalism.

Paternalism is defined as the interference of an individual or a collective actor with another person, against the will of the latter, and justified by claiming that the person interfered with will be better off or protected from harm. Paternalistic attitudes on the part of experts and decision makers may demotivate lay participants in planning processes. What is more, the instant public decision makers insist that people do not know what's best for them, and get away with it, society might start sliding away from democracy. It is difficult to evaluate paternalistic policies, such as prohibiting the use of Segways, or making the use of cycle helmets compulsory. Surely, some pros and cons can be understood in terms of CBA, but a presumably significant cost element of such policies should reflect the annoyance created by restricting people's autonomy, and a credible way to value the loss of autonomy has not been developed.

Mainstream economic theory treats society as the sum of individuals, and individual preferences are added up (or in other ways aggregated) to the welfare of society. Næss (2006) advances a heterodox viewpoint when professing, on a critical realist platform, that the value of something for society is not reducible to the aggregate utility of individuals. If preferences of society – over and above the preferences of individuals – are allowed into CBA, the possibility arises that individual preferences will be overruled, which in turn risks paternalism. It seems difficult to defend a planning process in which citizens are first invited to actively take part, and then not trusted to have the best knowledge of their own preferences. Furthermore, if decision makers were to determine society's preferences in the CBA, it would be difficult to separate the advisory evaluation from the actual decision. Such a mix-up – designing CBA to simulate the final answer – is an often-voiced critique of elaborate evaluation tools.

Some scholars hold that the satisfaction of people's preferences is not an adequate index of well-being because there are conceivable circumstances in which these preferences might be satisfied, even though the individuals' true interests are far from being served. Adler and Posner (2000) examine the reasons for such distorted preferences – for example, lack of information and unjust social conditions. The preferences of some participants in the planning process may have been misshapen by poverty, lack of basic education, or damaged self-respect. Adler and Posner argue that CBA can and should be modified in a way that corrects for the failings caused by inserting distorted preferences into the analysis. Disrespect for some preferences invites paternalism, however. Besides, distorted preferences would not disappear even if people were to express volitions and inclinations in dialogical and deliberative processes rather than through market behaviour or stated preference studies. Misuse of power can distort the outcome of communicative processes as well as bias the result of analytic work. It is not obvious that more confidence

should be placed in preferences drawn from a 'willingness to say' than in preferences inferred from a willingness to pay.

Standard CBA takes preferences as exogenously given and not therefore distorted in the planning process. Preferences revealed in market transactions are usually taken at face value. There is more room for paternalism when using stated preference studies and adjusting them for responses that indicate objections to the entire interview format, and for preferences revealing absolute values, 'unrealistically' implying that one consequence (e.g., alleviation of noise) trumps all other consequences in all circumstances. Such adjustments of stated preferences are briefly discussed ahead.

We have strongly felt values that we do not want to compromise. How does CBA deal with that?

According to mainstream economic thinking, everything can be compared and traded if the price is right. All items in the CBA account are regarded as commensurable and measured in money metrics and can therefore be summed (Aldred, 2006). Lexicographic preferences follow from absolute values or duties and are associated with deontological ethics. With such preferences, one particular consequence among those included in CBA is seen as overwhelmingly important. Even substantial improvements in any other consequences are considered insignificant compared to the slightest deterioration of this primary consequence (or goal variable). The value of improving the consequence (or goal) that is lexicographically preferred thus seems to be infinite. In stated preference interviews it often happens that the option of protecting the environment is chosen by a significant share of the respondents, no matter which attractive attributes the alternative options are supplied with. Hypothetically, the environment would be protected at any cost (Spash, 2000).

Stated preference studies work best when interviewees adjust to a utilitarian mode of thinking when filling in the forms. The reaction of deontologists to methods like contingent valuation concerning environment or justice can engender protest responses, resulting in missing answers, zero or infinite registered willingness to pay, or very strange observations as judged from rational choice theory (Price, 2000, p. 188). The planner may treat such preference data as unreasonable outliers, branding the respondents as irrational. Some prices in the CBA may easily become biased if the planners exclude or misinterpret the answers from those who express a willingness to uncompromisingly protect the environment.

Much work has been done on the design of stated preference studies to avoid protest responses of various kinds (Clark *et al.*, 2000; Spash, 2006, 2008a; Szabó, 2011), but the underlying difficulty is that asking people to trade their principles, even hypothetically, is seen as inappropriate and even morally disreputable to some. They are reluctant to choose between something of instrumental value and a truly moral position (Söderholm, 2001, p. 489). Ultimately, CBA risks developing into an institutional mechanism that systematically pushes the preferences of a significant group to the background – that is, the part of the citizenry believing in inviolable rights (Spash, 2008a). Lexicographic preferences do not necessarily receive proper treatment even in alternative decision tools, though. In referenda, for example, a majority of people with weak preferences always defeats a minority with strong preferences.

Conclusion

In democracies, the final decision concerning important public plans and projects is made by elected politicians. The political decision can, however, be influenced by the preceding process

of policy analysis and planning. This chapter focuses on democratization of this process by demanding that analytical tools be designed to reflect the values of involved citizens and address their problems. Rather than having the many engage in the actual policy decision, this democratization asks that planners devise and actively practise ways to recruit and include citizens' views into the policy development and assessment process. More engagement with the evaluation techniques facilitates the partial return of planning and policy formulation to local laypeople who will be affected by the project (deLeon, 1992). The finally enacted policy may not agree with their particular preference, but for citizens to accede to a political judgment that they have helped formulate is presumably less alienating than having to accede to a majority that have outvoted them without preceding deliberation.

The Kaldor-Hicks compensation test underlies the recommendations of standard CBA. In the words of Lutz (1995, p. 190) it is "contaminated with the inequities of the existing income distribution, as well as being blind to notions of human rights and human needs". In order to centre policy evaluation on human dignity, he defends a three-step procedure: it starts by testing the project in terms of its consistency with relevant rights, and then appraises the project in terms of its impact on basic human needs. Only if the results of these steps are favourable is the project moved on to the third stage of assessing costs and benefits on the basis of market prices, stated preferences, and deliberation. This procedure is in line with the critique of CBA put forward in this chapter.

Richardson (2000, p. 1000) suggests that advocates of CBA as a normative standard face a dilemma: if democratic legislatures and elected representative councils at lower administrative levels are legitimate assemblies for setting collective ends, "then these ends, as worked out in collective deliberation – and not individuals' preferences as revealed in the market or in contingent evaluation studies – should provide the crucial basis of evaluating alternatives". As the party politics of local councils does not necessarily fully absorb the popular feeling and the interests of those strongly affected by a plan or project, this chapter argues for a compromise: the values people hold regarding matters of collective choice can be constructed and articulated through reasoned dialogue and debate with other members of society in participatory and deliberative planning processes (Howarth and Wilson, 2006). Deliberative monetary valuation is a promising set of hybrid techniques combining economic and political science knowledge to clarify participants' preferences and insert them into analytic evaluation.

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5.9

THE STRATEGIC USE OF THE CHARRETTE PROCESS FOR APPLIED RESEARCH

Zeenat Kotval-K and John R. Mullin

Introduction

This chapter focuses on the use of the charrette as a particular method of undertaking applied research in an educational or practice context in the field of planning. It documents the emergence of the charrette as an alternative method for engaging stakeholders and communities in the planning process that addresses some of the limitations of more formal opportunities for citizen consultation and engagement. The wider origins and purpose of the charrette process are documented before exploring a series of working principles for the application of the charrette process. These principles are designed to help planning practitioners and planning students engage effectively with the design and management of charrettes as an applied research method, highlighting their value as both pedagogic tools and practical instruments for engaging with planning issues in practice. The concluding section of the chapter reflects on the value of the charrette but also explores some of its limitations as an applied research method.

Communicative planning through consensus building

Beginning with the great protests that spread across Europe and North America in the 1960s, continuing through the environmental and social justice movements of the seventies and eighties, and into the increasing attention on classism by the turn of the century, city and town planners have struggled to ensure that a fair, open, transparent process of decision making is inherent in their plan-making programmes. It is no easy task, for planners must meet the needs of multiple publics that reflect disparate values, interests and needs.

Consensus building in communicative planning has been recognized since the later part of the twentieth century as the avenue for the reformulation of comprehensive planning and the addressing of complex, controversial issues (Innes, 1996). Lindblom (1959) and Altshuler (1965) questioned whether comprehensive planning was the only way for planners to accomplish their responsibilities and, more importantly, challenged planners' abilities in acquiring all the knowledge required for comprehensive planning. The thought was that it was impossible for planners to know everything that was needed to plan comprehensively, and other methods for planning were needed. Consensus building emerged as an avenue that enabled planners to take up that challenge. Drawn largely from Habermas' (1984) work on 'communicative rationality',

consensus building involves the interaction of multiple parties in a manner such that everyone learns from each other. The basic assumption is that all parties are able and willing to communicate with each other through meaningful dialogues, rooted in information generation through diverse experiences, morals and cultural expressions, and collaborate to achieve mutually agreeable outcomes (Forester, 1989; Beauregard, 1998; Healey, 1993; Healey and Hillier, 1996). This debate is more effective when instruments of authority do not overpower these discussions, or efforts are made to constrain the exercise of instruments of authority (Hillier, 1993, p. 108). Sandercock (2000) asserts that the successful outcome of a debate is not a compromise but an understanding of each other's perspectives. In the process, advocacy for marginalized groups and minority interests is better achieved. Creating an open and inclusive process is critical to ensure that the voices that Sandercock (1994) and Arnstein (1969) refer to as the 'have-nots' are heard. This group typically includes the non-voting poor, women, immigrants and migrants. Often unheard, unseen and undervalued by the larger community, their perspectives are scarcely heard within traditional planning practices.

Given this climate, many planners have endeavoured to ensure that decision making is as open as possible and that all parties have the ability to participate in an informal and meaningful manner. Through interviews, surveys, polling, use of translators and reaching out to immigrant organizations and related sections of society, they have sought to ensure that all citizens with a stake in the community have the right to knowingly influence decisions. "Will this project harm my property values?", "Will this decision mean the closing of the local school?" or "Will this project emit noise on my street?" are the types of questions commonly posed. The citizens need to hear the formal arguments, observe the physical attributes of the proposals before them and note the responses of their neighbours and advocacy groups to the issues. They also need to be able to directly respond themselves. Such meetings in one form or another have long been a tradition in local planning. Most often called 'public hearings' in the United States, they are embedded in law, deeply rooted in culture and are considered a critical part of the planning process. And yet, too often, the public hearing process reflects an approach in which parties overwhelmingly are required by law and tradition to take a stand on the argument in front of them. It is very much an adversarial approach. In fact, it is not uncommon that the moderator of a public hearing will begin the meeting by asking those who wish to speak or are in favour of the proposal to position themselves on one side of the room while those opposed should move to the other. These public hearings often take on all of the characteristics of local theatre. As examples, advocates for one side or the other will loudly applaud or hiss depending upon the speaker's position, they will bring signs and placards which are waved at well-timed moments and they will practice intimidation by entering into the hall *en masse* with newly created tee-shirts advertising their horror at the likelihood of an action occurring. At a recent set of public hearings across the state on wind energy in Massachusetts, the opponent even went so far as to create a roving squad of citizens who were requested to stir up local anger. In another instance, not long ago, a local community in Massachusetts was holding a public hearing on the future use of a new park. The fundamental question was whether the park should be primarily for passive or active use. At a critical moment in the deliberations, the advocates brought the entire community 'little league', consisting of sixty very young, uniformed baseball players, to advocate for their cause. They mentioned the need for new facilities. The presence of the kids as props for the active use of the park carried the day.

In short, while the process enables the participant to engage and possibly influence an outcome, citizens cannot actively shape the outcome. Planners have long noted this problem and

have endeavoured to include citizens in building the plan, proposal or project before it becomes fixed and ready for formal adjudications. They have engaged in various research activities and organized neighbourhood meetings, met in kitchens, organized field visits, conducted surveys, held workshops, held public hearings, provided information flyers and written press releases to help explain the nature of the issues at hand, and yet none of these have enabled the community as a whole to come together to help build the plan or project that both meets community needs and protects their self-interests. Over time, however, the charrette has emerged as a critical tool to help overcome the limitations of traditional forms of citizen engagement in planning.

The role of charrettes in the planning process

The term 'charrette' has its origins in a French term that refers to a 'cart'. Architecture and design students at the Ecole des Beaux-Arts in Paris in the nineteenth century would submit their projects by putting them in a cart that would be circulating to collect their final drawings. Students would jump on to the cart in an attempt to make the last touches to their work and finish their work by the submission deadline (Lennertz, 2003). This describes an intense burst of activity and a last-minute fix, yet the use of the term charrette in the planning process refers to a process of collaboration, intense dialogue and deliberation between participants to promote understanding and facilitate planning activity.

Charrettes have been used by architects since the nineteenth century, but it is only during the last quarter of the twentieth century that planners adapted the techniques to plan making in any substantial manner. For planners, charrettes are typically citizen-based efforts designed to determine the strengths, weaknesses, opportunities and threats to the community from a community-level perspective. Charrettes are also designed to provide insights into potential goals, objectives and priorities. As opposed to traditional public participation efforts, alternative methods such as charrettes help all participants learn from the process (Innes and Booher, 2005). They have been shown to convert the negatives of public participation into positives, apprehension into understanding and alienation into buy-in and ownership (Al-Kodmany, 2001; Sutton and Kemp, 2006).

A fundamental question related to charrettes is where and when they should be used as part of community planning. In our experience, we have applied charrettes as part of the process for a wide range of purposes. At times, they have focused on issues as small as how best to revitalize a mill yard or to attract new businesses to a downtown. In others, we have used them for obtaining input on regulatory reform or the creation of a capital improvement programme. In most instances, however, we have found them to be most fruitful in developing 3–5-year strategic plans. These plans tend to remove the pressure and stress of immediate issues and allow citizens to reflect on how they want their communities to evolve in the future.

The charrette process

Planning charrettes involves various elements that contribute to their success. Pre-meeting planning involves sufficient background data collection on the issues at hand, determining the dates, times and location of the meeting and deciding on the participant list, agenda and exercises for the meeting. The post-meeting work involves quick formulation of plans according to the results of the meeting and a follow-up on implementation. The main component, however, is the actual meeting itself. This involves facilitating the meeting, engaging in dialogue, creating an environment for others to feel comfortable to participate in, carrying out unstructured exercises

that arise from proposed thoughts and solutions during deliberation, and obtaining the most out of an intense brainstorming session.

Charrettes must be held at convenient times and locations so that a desirable turnout is achieved. Usually held in the community itself, in community centres, schools or the like, these meetings facilitate participation by community members and stakeholders alike. One, however, has to be careful in the selection of place and space. Several communities where we have worked selected sites that are non-municipal, such as private country clubs and religious halls. These places can have stigmas to them: Would those who cannot afford club membership feel comfortable in such a place? And would people of one faith feel comfortable in another's structure? In any case, being in close proximity to the issue at hand also provides for a better environment for deliberation. Sufficient time must be given to all participants to plan to attend the charrette. A letter inviting the participants to the meeting, telling them what to expect during the meeting, what they will be expected to do, the issue at hand and some preliminary information so that they can get themselves familiarized with the main topic is critical. As for timing, many planning charrettes are held in the evenings or on weekends so that participants can take out time from their busy work schedules and come together for a common purpose.

The agreed-upon time frame for charrettes ranges from 1.5 days (Gibson and Whittington, 2010) to four days for general issues and up to a week for more complicated issues (Lennertz, 2003; Condon, 2008). The time frame often depends on the nature of the planning project, the stage at which the charrette is conducted and the knowledge and familiarity of the participants. For example, a charrette for purposes of identifying basic planning issues in a community could last a few hours, while one that requires working sessions that allow for dialogue, design, agreement and feedback could last multiple days spread over an extensive time period. By working within a time constraint, participants are forced to abandon usual time-consuming negotiations and useless banter and to quickly start thinking 'outside of the box' (Lennertz, 2003). This is beneficial as this short time period keeps ideas and thoughts fresh in people's minds, thus enabling misunderstandings to be resolved quickly and even faster buy-in to the created plans.

Another instrumental element in this process is the facilitator, or the one who provides guidance during the entire meeting (Lennertz and Lutzenhiser, 2006). Outside consultants or facilitators are frequently brought in to the process to objectively extract information and opinions and encourage dialogue that is not biased towards any particular stakeholder's perspective. If the charrette is not conducted by an outside consultant trained in facilitation and negotiation, it often becomes the planner's job to act in that capacity. Indeed there is a danger of bias; however, it is incumbent upon the planner to assure the participants that his or her facilitation role is that of a neutral party. To accomplish this, the planner often needs to have this neutral role reaffirmed by political or community leaders. Another technique would be to establish a 'bias check' at the charrettes themselves: here, the planner at key points asks the participants if they feel that the planner's positions are colouring their positions. The importance of planners' roles as negotiators and mediators is critical (Susskind and Ozawa, 1984), yet, surprisingly, planners are rarely trained as negotiators as part of their education. This capability, then, gets honed with practice and experience. In essence, in order to develop a workable and successful charrette, planners require multiple skills that include politics, negotiation, facilitation, mediation, process design and meeting design (Forester, 1999). During deliberation, the facilitator or planner listens and then aims to incorporate the prioritized ideas and suggestions into the design or plan. As Forester (1999, p. 74) puts it, "If the listening does not lead to subsequent action … then such listening becomes merely condescension, wasting or manipulating others' time". Forester is quite right. We have had instances where the participants directly and

pointedly asked the mayor at the end of the charrette how the leader was going to embrace the words of his citizens. A failure to respond meaningfully can be met with anger and cynicism. In another, one citizen informed the community leadership that the findings of the charrette were 'sacred' and must be followed. In short, community leaders who ignore the findings do so at their own political peril.

To facilitate listening and incorporation of everyone's input, smaller breakout sessions and structured and unstructured exercises are conducted. Breakout sessions facilitate discussion among smaller groups of varied backgrounds so that everyone has an equal chance and sufficient time to voice their opinions, concerns and proposed actions. Smaller groups enable the quiet and reserved participants to feel comfortable enough to talk and believe that their group members are interested in what they have to say. Facilitators walk around and make sure all groups are engaging in productive discussions and dialogues and control any heated discussions and arguments that might ensue. Smaller groups also make this job of facilitators easier, as it is easier to calm a few participants down and diverge their aggression into channels of productive discussion.

Feedback is accomplished by a session where the collaborative thoughts and ideas from all involved are compiled and displayed – for example, on boards and large sheets of paper. Participants are then asked to review the ideas, ask any lingering questions they might have and mark their preferences, thereby creating a mutually agreed list of priorities. Design charrettes make extensive use of visualization tools, such as sketches, models, maps, photographs, GIS and other computer simulations. It is not imperative that the participants be technologically savvy, as these tools are used by the facilitator's group so as to make visualization of ideas and concepts easier for the participants. They help the community members visualize their current circumstances and assess other alternatives that might be proposed during the charrette (Sanoff, 2000). Although planning and design charrettes may have different instruments of collective visioning, their purpose and process are the same. In either case, the facilitators need to have the art to lead without leading (Condon, 2008).

Charrettes as a tool for pedagogy and research

From a student perspective, the charrette process can be an extremely valuable topic for both fieldwork studies and formal research. In terms of fieldwork, students have the opportunity to gain an 'up close and personal' look at how the planning process works. The charrette process is no longer focused on the abstract principles that they have discussed in their theory classes, but addresses how real people bring their particular thoughts, ideals and values to local planning. They can identify how roadblocks are placed in the process, how data and information can cause people to change their minds, and how the power of a charrette can contribute to the creation of a meaningful, workable plan. In our experience we have observed in several instances that student participation in charrettes has been transformational in the sense that they could typically see how important the 'notion of compromise' and the 'art of the deal' are to plan making. It is essential, however, that the students realize the importance of their work to the community. After all, their work will be a fundamental part of the plan's development. They are informed that they are not to advocate for their own positions at the charrette itself. This point is critical. Many of our students are at a stage where they believe quite strongly in particular causes. For example, our students are overwhelmingly supportive of social justice, environmental protection, sustainability, smart growth and 'the green movement'. They are also slow in accepting compromise or in recognizing that others are not ready to embrace their positions.

Typically, students are assigned to assist the smaller groups to prepare the group's positions by providing them with information and data that are collected through background research conducted on the topic being discussed. They will also work with the groups to prepare concise 'white papers' – summaries of findings and presentational materials. At the charrette itself, the students will be assigned as reporters, scribes and note-takers at the various tables in the breakout rooms. They typically give this information over to the person reporting the findings, who, in turn, presents it to the audience as a whole. Following the end of the charrette, the students will prepare a final report on the outcomes of the process for the community in question and a summary of their thoughts and observations that are used for 'post-charrette' discussions back in the classroom. In sum, the charrette process is immensely valuable because the students can see theory at work, can gain a sense of how difficult it is to get to consensus in a community, and can better understand the values of citizens committed to their communities and, perhaps more importantly, how important it is for a planner to have a depth of knowledge about the community. In terms of formal research for students and faculty, charrettes can serve as a topic for dissertations, theses and formal articles. Local values, local culture, the place of learning, notions of diversity and battles over scarce resources can all be experienced in a small place, over a short period of time. It provides an immense opportunity as both a teaching and learning tool.

Working principles

From our experience in developing charrettes at the community level over the past twenty years, ten integrative working principles have emerged that are designed to guide those interested in employing charrettes as a tool in the plan-making process.

The participants

1 Charrettes belong to the participants. It is a time when officials must listen. Community members have personal knowledge that is derived from experience, which lends valuable information to the goals of the charrette process. In many cases, where the goal of the charrette is to find issues that need attention and appropriate solutions, "local knowledge is far more relevant and reliable than expert opinion" (Kotval, 2006, p. 84). Since these members have a nuanced knowledge of the issues facing a community, they appreciate solutions from the experts that address this complexity (Sutton and Kemp, 2006). The leadership must be prepared to discover positions that are counter to those of people who typically control the levers of power, such as the mayor or town council. If the leadership is not prepared to accept counter positions that emerge during the process, it should not hold the charrette. The goal is to have everyone talking, deliberating, voicing concerns and coming up with a mutually agreed-upon plan of action. Generally, a consensus is reached concerning the top five priorities, as they typically have a prominent place in the plan. For the lower priorities, it is far more difficult. The strength of a charrette lies in the fact that it invites all participants to a workshop where everyone has equal standing, regardless of their background, knowledge base or beliefs. We usually spend a considerable amount of time on establishing 'rules of the day' at the start of the charrette. They include the following, among others:

- All participants will speak in a positive tone.
- All participants will represent themselves rather than political or advocacy groups.

- All participants must be conscious of the need for all members to participate.
- All participants should speak in sound bites rather than long-winded responses.
- All participants will be placed at tables arbitrarily such that 'block positions' are eliminated.
- All name tags include only a person's first name. There are no last names, titles or affiliations placed on them.

2 Charrettes will succeed if there is participation from all segments of the community, including those traditionally ignored or left out of decision making. The time of day, food, child care, transportation, translation services and location are all critical elements in facilitating attendance. The purpose of charrettes is to provide a space where quiet voices can be heard alongside those eager to voice their opinions in collaborative work. Those who are usually left behind in decision-making processes are also those who have constraints on their time and attention: a lack of interest in the issue at stake, distrust of the experts and authoritative intentions, and social or financial constraints. Sufficient advance notice of the charrette can help this group of participants to adequately prepare for and commit time to the meeting.

3 The positions of organized advocates with specific interests must be controlled. The deliberations are supposed to be collaborative work. General citizens need to represent their own thoughts and opinions and act collectively as a community. People decide to attend meetings and workshops (or not) for different reasons. Those who attend are typically interested in the process and want to share their opinions on the important topics before them. They might do this from a personal perspective or because they want to advocate for the positions of certain groups. In all cases, they want to be able to add their thoughts to the issues and help in the formulation of solutions. Those who come with vested interests, who are 'single-issue' advocates or who simply have an 'axe to grind' are allowed to participate. However, they must follow the intent of the charrette and the rules of the day. Our experience is that very few participants ignore these rules.

Pre-charrette

4 The purpose of the charrette and the geographical boundaries of the area that the charrette will focus on must be clear. Agreement on physical boundaries should be discussed before the charrette begins. Participants attending these workshops need to know specifically what the intent and required outcomes will be. This will enable them to be prepared for those issues by developing their thoughts and opinions prior to the workshop. If participants show up to the workshop unprepared and uninformed, the deliberations will usually be uninformed and vague as well.

5 Although background information is important, no one will read great amounts of material. What's more, this material must be free of technical language. This background information serves two purposes. First, it challenges the perception that citizens will not have anything substantial to contribute to the process because they do not understand it. Second, it helps the participants prepare and formulate their thoughts on the topic with greater clarity.

During the charrette

6 The charrette is usually non-judgmental and intended to be non-confrontational. Whenever there is a gathering of people from varied background and interests, there is bound to be some argument and confrontation. Listening to others' viewpoints and understanding different approaches are hard for many people, if not all of us. The charrette process should aim at understanding these varied perceptions, removing negative ones and focusing on those that are positive. It is not necessary for everyone to agree on everything – the idea is to listen and hopefully understand another person's point of view.

7 From time to time, there are groups that will boycott charrettes. Most commonly, they do this because they wish to make a political statement in opposition to the actions of those organizing the charrettes, because they believe the process is flawed or that their members were not invited directly to participate. It is critical that boycotts should be avoided at all costs. While there are no fixed means of preventing boycotts, we have found two techniques that work. First, if the leading political figure of the community approaches them and personally asks their help, more often than not they will participate. Secondly, if the organizers assure them that their positions will be fairly heard then they frequently quit the boycott.

8 Charrettes need to be forward-looking: commentary on past planning efforts must be controlled. It is easy to delve into the past and discuss how things went wrong. Although learning from past experiences is the natural way of thinking about issues that have cropped up before, the major focus should be to visualize and prioritize what we want the future to look like.

Post-charrette

9 The documentation of findings must be widely shared. Once the process is over, it is useful for everyone to see what they have collectively produced and how their own opinions framed those results. Not only does this inform the participants of the collective power of the community, but also it boosts their own morale and confidence that their voices were heard and given equal attention to that of any other participant. Since charrettes are aimed at gathering information, not all questions will be answered during the process of the charrette, and those that remain must be researched thoroughly and publicly answered. However, it is imperative that the planner(s) respond to those findings as the process of plan making occurs. This should occur in four ways. First, the charrette organizers must send a summary of the charrette and future steps back to all participants so that they have the opportunity to reflect on the findings. Secondly, the findings must be sent to the committee responsible for creating the plan such that they will have knowledge of the participants' views. Thirdly, the planner should send the summary to all municipal officials so that they, too, can reflect and act on the findings. Fourthly, the planner should be prepared, as the plan develops, to show where the findings have been incorporated into the plan or to explain why they have been rejected.

10 Charrettes must be integrated with other data collection techniques. Charrettes are similar to a research project, where the goal is to brainstorm and participate in a dialogue so

that everyone learns more about the issues at hand and, in turn, is able to understand or agree upon a set of solutions. As is the case with any type of research, charrettes must be accompanied by other techniques for data collection. Too often the information generated in this process is more than scientific in nature; it comes from the experiences of the participants as well, and can lead to changed attitudes, better informed decisions and creative solutions (Healey, 1993; Innes, 1998).

Conclusion

The shift in accepted theoretical frameworks in the second half of the twentieth century resulted in the inclusion of marginalized groups as participants in planning and decision-making processes and recognized that these groups could provide valuable insights into planning theory. This shift involved different forms of knowledge – both expert and experiential – and emphasized learning during the planning process through storytelling, listening, interpreting and understanding (Sandercock, 1995). Charrettes are one way of attaining citizen participation in the planning process. Although it is a guided process, it is creative as unique ideas are developed collaboratively, something that cannot be achieved through a step-by-step, routine procedure (Innes and Booher, 2005).

The charrette process must be carefully applied for there are limitations in its use. The first limitation occurs when the charrette is seen as a legal or procedural requirement of citizen participation that must be satisfied. The second occurs when the participants are self-serving and work as strong advocates for their specific causes rather than for those of the community as a whole. The third occurs when the topic at hand is presented in such a technical manner that it is not understood. We have noted this recently in charrettes dealing with the placement of biomass facilities and wind energy structures. Finally, there is also the general notion that communicative planning pays insufficient attention to the power-laden atmosphere that planning operates in (McGuirk, 2001). In that sense, it is difficult to extract the planning process from the "political realities of what is likely to happen" (McGuirk, 2001, p. 214) simply by turning to communicative planning through consensus building.

Planning is not the only field where charrettes are useful. 'Research charrettes' provide industries a forum for intense data collection and deliberation among industry leaders and stakeholders (Gibson and Whittington, 2010). Similarly, Sutton and Kemp (2006) show how academia and community involvement was bridged through the use of charrettes. The personal knowledge of the community members and the expert knowledge of the academics and planners make for an environment of mutual learning and collaboration. Whether used in the planning process or as an educative tool, the increased knowledge base with the inclusion of a varied number of participants makes the results that much more meaningful.

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5.10

ENGAGING AND EDUCATING YOUNG PEOPLE IN SUSTAINABLE DEVELOPMENT

Communicating research findings and planning practice in an active learning environment

Angela Million, Patricia Machemer and Zenia Kotval

Introduction

> *Take an apple and cut it into four slices. The first quarter of the apple represents the landmass on earth. From this "landmass" take away another two thirds of the apple, because it represents desert areas and high mountain areas, which are not suitable for living. The tiny quarter of an apple left represents the land that sustains our lives.*

This apple metaphor is used as an interactive learning activity with children and young people. The activity captures the attention of the participants and makes clear the reasons why sustainable land revitalization matters. The apple metaphor also represents the focus of this chapter, which explores mechanisms for the engagement of children and young people as stakeholders in important policy issues through undertaking specific forms of research and engagement activity. The chapter highlights how these engagement activities can be used to facilitate policy implementation and the communication of research findings.

Sustainability and brownfield land revitalization

There is no definitive definition of sustainability, yet classic definitions tend to share common dimensions and considerations. The most widely cited definition of sustainability comes from the Brundtland Commission, which defined sustainability as "meeting the needs of the present without compromising the ability of future generations to meet their own needs" (World Commission on the Environment and Development, 1987). The popularity of this definition is in part due to the clarification and simplification of a complex concept. Since its wide use as a concept in the early 1990s, there has been guarded optimism in the use of the concept of sustainability. Key questions nevertheless remain, focusing on what sustainability is, whether

it can be achieved, whether it is a valid goal and how we should measure it. Despite these questions, the concept of sustainability still remains a valid construct in land revitalization. Ruckleshaus (1989, p. 167) notes that "environmental protection and economic development are complementary rather than antagonistic processes". In the United States, the President's Council on Sustainable Development (1999, p. iv) has a vision statement that "recognizes that a sustainable US will have a growing economy that provides equitable opportunities for satisfying livelihoods and a safe, healthy, high quality of life for current and future generations". Gillham (2002) purports that sustainable development is development that limits impacts to the natural environment and society while preserving the existing resources of both as required to sustain future generations.

Representing land resources as a finite apple in the aforementioned exercise allows young people and students to quickly conceptualize the notion of land as a finite resource and the potential to use it in sustainable ways. Additionally, these audiences have been born and raised in the years following the Brundtland Commission, and sustainability therefore potentially forms an important part of their world view. Another group for whom sustainability forms an important paradigm is urban and regional planners. Sustainable city and regional development has traditionally involved securing a balance between economics and ecology. Kaufman notes that the impetus for a policy is rarely a right or obligation to protect land; rather, the reasons cited as justifying a policy are usually efficiency, economy or resource protection (1985, p. 291). Kaufman nevertheless goes on to argue that ethical considerations are alive and present in planning and development processes for land resources. This dichotomy continues to shape land policy and planning policy. However, this dichotomy in urban land revitalization has been further complicated by the concept of social equity.

Following the Brundtland Commission, planning and development researchers have included the notion of social equity in their discussions of sustainability (Cohen and Preuss, 2002; Burton, 2000; Counsell, 1999; Pezzoli, 1997; Campbell, 1996). In particular, Cohen and Preuss (2002) make a distinction between social equity and sustainability, stating that the latter is focused on natural resource protection and food production, while the former allows for a broader view and would permit land use change unrelated to landscape preservation. Campbell (1996) presents the 'planner's triangle' of environmental protection, economic development and social equity. His conceptualization of this triangle places sustainability at the centre. Jepson (2001) also noted that there are numerous definitions of sustainability. However, these definitions are predominantly descriptive. Jepson offers a functional form based on environment, economy and society (equity), referring to these as the "three Es". Like Campbell, Jepson relates the ability to achieve sustainability to the ability to address all three Es – environment, economy and equity – simultaneously.

For urban and regional planners there is a clear understanding that the sustainable development of cities and regions has to incorporate brownfield sites as potential areas of development to improve environmental quality and sustain the integrity of ecosystems. The development of brownfield sites can enhance the quality of neighbourhoods, cities and regions. Yet this understanding of the importance of incorporating brownfields into regional development is not necessarily self-evident to those outside the planning profession and research community. This means that there is always the task of communicating research findings and best planning practice in order to foster a wide public understanding of why land revitalization matters, to reduce land consumption and to promote sustainable cities and towns (Bock *et al.*, 2009, pp. 203ff.).

There are several important target groups for communication and education in sustainable land revitalization. These include site owners, city officials and politicians and the general public. Recent literature has demonstrated the importance of youth education – focusing on children and students, including university students – and the need to provide tools and knowledge to enable these groups to participate as informed citizens, future decision makers and mediators and communicators of future plans and visions. Youth involvement in planning can add a valuable perspective to the decision-making process (Quon Huber *et al.*, 2003). This could also introduce people to the concept of the reduction of land consumption through the reuse of brownfield sites. The authors of this chapter share the experience of Rankin, who stated that during the construction of a brownfield project it often "evolved into an environmental education project as well as a teaching resource for sustainability" (Economic Progress Alliance, 2008, cited in Rankin, 2008, p. 120). Furthermore, these projects can be a basis for further research on what forms of knowledge and tools of planning influence the adoption of sustainable lifestyles and decision making (Uttke, 2012).

The 'communicative turn' in planning in the 1990s (Healey, 1996) emphasized a shift from urban planning as a closed-door 'Gestaltungsakt' to a process for active negotiation on the diverse needs and preferences of different actors. There has in recent years been an increase in public interest in shaping sustainable environments, resulting in the emergence of new forms of 'collaborative' or 'deliberative' planning (Healey, 1997; Forester, 1999). There has at the same time been an accelerated rise in the availability and use of digital technologies and new tools and methods of communication. These technologies and tools not only have influenced social networks and impacted on the urban environment but also are changing the ways that research and planning are undertaken, with increased possibilities for participation in data collection and the communication and implementation of research results through the fostering of collaborative decision-making processes. Public participation is influencing planning practice and research, and it is here where communication shifts from informing the public to educating the public. Planning researchers today can and should use a wide range of tools and methodologies to communicate with audiences and educate them about their research and aspects of planning practice. These tools cover the field of analysis (GIS, mapping, crowdsourcing, real-time data analysis, etc.), the methods of design and representation (hand sketching, computer-aided design or CAD, 3D, graphic design, model building, interactive models), the distribution of content (print media, Web 2.0, social networking, mobile Internet) and the involvement of different stakeholders in planning processes (surveys, moderation). A selection of these methods is presented in the case studies in the following sections.

The remaining sections of this chapter document the tools and methods of communication used in selected projects on engaging young people as stakeholders in the implementation of planning policies related to the use of brownfield sites and land revitalization, as well as some of the educational outcomes. The account of the projects is in many cases based on our own experience and insight gained from being educators in the projects. The projects address several different institutional contexts, including university, school and extra-curricular contexts, and therefore engage different target groups, such as university students, high school students and children. Finally, the accounts explore a range of different formats, methods and tools for teaching and researching in spatial planning. Four projects focused on youth engagement in spatial planning are relayed. These are (1) an international university exchange programme hosted by Michigan State University (US) and the University of Technology Dortmund (Germany) for the past fifteen years; (2) a workshop series called 'Summer Academy' for children, by the non-profit association JAS Jugend Architektur Stadt e.V. (Germany); (3) a high-school project called

'Open Space', realized within the *REFINA* research programme ("Research for the Reduction of Land Consumption and for Sustainable Land Management"); and (4) a children's planning education programme called 'Landscape Explorers', which introduced youth between the ages of nine and twelve to planning concepts, approaches and a real-world local brownfield project.

Sustainable land revitalization in education

Sustainable land revitalization is the balance of social, economic and environmental interests and objectives. It involves a holistic and integrated approach, and asks for viable decisions based on all three aspects of sustainability (Federal Government of Germany, 2008, p. 21). The challenge of sustainable land revitalization is significant, and "achieving this balance is increasingly important in cleanup and revitalization of regions incorporating sites with real or perceived contamination, since many of these areas are not meeting their full economic, environmental/ecological, or social/cultural potential" (Forschungszentrum Jülich GmbH, 2008, p. 7). The task is not new, and in Germany land revitalization – especially the recycling of brownfields – has been one of the most important fields of public and private urban redevelopment efforts in the past thirty years (Henning, 2007, p. 10). The change in economy from manufacturing towards service industries led to decreased demand for industrial areas. Also, the demand for construction land is in decline. At the same time the new use of land for settlement and transport in Germany stood at 113 hectares per day (Federal Government of Germany, 2008, pp. 144–145, Abb. 1). The increase in unused industrial land and the rapid consumption of land for new uses led to the German federal government's 2004 goal to reduce new land use for settlement and transport to 30 hectares per day by 2020. Progress towards this goal depends on a dual strategy: protecting peripheral areas by developing inner cities. It is about fostering the recycling of land through brownfield developments over greenfield development at an aimed ratio of 1:3.

Several pilot studies and research projects were started in Germany, which were designed to develop creative and practice-oriented approaches to counteract a further increased use of land. These projects included: *Fläche im Kreis* or 'Land in a cycle'; REFINA; *Nachhaltige Siedlungsentwicklung* or 'Sustainable settlement development'; and other related projects. Only in the REFINA project was there a specific programme of action dedicated to communication to develop new methods and concepts for education and training in the field of sustainable land use (see www.refine-info.de).

In the US, the negative externalities associated with brownfield sites spurred a number of federal, state and local policies and also prompted the development of tools and incentives aimed at encouraging brownfield redevelopment (Adelaja *et al.*, 2009). In Michigan, examples to incentivize land revitalization include brownfield tax credits (BTCs), tax increment financing (TIFs), brownfield redevelopment grants and loans, and brownfield site assessment services (Michigan Economic Development Corporation [MEDC], 2008). Michigan has been among the leaders in the US for adopting brownfield redevelopment strategies and other land use tools, such as land banking. Like Germany, Michigan has lost industrial market share for many years and, as a result, has an overabundance of unused industrial spaces. Michigan now has one of the largest inventories of brownfield sites in the nation (NALGEP, 2004). An estimated 44,000 acres of brownfield land are currently undeveloped in the state of Michigan (MEDC, 2008). Larger cities like Detroit, Flint and Grand Rapids have had varying success at redeveloping former industrial sites into loft style apartments, offices and other creative uses, such as breweries. Policies that encourage brownfield remediation and an overstock of unused industrial space give Michigan a competitive advantage in this area of urban planning.

Sustainable land development is taught within the curriculum in several classes on urban planning university programmes in Germany and the US. These classes, for example, cover economic development, land use planning, urban design and landscape design. Yet sustainable land development is barely present as a topic in school-level education (Bundesministerium für Umwelt, Naturschutz und Reaktorsicherheit [BMU], 2008, p. 52), although several institutions already have developed educational material. Examples in Germany include *Bundesministerium für Umwelt, Naturschutz und Reaktorsicherheit* (Federal Ministry for the Environment, Nature Conservation and Nuclear Safety) in 2008, and *Wüstenrot Stiftung* (Association of Wüstenrot) in 2010. Similar examples from the US include a programme by the Pennsylvania Department of Conservation and Natural Resources (2005), and the Western Pennsylvania Brownfield Center School outreach programme for elementary, middle and high school students. There are also several active, extra-curricular programmes offered by environmental education activists and by built-environment educators. This chapter presents a summary of four spatial planning projects to illustrate teaching and research methods in youth spatial planning. The chapter then concludes with a discussion of cross-cutting themes based on the case studies.

International university exchange programme in brownfield development between MSU, US, and TU Dortmund, Germany

The exchange programme in brownfield development between Michigan State University (MSU, US) and the University of Technology Dortmund (TU Dortmund, Germany) began in 1984. Each year there is a 2–4-week student exchange that incorporates teaching and learning methods, such as lectures, discussions, field trips, site visits and workshops, on brownfield development. Approximately thirty students work together in cross-cultural and interdisciplinary design charrette teams, in which German spatial planning students are teamed up with American urban planning and landscape architecture students. The project has several objectives, including helping participants learn the methods, instruments and tools for land revitalization, facilitating international knowledge transfer and providing the opportunity for working in interdisciplinary and intercultural teams. Finally, the project aims to provide a practice-oriented experience by working on real case studies of brownfield land development.

An important element of the programme is attending field trips to brownfield sites and to sustainable urban development projects (see Figure 5.10.1), as well as participating in a 4–5-day design charrette in Germany or the US to develop solutions to problems faced on brownfield sites. A brief is usually prepared by the students themselves to introduce the project to the guest students. Site visits are arranged with the owners and city planners. The students work in small, interdisciplinary groups of four or five people. The charrette ends with a juried public presentation, while feedback on students' work is provided by guest critics, the press and the tutors.

Overall, the students learn that certain planning questions and problems are universal and that ideas can be transferred between different countries. They also learn that political and economic situations differ and that land use issues are far more complicated in the US due to patterns of ownership. The students themselves stress the international student workshop as "a very successful method of studying and learning different aspects and attempts of planning relevant subjects" (Hoffmann and Ziegler-Hennings, 2009, p. 48). Many of the students in both countries have continued their interests in brownfield revitalization work, which needs to be done to clean up the environment so that the land is restored to a suitable condition and can become productive again.

Figure 5.10.1 Practice-oriented experience of university students by researching real case studies of brownfield land development (image: Zenia Kotval).

Summer Academy for Children by JAS, a non-profit organization for built-environment education

From 2007 through 2010, the Summer Academy in Gelsenkirchen, Germany, has run a four-day workshop for fifty children and young people about reading, shaping, experimenting with and researching the city (see www.jugend-architektur-stadt.de). The overall task is to develop 'young' visions about the future use of brownfield sites. Under the theme 'Guess what I see', children aged seven to twelve years have the opportunity to discover buildings and city quarters around the former coal mine of Oberschuir. Ideas for the temporary use and transformation of the brownfield site are developed. The young participants work in thematic groups of architecture, city planning, urban design and landscape planning. In small groups of 7–10 children, supported by two educators, the youth investigate the former coal mine, the surrounding neighbourhood and the former railway site next to the mine. The brownfield site's conditions allow on-site working and, after analysing spatial situations, ideas are developed and made visible in 1:1 installations and models (see Figure 5.10.2). The project's objectives are to promote children's understanding of the environment and to sensitize children to the importance of the built environment, as well as to promote creative problem solving for positive environmental change. The project also provides hands-on design activities and space to experiment with different techniques, forms and materials. Additional project objectives include educating children and young people about space at different scales – including individual buildings, neighbourhoods and town centres – as well as encouraging children, young people and all other citizens to be aware of good design and their personal roles, rights and responsibilities in the creation of the built environment.

A variety of active learning methods are utilized in the project to educate the children on spatial planning concepts, including: mental maps, perception walks, map analyses, aerial

Figure 5.10.2 Delivering an understanding of chances and possibilities in the reuse and redesign of spaces in an on-site children's workshop.

Source: Thorsten Schauz.

photograph interpretation, site visits for inventory and analysis, spatial experiments and model building. These methods provide opportunities for exploration of the urban environment, support peer-to-peer discussions and permit the youth to visualize their own ideas and desires about the built environment and experiment with different space experiences. The children can choose their scale and focus of planning and design, such as architecture, city planning, urban design or landscape design. For all groups a 'city researcher toolbox' is available with camera, clamping board and map material, in order to investigate the area. Methods used in the different groups while working with the children are adjusted to the scale and focus of the project. In general the steps are: investigating the site, experimenting on the site, developing a vision and visualizing the ideas in models. Thus, all children learn and utilize the planning and design process.

At the end of the workshop there is a tangible result, such as a model for a new city quarter on a brownfield site. Apart from this visible result, the project also delivers an understanding of chances and possibilities in the reuse and redesign of an underutilized site. The children also experienced the planning and building process of a city. The children learn that they have to address not only their individual site but also neighbouring sites to make connections and to work with neighbours in order to realize common ideas.

REFINA 'Open Space' project using new technology and media

Freifläche – Jugend kommuniziert Flächenbewusstsein – translated as 'Open Space – young people discussing land use awareness' – is a project within the REFINA research programme undertaken from 2007 to 2009 (see www.refina-info.de). The aim of the project is to foster understanding by seventy-five high school students in three selected schools in different cities in Germany of the German federal government's goal to reduce new land use for settlement and transportation to 30 hectares per day by 2020. To capture their interest the project uses interactive, technology-oriented tools, such as satellite navigation GPS, Google Earth and the Internet. These tools are combined with traditional ways of spatial analyses, such as aerial photo interpretation and geographic information systems (GIS) (Mählmann, 2008, p. 36).

The objectives of the project are to educate high school students about the German federal government's 30 hectares goal and to capture young people and their teachers as 'multipliers' or advocates to promote the same goal. In addition, the project attempts to develop innovative, didactical methods to investigate, document and evaluate the problem of land consumption through working with students. A final objective of the project is to foster the technical-methodical and didactical integration of the topic of land consumption in environmental educational facilities and schools by producing teaching materials.

An interactive DVD was developed and utilized within this project. It focuses on five main topics: land consumption, storm water, soil, urban planning and historical cities. Students began the curriculum by defining their 'dream house' and discussing the consequences of their 'dream houses' on land use development in their towns and cities. Land use analysis was undertaken using the Internet to access datasets, GIS, Google Earth, site visits and GPS systems (see Fig. 5.10.3). Students moved from analysis to defining planning goals and possibilities, in part based on previously defined objectives, such as the federal '30-hectare goal'. The programme ended with a PowerPoint presentation of the project results, posters, videos and websites created by the students. The focus of the presentation was to present their point of view and ideas about ways to create a more sustainable pattern and form of development.

The outcomes of the project showed that the students improved their ability to use knowledge and information interactively, as well as to apply technologies in a constructive manner. They were eager to be involved in decision-making processes and able to work in a wider context. The students produced ideas that can help to work towards more sustainable development (Freifläche, 2009, pp. 4–5). Additionally, the project resulted in educational materials that are available to other schools and institutions through the website www.freiflaeche.org.

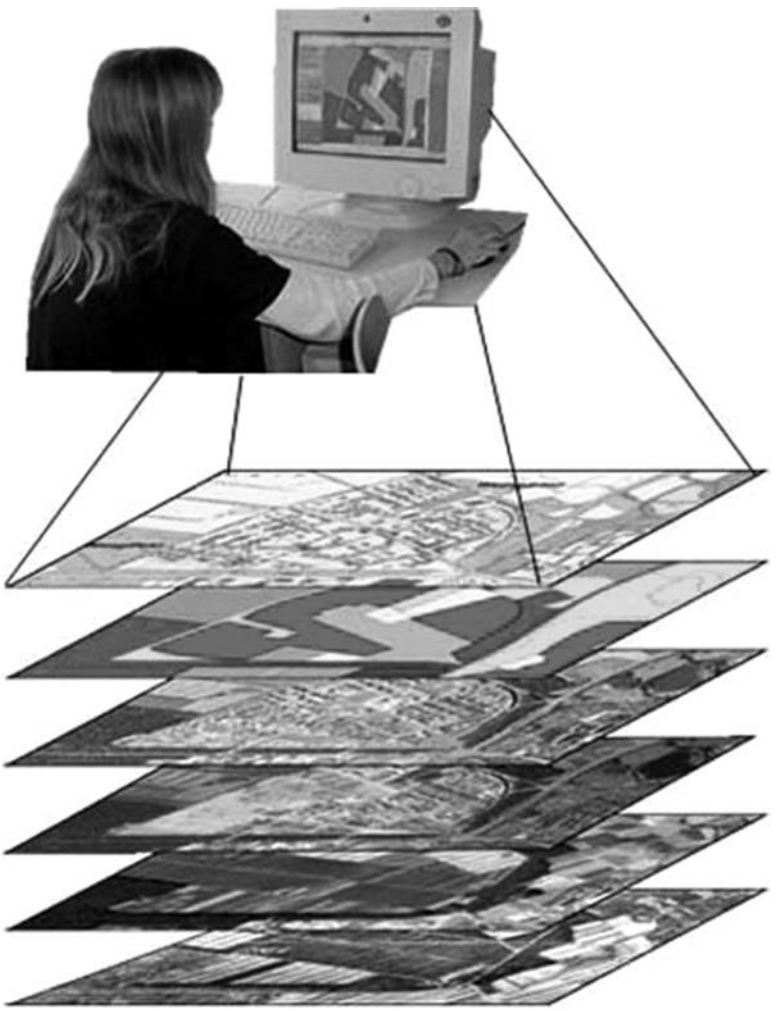

Figure 5.10.3 Working with high school students using interactive, technology-oriented tools such as satellite navigation GPS, Google Earth and the Internet.

Source: Wolfgang Roth.

Case study: Landscape Explorers summer session at Boys and Girls Club, Lansing, MI

In 2009, thirty children aged between seven and thirteen at the Boys and Girls Club (BGC) in Lansing, MI, were introduced to planning and design concepts, principles and skills through the Landscape Explorers programme. The children complete a series of hands-on creative projects culminating in a presentation of the brownfield redevelopment project to City of Lansing planning officials. Activities include: an introduction to design and design principles; Mapping Your Mind, an environmental imaging exercise; architectonics; neighbourhood analysis, with a SWOT analysis accomplished by a neighbourhood walk; designing an ideal neighbourhood; and the Logan Square brownfield redevelopment project. In this culminating project the children work in small groups to develop potential redevelopment options.

The project has the objective of developing participants' understandings of their local environment, both at the neighbourhood and city level, and to introduce to them a series of urban planning and design concepts and methods. It also encourages creative problem solving and problem-based learning through engaging in hands-on activities in the design process. Finally, the objectives of the project include educating children about issues of scale at site, building, neighbourhood and commercial centre levels, as well as promoting involvement in local planning practices.

The children participate in several hands-on activity sessions, including cognitive map making, constructing their favourite space, redesigning the outside entrance to the Boys and Girls Club, neighbourhood analysis, designing their ideal neighbourhood and the Logan Square commercial brownfield design project. With the Logan Square brownfield project, the students undertake a site analysis, meet with city planning officials to generate design concepts and alternatives, develop models for conveying revitalization proposals and present these models to city officials. For model development, children work in small teams of 3–4 children and are supervised and guided by MSU students of urban planning and landscape architecture. Previous active learning sessions provide information on architectural elements, planning rules and regulations and the design process.

All sessions culminated in the final Logan Square Redesign Models and their presentation to city officials. While the models represent actual physical outputs, the teaching and learning outcomes are just as valuable, and perhaps more so. The children from groups traditionally under-represented in planning processes became aware that citizens can have an impact on how their community looks, feels and functions. The children are also aware of planning as a process, the function of cities and regions, and planning as a potential career path.

Discussion and evaluation of the case study projects

In presenting a summary of the foregoing case study programmes in youth education in brownfield revitalization, four common themes emerge:

- The rise in the importance of built-environment education for children and young people;
- Learning about and utilizing the planning and design process;
- The importance of hands-on, personal and on-site activities as a teaching approach, including the use of a wide variety of media formats and tools for communication;
- Peer-to-peer learning in small groups.

The following section discusses these four themes and the lessons learned that can be applied to research and teaching in planning with young people.

Rise in importance of built-environment education for children and young people

All of the case studies share a common value of built-environment education for children, young people and college students. The case studies presented here encompass an approach identified by Knowles-Yánez (2005), in which planning interacts with children – namely, educators teaching children about the practice of planning. The objectives addressed in all cases correspond to the aims of overall built-environment education (UIA Built Environment Education Network). Contents and methods of built-environment education (BEE) for children and adolescents have "developed especially in the past 20 years with a rising public awareness" (Uttke, 2012, p. 3). This rising awareness has resulted in the development of many groups and programmes all over the world. Children have moved beyond the focus of planning play spaces (Reicher *et al.*, 2007). Teaching, planning and research practice include development and implementation of planning course curricula (see Race and Torma, 1999; Mullahey *et al.*, 1999; Driskell, 2002); international conferences, scholarly and practitioner publications, such as the American Planning Association's and the Canadian Institute of Planners' educational publications and the *Children's Environments Quarterly* (previously known as *Childhood City Newsletter*); and the formation of local, national and international organizations focused on built-environment participation and education of children (e.g., Place Perception Project, Childhood City, Environmental Design Research Association, Landscapes for Learning, PLAYCE, JAS Jugend Architektur Stadt e.V., Community Built Association, Children's City Council).

The case studies presented in this chapter, in addition to the aforementioned programmes, demonstrate a growing recognition for youth education and participation in the area of brownfield development, in part because brownfield sites are a common sight in most communities. Children, and especially young people, are often pioneer users of these sites (at least in Germany: BMVBS/BBSR, 2010, pp. 46ff). Children are keen observers of their environmental setting and are capable of analysing and understanding their surroundings (Horelli and Kaaja, 2002; Moore *et al.*, 1987; Lynch, 1977).

Learning about and utilizing the planning and design process

Another common theme addressed by all case studies is that the participants learn about and utilize the planning and design process. This is both a common objective and common result in all the case study approaches. While the scale of the project differs across programmes, from a 'dream house' to a city quarter, and to a commercial zone, the participants learn about and engage in the planning and design process. The students all perform inventories, gather historical information and identify goals, objectives and strategies. In all cases the sites are underutilized and in need of revitalization. While the participants are required to recognize the physical, economic and social contexts of their site, they are encouraged to use the planning process to 'think outside the box' to address land revitalization challenges. By allowing innovative thinking in the planning process, these case study programmes capitalize on the inherent ability of youth to be visionary, an ability often lost in adults.

The importance of hands-on, personal and on-site activities as a teaching approach

All of the case study approaches recognize the importance of a hands-on and on-site teaching approach in spatial planning education with youth, as well as the use of different media in analysis, design and the presentation of findings (GIS, mapping hand sketches, CAS, 3D, model building, etc.). An appreciation of the environment begins at an early age, marked by an intensity of exploration (Talen and Coffindaffer, 1999, p. 321). Research has found that children possess an inherent spatial cognition (Halseth and Doddridge, 2000; Hart, 1997; Blaut, 1987; Nagy and Baird, 1978; Hart and Moore, 1971). This combination of interest in on-site exploration and ability to understand spatial concepts makes planning and design charrettes an appropriate teaching method for youth. Design workshops were used in all four case studies, from a variety of international urban site revitalization projects to a coal mine site, to dream house design in individual communities, to a commercial brownfield site. Design workshops allow active engagement and participation. Additionally, the master plans and physical models created in the projects can be analysed. The hands-on nature of the case studies and the charrette approach is more appropriate for youth as they are more active than passive. Simpson (1997, p. 923) suggests that children's participation must be encouraged through the creative processes that relate to their capabilities.

Leading up to the workshops, the different case studies use a variety of hands-on activities. For example, the use of beach tents to allow all children to find their favourite tent location and explain why they had selected a certain place provides one illustration of hands-on engagement activities. In this case different tent locations were experimented with, just as the creation of urban models allows children to experiment with the location of project elements. In both cases, spatial formations were experimented with and considered to determine which uses in which place would be most functional. Such hands-on experimentation allows children to understand planning concepts such as 'compatibility' without using words and concepts that are unfamiliar to them.

In the REFINA project case study, hands-on activities move from the physical world to the virtual world. In this case, technology and media allow for an interactive, hands-on experience. The interactive learning experience seems to be more enduring and effective. The usage of new technologies, just as the introduction of tents and model making, captured the interest of most young people and was fun for them. It was often a reason for students to study a rather 'abstract' topic, such as sustainable development, which is otherwise unfamiliar and uninteresting. One student stated his experience of the programme in a very direct way. He said, "To experience things myself and to understand them through doing is a lot more fun than reading a text with facts and numbers" (cited in Troll, 2009).

By using on-site visits and locations that are within the participants' community, the teaching methods capitalized on a youth tendency to focus on their own individual perspective. For example, for the topic land consumption the students first were asked to talk about 'My dream house – as I would like to live.' The students then discussed the consequences of their 'dream houses' on land use development in their towns and cities. Personal connection and on-site opportunities are imperative to youth involvement and understanding. With youth participation in planning in education and data collection on youth perceptions, there is great value in being on-site. Site conditions can thus be experienced first-hand by the youth. In all case studies, youth were fortunately able to engage in site inventory and analysis first-hand.

Peer-to-peer learning

Small groups are a vehicle used for peer-to-peer teaching and learning in all of the case study approaches. In all the cases, the programmes stress the importance of small group activities to maximize the learning potential of the participants. In the case of the university exchange programme, small groups allow students from different cultural backgrounds and different epistemological settings to exchange ways of inquiry, ideas and concepts. These small group opportunities are particularly important given the participants are unfamiliar with one other (Kotval 2009). While the participants at the BG Club are familiar with each other, the small groups allow them to quickly recognize and explore different planning and design ideas. Even though the children are from the same culture, they still have different ideas. Small groups force the participants to engage in the charrette process or, in the case of REFINA project, utilize technology and software in an efficient and effective manner. In the case of the summer academy, given the age of the children (7–12) and the number (50), breaking the participants into smaller groups is needed in order for each child to maximize his or her participation and, in turn, his or her learning. Small groups are needed to allow the children to personally explore their environment and provide opportunities for them to speak, be heard and to articulate their visions for the built environment. These objectives are more easily achieved in small groups of 7–10 students than in a large group of 50 students.

Conclusion

This chapter focuses on engaged research methods and practices that use brownfields as a platform to educate university students, young people and children about sustainable land revitalization. It also depicts ways of communicating research findings and planning knowledge to a wider public. The methods and practices presented all involve active learning approaches in order to maximize the inherent capabilities of students and youth to comprehend and understand spatial planning concepts. Communication and learning strategies are intertwined. In summarizing the case study programmes, four cross-cutting themes emerge: the rise in importance of built-environment education for children and youth; learning about and during the planning process; the importance of hands-on and personal teaching approaches in spatial planning; and the role of peer-to-peer learning.

The cases demonstrate that there are a wide variety of communication and active learning methods and tools available to researchers and policymakers – from charrettes and field trips to workshops with spatial experiments and technology-based teaching in high schools and in youth centres – that seem to be successful in capturing attention and creating discussion between students and teachers about land planning and revitalization (Kotval 2004). Common to the case study programmes on brownfield revitalization is the use of active learning approaches. While there are some differences in the approach taken, as well as in the focus by individual groups and programmes, there is much commonality in their missions and teaching goals. On the one hand, it is about gaining knowledge on land use and incorporating divergent interests of nature protection, city planning, economics and individual versus group interests. On the other hand, the students learn to recognize spatial conflicts and gain attention for typical problems of their neighbourhoods, cities and regions, while also comparing their setting to other national or international settings. In addition, not only planning students at university but also much younger students in school or extra-curricular programmes

acquire planning competences in which land use conflicts and creative problem solving play a substantial role.

The methods presented in this chapter show that research communication and education in sustainable land revitalization have moved away already from a narrow, knowledge-based approach to a broader, more active approach encompassing knowledge and understanding, active and creative learning experiences and the development of values, skills and abilities. Whether the participants in the programmes really captured that the balance between economics, ecology and social aspects in sustainable developments is also connected with compromises and, sometimes, even suboptimal solutions (e.g. regarding land consumption) is an open question. There are more questions unanswered, such as: were the communication strategy and the learning experience successful? What are the impacts and outcomes? Which methods work well for which target group? How can a conscious choice of communication tools and methods work towards a more just and sustainable environment? So it would be interesting to exchange experiences and to explore experiences with further research.

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