GOOD REASONS
for BAD FEELINGS
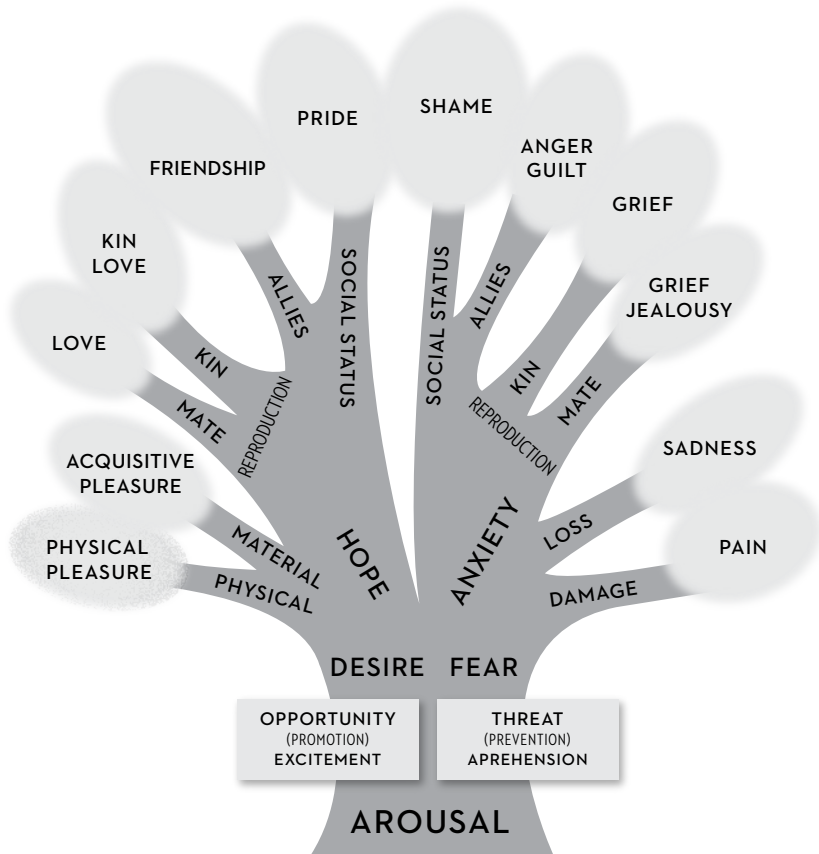
Insights from the Frontier of
Evolutionary Psychiatry

RANDOLPH M. NESSE, MD

	PROXIMATE	EVOLUTIONARY
SLICE IN TIME	What is the mechanism?	What is its adaptive significance?
SEQUENCE ACROSS TIME	How does it develop in an individual?	What is its evolutionary history?

PRIDE

SHAME

FRIENDSHIP

ANGER
GUILT

KIN
LOVE

GRIEF

GRIEF
JEALOUSY

LOVE

ALLIES

SOCIAL STATUS

SOCIAL STATUS

ALLIES

KIN

KIN

MATE

REPRODUCTION

MATE

REPRODUCTION

ACQUISITIVE
PLEASURE

SADNESS

PHYSICAL
PLEASURE

MATERIAL

HOPE

ANXIETY

LOSS

PAIN

PHYSICAL

DAMAGE

DESIRE   FEAR

OPPORTUNITY
(PROMOTION)
EXCITEMENT

THREAT
(PREVENTION)
APREHENSION

AROUSAL

2

EMOTIONS FOR SITUATIONS THAT ARISE IN GOAL PURSUIT

		BEFORE	AFTER	ALTERNATIVE OUTCOME
OPPORTUNITY	PHYSICAL	Desire	Pleasure	Disappointment
	SOCIAL	Excitement	Joy	
THREAT	PHYSICAL	Fear	Pain	Relief
	SOCIAL	Anxiety	Sadness	

ANXIETY DISORDER	SITUATION/DANGER
Phobia of small animals	Possible damage by the animal
Fear of heights	Injury from falling
Panic attacks	Attack by a predator or human
Agoraphobia	Attack by a predator or human
Social anxiety	Loss of social standing
Hypochondriasis	Sickness
Fear of being unattractive	Social rejection
Fear of needles and fainting	Injury/bleeding

| LOW MOOD	HIGH MOOD
Pessimism	Optimism
Risk avoidance	Risk taking
Inhibition	Initiative
Low energy	High energy
Social withdrawal	Social engagement
Quiet	Talkative
Slow thinking	Fast thinking
Unimaginative	Creative
Submissive	Dominant
Lack of confidence	Confidence
Low self-esteem	High self-esteem
Analytic thinking	Subjective thinking
Expecting criticism	Expecting praise
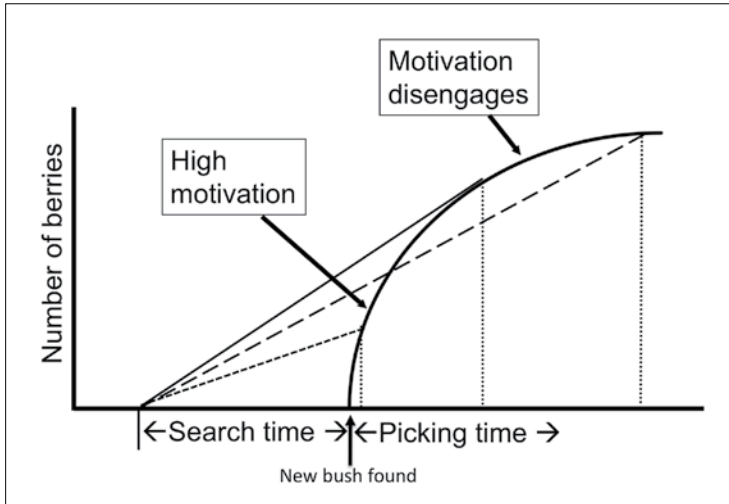
The Marginal Value Theorem
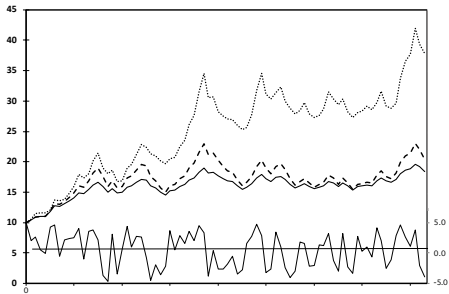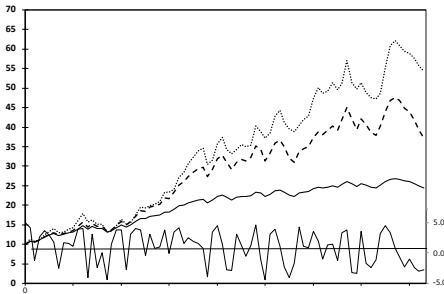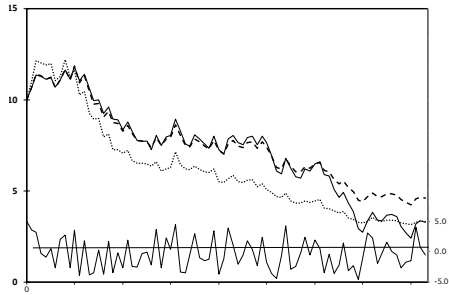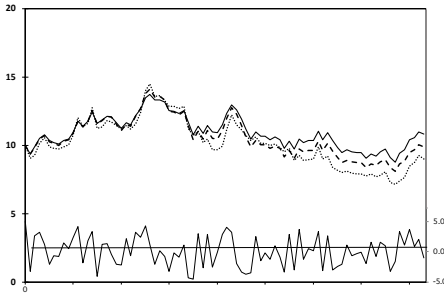
Four Runs of the Mood Model

Four runs of the mood model illustrate how chance variations in payoffs result in vastly different outcomes for the three strategies: Moody (dotted), Moderate (dashed), and Moodless (solid). The thin line at the bottom indicates how payoffs vary at each different move in the game.
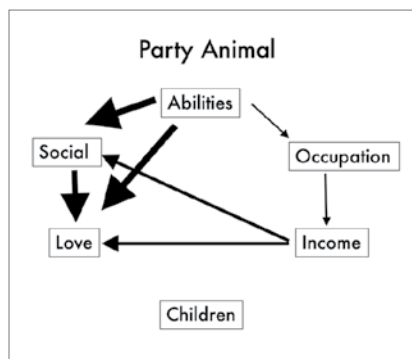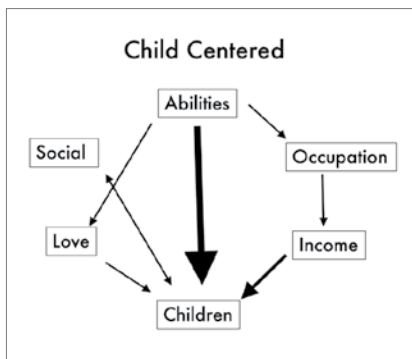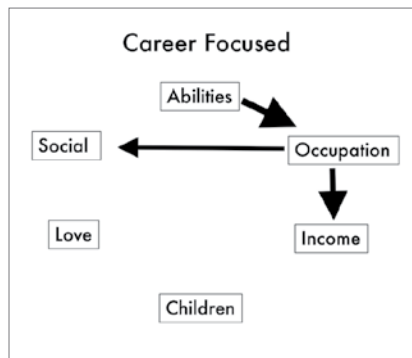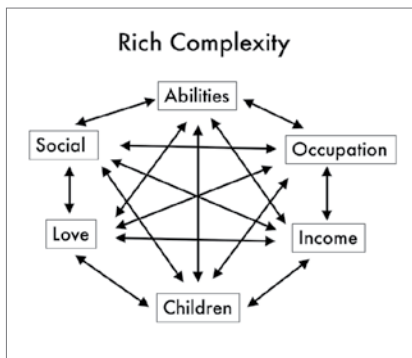
**Some Patterns of Resource Allocation**

EMOTIONS SHAPED TO COPE WITH THE SITUATIONS
THAT ARISE IN EXCHANGE RELATIONSHIPS[51]

EMOTIONS AROUSED BY SITUATIONS IN RELATIONSHIPS	OTHER COOPERATES	OTHER DEFECTS
YOU COOPERATE	(3 for each) Friendship Trust	(0 for you, 5 for other) Suspicion (before) Anger (after)
YOU DEFECT	(5 for you, 0 for other) Anxiety (before) Guilt (after)	(1 for each) Disgust Avoidance
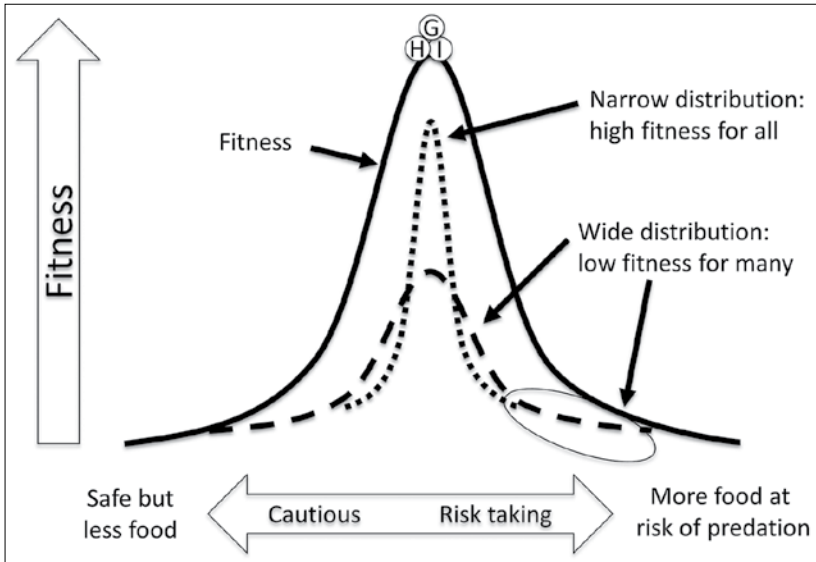
The Standard Model

The solid line is the fitness at each level of cautiousness. The points that maximize fitness for an individual (I) and a gene (G) and health (H) all coincide at the peak of the fitness landscape. If the distribution of degrees of cautiousness is narrow (the tall dotted curve), most individuals will have high fitness and good health. If the distribution is wide (the dashed curve), some will be at high risk of predation and others will be at a high risk of starvation.
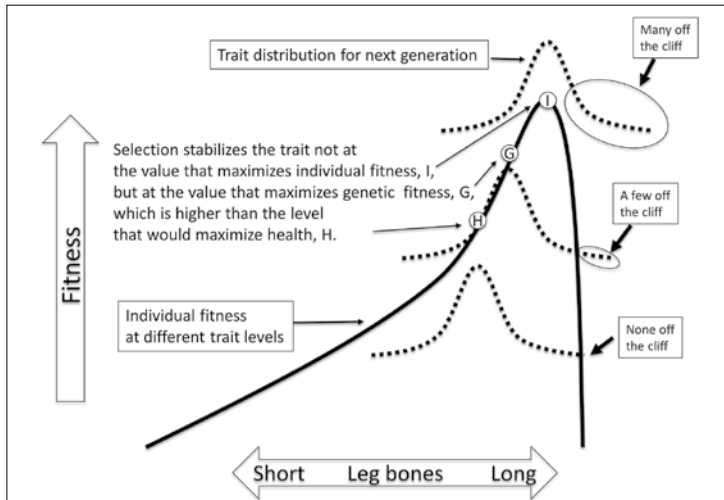
How Cliff-Edged Fitness Functions Make Disease Inevitable
Traits with asymmetrical fitness functions are stabilized not at the level that maximizes individual fitness (I) or at the level that maximizes health (H), but at the level that maximizes gene transmission (G), despite dire outcomes for a few individuals.