

ESRC Conference: Diversity in Macroeconomics
University of Essex
24- 25 February 2014

**Models of Radical Uncertainty and
Inductive Decision-Making**

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Social intelligence and collective decisions (Ben-Jacob)

- Relatively primitive life forms are socially intelligent → have a social IQ
- Potential for successful cooperation is captured in genomes
- Genes determine an organism's capacity for successful communication and cooperation
- Mutations → emergence of diversity

Non-Bayesian decision-making in policy (Gilboa)

- Bayesian versus frequentist approaches → subjective probabilities
- Cannot capture fundamental uncertainty
- Capacity for (quantifiable) rationality is compromised in a world of risk and uncertainty

Human sentient and social actors (Tuckett)

- Taking on the standard view of humans as mathematical machines → sentient, social actors
- Behaviour under uncertainty driven by conviction narratives, divided states, group-feel, desires for phantastic objects
- Directed Algorithmic Text analysis: quantitative content/textual analysis of archives to quantify animal spirits and capture macroeconomic instability

Rationality and behaviour

- Amartya Sen (1977) on the “rational fools” in standard approaches
- Evolution and natural selection → natural intelligence and biological heuristics:
 - Microbes, slime moulds → biological neural networks
 - Termites
 - Fairy wrens, reef fish, scrub jays
 - Primates
 - natural heuristics
- New non-dichotomous conceptions of human behaviour

Termite-inspired bots build castles



Rethinking Rationality

- Rational=optimising= clever = good ✓
- Irrational = “ sub-optimising” = stupid = bad ✗

Evolutionary principles

- Natural selection shapes behaviour
- “Perverse” behaviours often environmental adaptations to life as hunter-gatherers, e.g. Smith and Tasnadi (2007) on “natural addiction”
- Fitness of evolved responses undermined by modern technology: computerisation, globalisation, deregulation

Biological science: methodological insights

- Scientific methods:
 - Experimental and observational techniques
 - Proper controls; testable, refutable hypotheses
- Evidence and measurement
 - Neurophysiological measurement has the potential to open the brain's black box
 - Ecology, animal models e.g. Will Feeney on brood parasites and co-evolution
- Theoretical innovations
 - Emotions aren't "bad"; deliberative thinking isn't "good" e.g. Damasio's somatic marker hypothesis
 - Behaviour as the product of interacting systems

Time, Risk and Animal Spirits

- Risk + time preference + uncertainty → dynamic decision-making
- Economists often assume that time and risk preferences are:
 - Separate, independent
 - exogenous

Is this correct?

- Endogenising discount functions within an animal spirits model → better predictive power??

Questions for presenters

- How much human behaviour be understood in terms of evolutionary principles?
- In a non-Bayesian world are policy-makers compromised by quantitative constraints on prediction/forecasting?
- What are animal spirits? Are they about confidence? And/or do they link to time and/or risk preferences? Can Big Data on emotional responses help macroeconomic policy makers?