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 apacity 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 $\rightarrow$ 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 $\rightarrow$ 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?