

Human Behaviour

A Bridge Too Far for Complexity?



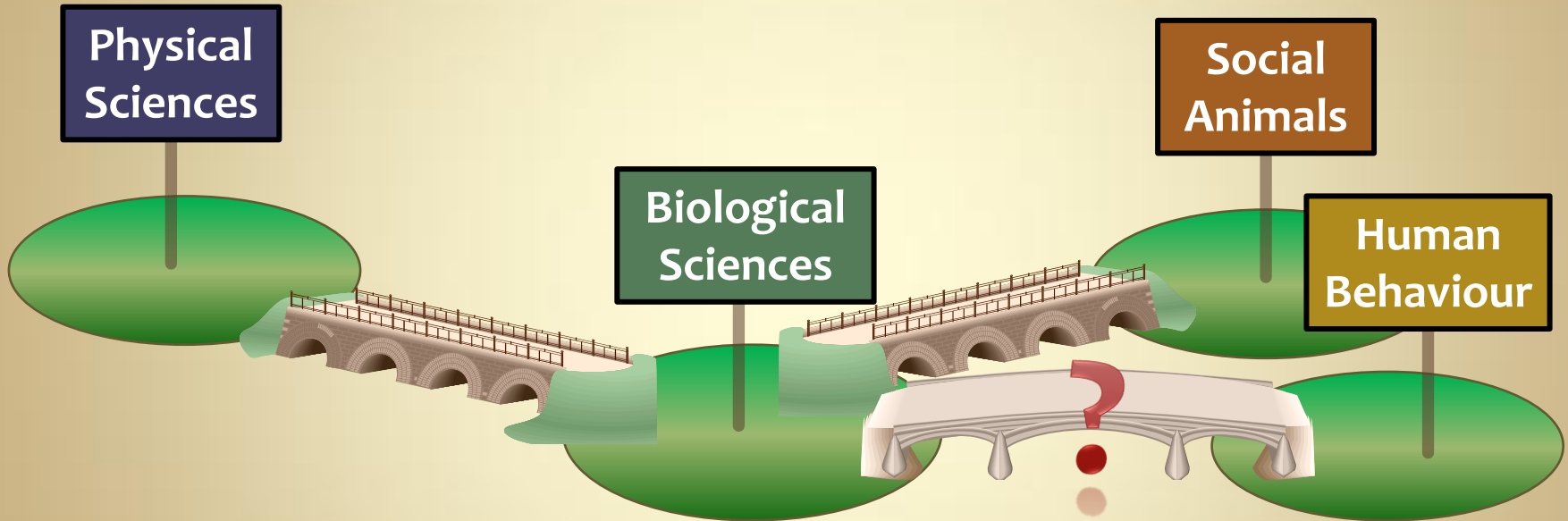
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Premise

- A bridge too far for complexity?



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Methodological Approach

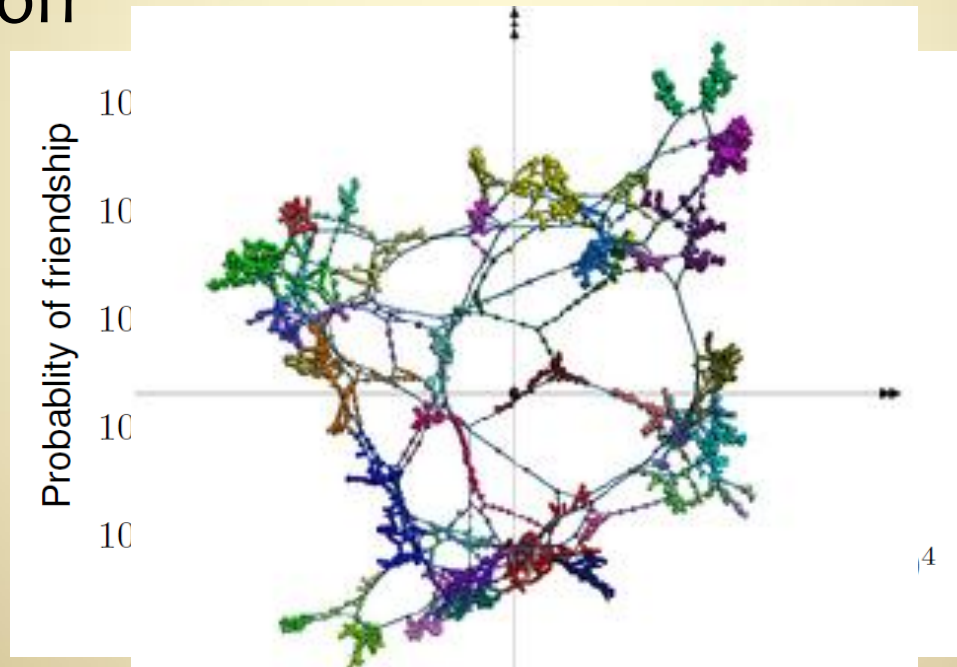
- A. Richardson & Cilliers (2001) categorisation of complexity science:
 1. Hard Complexity Science
 2. Soft Complexity Science
 3. Complexity thinking

- B. What has changed in 'transfer' of concepts from natural sciences to social sciences:
 1. Additions
 2. Misunderstanding
 3. Reinterpretation

Updated & Expanded

Hard Complexity Science

- Reductionist approach, seeking ‘universal laws’
- ‘Toy models’ → real data
- Networks, scaling, control parameters, phase transition

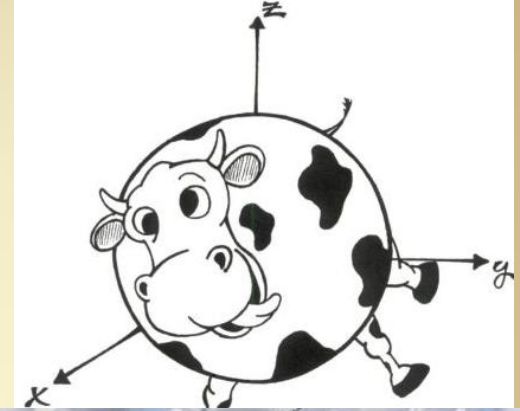


lino et al (2010) Community Structure in a Large-Scale Transaction Network and Visualization

Hard Complexity Science Issues

Reductionism

- Universal laws vs. unique systems
- Modernism, structuralism



Usefulness

- Social scaling laws?
- Social network properties?
- Social control parameters?



Soft Complexity Science

a) Complex models of social systems

- Seeking to represent reality
- Empirical data used to build or check models

b) Metaphors for social systems

- Framework for understanding qualitative data
- Explanations of agents within organisations (e.g. Stacey, 2005)

a) Complex models of reality

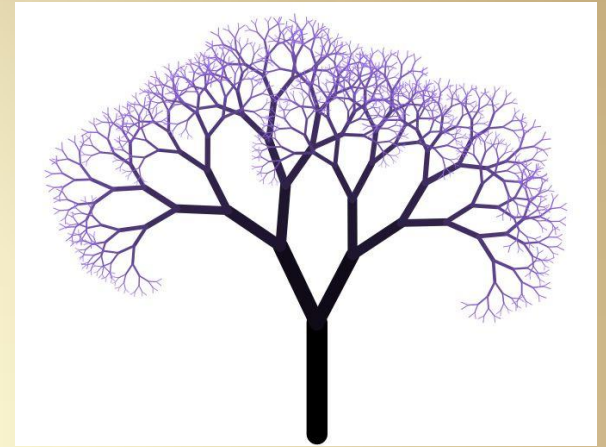
Issues

Bottom-up approaches

- ‘historic contingency’ vs. scaling

Models vs. reality

- Kermack-McKendrick model of idea contagion (Erdi, 2008)
- Hill et al (2011) An Agent-Based Model of Group Decision Making in Baboons



a) Complex models of reality

Issues

Modelling society

- Complex systems are highly sensitive
→ models quickly diverge from reality
- Minds cannot be quantified
- All of history must be included



a) Complex models of reality

Issues

Mistaking models for reality

“we have to be careful; human beings are not dynamic objects”
(Prigogine & Stengers, 1984, p. 298)

“We now know that societies are complex systems involving a potentially enormous number of bifurcations exemplified by the variety of cultures that have evolved”
(Prigogine & Stengers, 1984, p. 313)

b) Metaphors for Social Systems Issues

Potential for misunderstanding

“As tension or instability increases in a system moving away from equilibrium, the system bifurcates, sometimes involving transformative change...Entropy will slowly dissipate from a system until the potential energy is at a low level” (Gilstrap, 2007)



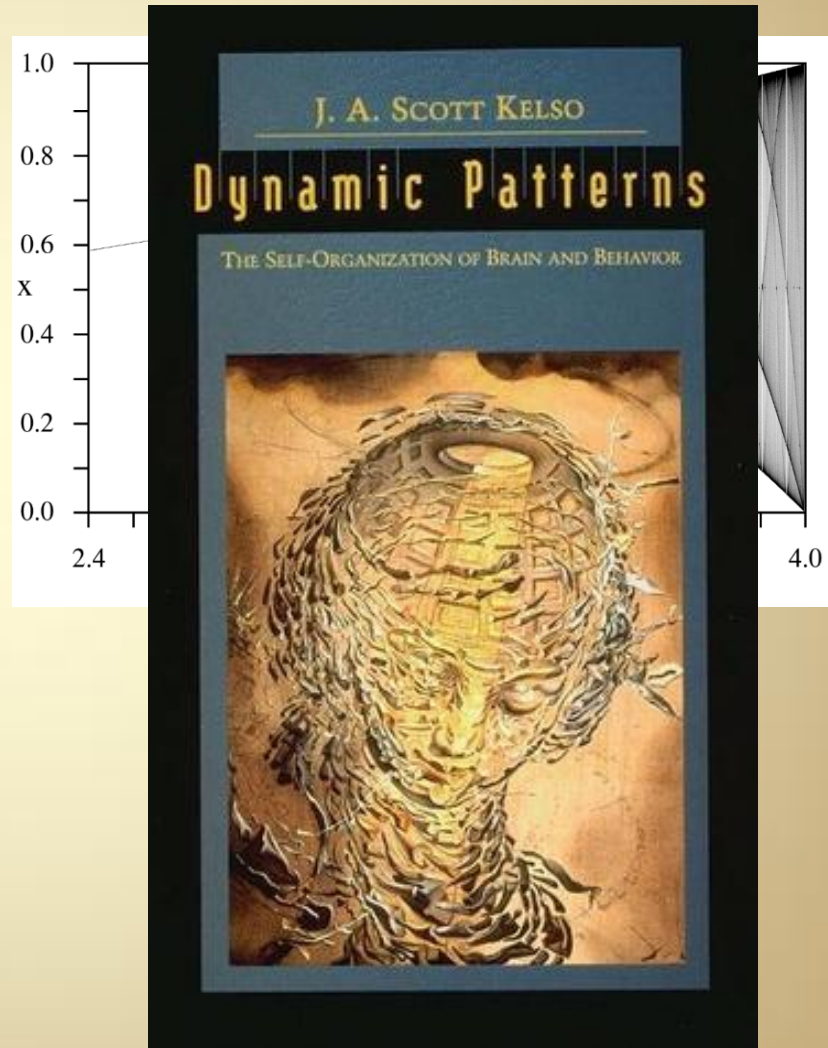
b) Metaphors for Social Systems Issues

Lack of definition

- 'Edge of chaos'
- Chaos = complexity
- Self-aware agents

Not falsifiable

- e.g. Kelso (1995)



Complexity Thinking

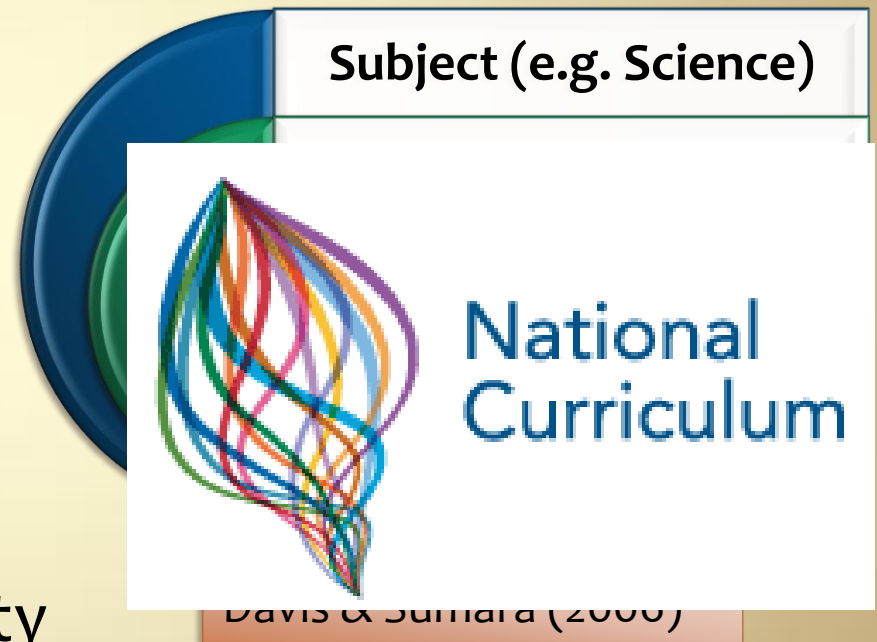
- All knowledge of complex systems is limited.
- Researchers/practitioners are complicit in systems.

a) Optimistic approach

- ‘Emergence’
- ‘Level-jumping’
- Positive action

b) Cautious approach

- Rejects ‘linear’ causality
- e.g. Osberg, Biesta & Cilliers (2008)



Complexity Thinking Issues

Unpredictability

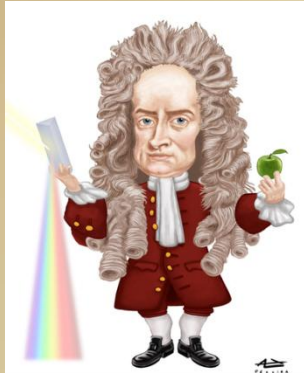
- Emergent phenomena unlikely to be as you want

A New form of Postmodernism?

- No mechanism for ‘judging’ descriptions/actions
- Epistemology is difficult to pin down
- Relativist?



Who's who?



Physics



**Hard
Complexity**



**Universal
Laws**



Biology



**Soft
Complexity**



**Models of
reality**



Social Science



**Complexity
Thinking**



**Action in
the world**

A bridge too far?

- There are great difficulties in describing social systems
- Different complexivists use different approaches
- We must first ensure we can talk to each other



Paper

Hardman, M. A. (2011) Is Complexity Theory Useful in Describing Classroom Learning? In Hudson, B. and Meinert, M. A. (Eds.) *Beyond Fragmentation: Didactics, Learning and Teaching in Europe*. Opladen and Farmington Hills: Verlag Barbara Budrich.

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