

Change, Complexity and Consciousness:

Complexity Theory as a Challenge to Critical Realism

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Globalization and its Challenges

- Social Theory reacted poorly – often not distinguishing cause and effect
- Empiricist/Actualist: seizing on one SAC element and extrapolating from changes in it:
 - S(tructure) → Global capitalism/ Empire (Negri)
 - A(gency) → ‘Institutionalized Individualism’ (Beck)
 - C(ulture) → Information/Knowledge Society (Castells)
- Contemporaneously, Complexity Theory developed in natural science and Social Theory was always a borrower

Prigogine and Allen

[T]he systems that interest us are large, non-linear systems operating far from thermodynamic equilibrium. It is precisely in such systems that coherent self-organization phenomena can occur, characterized by some macroscopic organization or pattern, on a scale much larger than that of the individual elements in interaction. It is a structure whose characteristics are a property of the collectivity and cannot be inferred from a study of the individual elements in isolation. (1982:7).

What is a *Self-Organizing System*?

- No generally accepted definition
- ‘a self-organizing system is one in which there is no central locus of information and control. Information and control are both thoroughly distributed, and collective behaviour is emergent from the individualistic dynamics of components in a manner that produces the illusion of coordinated effort.’ J.T. Ismael, p. 332.
- Examples used in the literature: turbulent fluids; ANT colonies; schools of fish; traffic flows, economic markets
- Social Science is owed an account of HOW and WHEN the social order became ‘self-organizing’ because history is of attempts at *self-government*

The appeal of Complexity Theory to some Critical Realists

- With one global social system, the problem of ‘boundaries’ vanished
- CT stresses change, not homeostasis – exit Functionalism
- CT deals with contingency and CR is intrinsically opposed to determinism
- CT rehabilitated ‘emergence’ [But also, ‘equilibrium’, ‘evolution’ and ‘holism’]
- At the Meta-theoretical level some CR fellow-travellers argued the CR and Complexity Theory were compatible (Harvey, Mingers, Urry, Walby)
- AND THE BONUS: the problems of ‘structure and agency’ and of the ‘Micro-Macro link’ were ‘transcended’

Read the theoretical small print

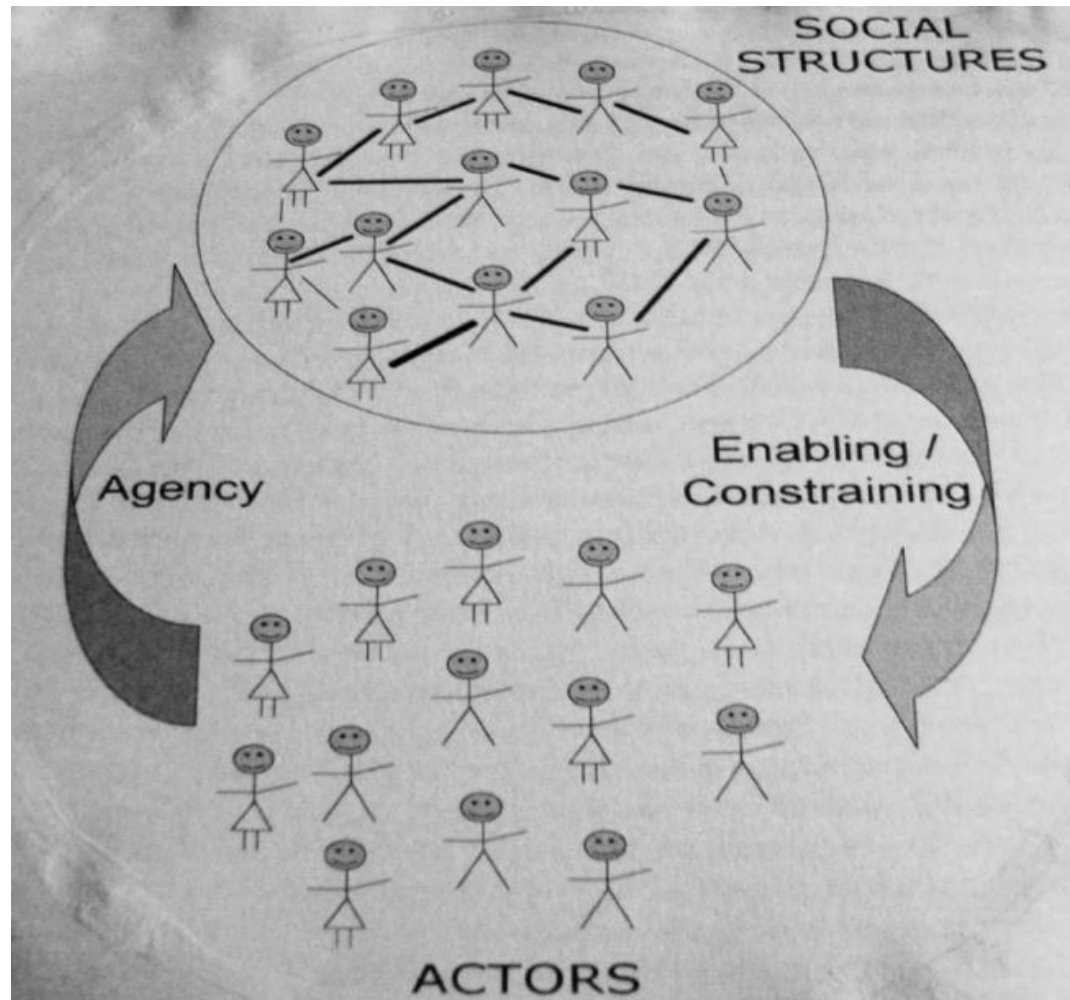
- In Social Science, 'complexity theorists' trade on social theories that had prepared the way by replacing STRUCTURES with 'flows', 'waves', 'liquidity'
- Endorsing the 'de-structuration' of late Modernity
'Individualization is becoming *the social structure of second modern society itself.*' Ulrich Beck
- SAC is OUT (with different properties and powers of its elements): Giddens IS BACK & 'central conflation' rules
- 'Self-organization' is the name of the game. But what does it presume in Social Theory?

Clearing the 'middle ground'

- *Self-organization* marries Holism (for the system) and Individualism (for the actors)
- Space between the two is occupied exclusively by 'networks'
- In the absence of 'structures' → 'Agent-based modelling', which 'solves the micro-macro problem'
- This presumes that the social order is constituted by DECENTRALIZED ORGANIZATION alone
- Agency = MONADS, therefore SOCIAL INTERACTION is examined as *self-organizing CROWD BEHAVIOUR*

Holism(system) plus Individualism (actors)

Source: Christian Fuchs, *Internet and Society: Social Theory in the Information Age*, (2008: 52).

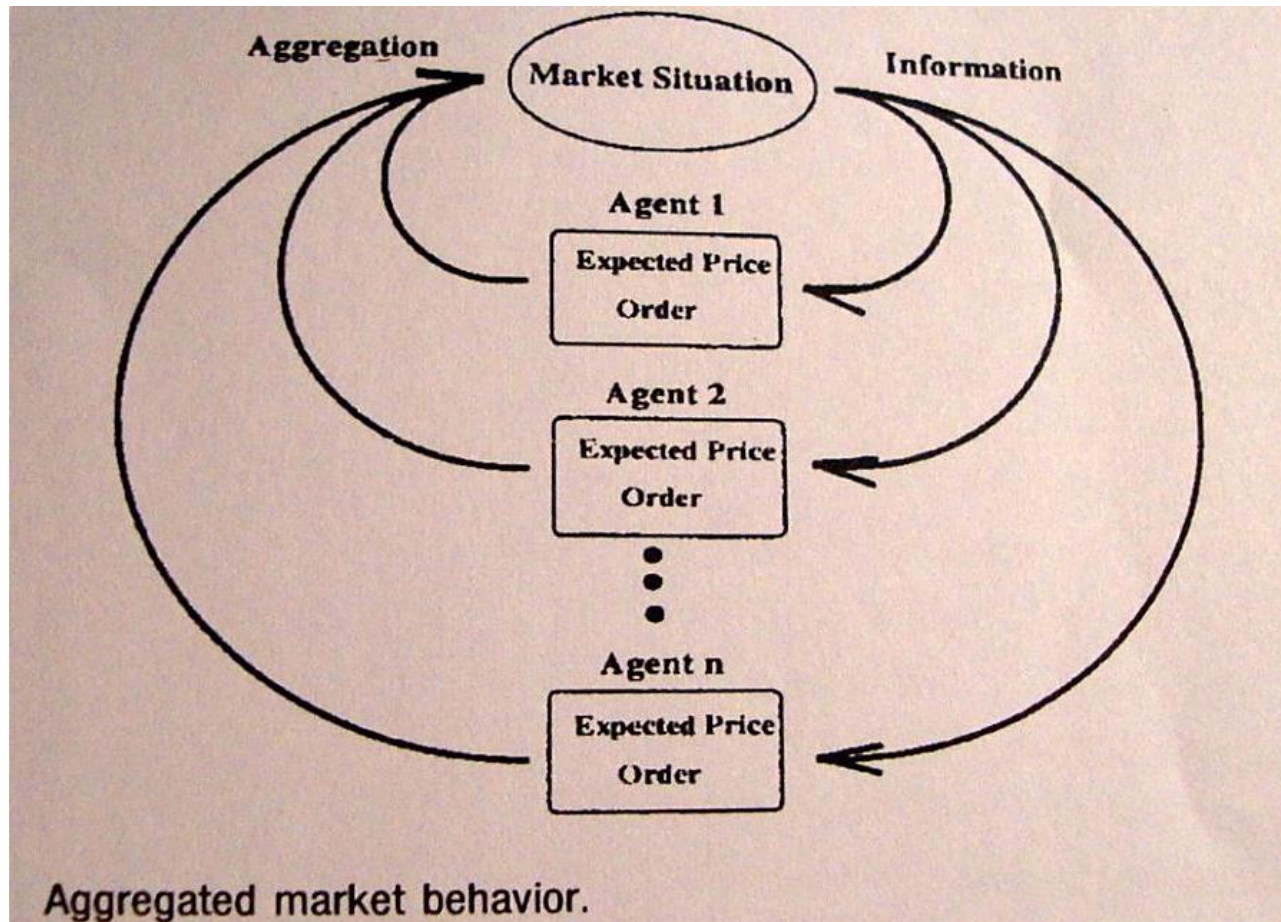


How to turn a 'heap' into a 'whole'

EXAMPLE: 'market traders' → 'finance market'

- 1. Remove structural/cultural contexts of ('trading') action, leaving nothing but crowd behaviour on stock-markets
- 2. Remove *relations and relationality* and model each trader as an autonomous monad
- 3. Explain *collective behaviour* of traders by formula of 'information + aggregation'
- This is not a 'power law' but the power struggles going on in a *Relationally Contested Organization*

Agent –based Market decisions



Source: Luc Neuberg and Koen Bertels, 'Heterogeneous Trading Agents' (2003, *Complexity*, 8:5, Figure 2, p.30).

Why Human Agents are not ANTS

- Human action entails CONSCIOUSNESS, REPRESENTATION, REFLEXIVITY & RELATIONALITY People aspire to be *self-governing systems*
- ANTs work through ‘Stimulus-Response’ and cannot:
 - Engage in flexible innovation
 - Envisage changes in their habitat
 - Collectively mobilize to transform/defend it
- Human actors ALWAYS have to work in:
 - Circumstances not of their choosing
 - Because there is no action without a context
 - Because there is no ‘non-relational’ action
 - Where *reflexivity is now imperative*

Hence the Reflexive Imperative!

- I conclude we have to analyse the social order today as a *Relationally Contested Organization*
- Today, as *always*, it is the resultant of the interplay between Structure, Culture and Agency because all action is contextually dependent, concept-dependent, and agentially-dependent.
- Which is what makes the social order only like itself
- And the faster it changes, the less we can rely upon routine action, or established norms and practices, but have to become individually and collectively reflexive.

In Conclusion

- Change originates in ‘internal perturbations’ deriving from human ‘concerns’ and ‘projects’ (or is mediated through them if initiated ‘externally’)
- Means the social order is radically different from any analogue in the natural order
- As Nicolis & Prigogine acknowledged (1989), the social order:

[I]s an interplay between the behaviour of its actors and impinging constraints from the environment. It is here that the human system finds its unique specificity. Contrary to the molecules, the actors in a physico-chemical system, or even the ants or the members of other animal societies, human beings develop individual *projects and desires* ...