

## Higher education in a complex world: making sense of policy (0029)

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The higher education sector and its institutions and practices form a complex system which is dynamic, adaptive and operating in an unpredictable, changing world. The system has adapted and continues to do so through networking and differentiation, relying upon feedback to sustain change. The unintended consequences of numerous higher education policy initiatives are testament to the ways in which leaders, managers and staff in the sector have either maintained their practices in opposition to policy directives or have embraced the challenges (see for example, the ways in which polytechnics competed ruthlessly for students as a result of the funding mechanism introduced at the time (Pratt and Hillier, 1992). Competing problem formulations and resultant policy solutions which only temporarily address 'wicked' problems, and which are implemented onto the existing tangled web of policy action are a feature of our 'hypercomplex' society (Hoppe 2010).

How can complexity theory help us understand the ways in which higher education policy affects the sector? Complexity theory is essentially a theory of change with particular emphasis on evolution, adaptation and survival (Morrison, 2002). Instead of using linear, causative models, the theory embraces organic, holistic approaches and particularly emphasises networks (Cilliers, 1998, Morrison, 2006). As an organism responds to its environment, this environment too is changed and in turn this changes the organism. This dynamic relationship is the cornerstone of complexity theory.

Given a sufficient degree of complexity in a particular environment new (and to some extent unexpected) properties and behaviours emerge in that environment. The whole becomes, in a very real sense, more than the sum of its parts in that the emergent properties and behaviours are not contained in or able to be predicted from the essence of the constituent elements or agents (Morrison, 2008:2)

Open systems are a characteristic of complexity theory whereby organisms adapt through learning, feedback, communication and emergence. The converse, closed systems, which are in a stable equilibrium, either die or move towards entropy. An open system *requires* unpredictability and disequilibrium to survive (Cohen and Stewart, 1995, Morrison, 2006). For successful survival in such an open system *is autopoiesis*, an ability to self create. An organism adapts and survives by differentiation which goes some way to help survive the competition for limited resources.

One of the most helpful uses of complexity theory lies at the 'edge of chaos' where an evolving system *has* to adapt in order to survive. This has resonance with the limits of knowledge, boundary crossing and creativity – places and spaces where individuals are forced to think of alternatives because the rules begin not to work. The ways in which social networking has transformed the dissemination of information is a case in point and higher education has to adapt to this new phenomenon even if decisions are made not to fully engage with the process.

Research drawing upon complexity theory has been applied to the way higher education interacts with wider systems (Tosey, 2002). Complexity theory can account for the position of higher education in globalized, marketized society whereby institutions have responded to global demands

but in turn have shaped those demands (Morrison, 2005). The theory can also account for the influence of one sector on another. In England, the increase of higher education provision in further education is a case in point (and likely to be given further impetus from recent speeches made by the new Minister for Universities and Science, David Willets, May 2010).

Cooper, Braye and Gayer (2004) argued that partial order predictability and probability sit alongside uncertainty in their analysis of inter-professional education. The sustainability of learning acquired whilst students undergo formal higher education depends upon the system's openness and adaptability, particularly in how knowledge is constructed and disseminated.

There are criticisms of complexity theory. As Morrison (2006) notes, complexity theory is not a new or even startling theory but it does bring together certain constructs which provides coherence. It has similar explanatory power to Engeström's (2007) activity theory or Bourdieu's (1977) notion of habitus. Deliberative Policy Analysis (Hajer and Wagenaar, 2003, Hamilton and Hillier, 2007) also recognises the tensions, dynamics and complexity in examining policy and particularly recommends attention to *practices* which are complex, value laden and contended.

Does complexity theory have predictive qualities? How helpful is it to acknowledge the complexity of any phenomenon and its connectedness to other equally complex phenomena? Yet in the same way that we look for patterns in complex natural phenomena (weather forecasts in unpredictable weather systems), we seek temporary stabilisation of complexity - in this case in order to understand what is happening in higher education. As Morrison (2006) points out;

if complexity theory is a theory of unpredictable, non-linear change, how does this sit within educational contexts in which responsibility exists for what happens now and in the future (Morrison, 2006: 7)

An additional danger is that the idea of adaptability and survival may be used for the means to justify the ends, ie for the theory to 'satisfice' (Simon, 1957). However, a complex (and chaotic) system has irreversibility as one of its qualities – in other words, an institution and its members can never find themselves in the same situation. Linearity provides helpful understanding but this can only go so far. Complexity theory embraces change, uncertainty and unpredictability. This goes a long way to help us consider future activities and practices as experiments rather than protocols.

This symposium will address how complexity theory can make a contribution to our knowledge and understanding of higher education. The next three papers in the symposium apply complexity theory to the examination of professional education, knowledge creation and medical teaching practice. We argue that complexity theory provides a different lens on higher education research, by anticipating change and seeking evidence on how organisations and individuals have adapted to the constant barrage of initiatives, policies and requirements.

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