
Complexity Theory, Philosophy and Education

Symposium: BERA Philosophy of Education SIG

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Symposium Abstract

Complexity theory offers an alternative to the simple causality and reductive accounts of change which dominate contemporary policy and practice. It does so by recognising that the interplay of dynamic elements results in the emergence of patterns and meanings that cannot be predicted by considering those elements in isolation. This symposium will show how complexity contests what it means to educate, and how it is related to existing philosophical traditions.

Paper 1 makes a case for complexity as a 'lens' which offers greater sensitivity to the particularities of different conditions and histories than normative approaches to education. Paper 2 disrupts the curriculum envisaged as 'organised simplicity' to imagine an open-ended, dynamic and emergent curriculum of 'organised complexity'. By connecting Deleuze's 'flat ontology' to the complexity view of mind, matter and context as inseparable, Paper 3 challenges contemporary characterisation of learning. Paper 4 draws on Mead's 'philosophy of the present' to suggest approaches to assessment that take account of children's capabilities and needs here and now, instead of orienting children towards what they will need or should be able to do in the future. As such we invite the audience to engage with the relationship between complexity theory, philosophy and education.

Paper 1: An Introduction - The Case for Complexity in Education

Melissa Hawkins & Jean Boulton

Paper 2: Curriculum and Complexity: A Different Imaginary

Phil Wood & Jo Trowsdale

Paper 3: Complexity and the Characterisation of Learning

Mark Hardman & Anna Wilson

Paper 4: Assessment Policy, 'Readiness for School' and a Complexity View of Time

Agnieszka Bates

Paper 3: Complexity and the Characterisation of Learning

Mark Hardman & Anna Wilson

The last paper considered learning as emergent from the interplay of curriculum, teaching, the worlds which students bring with them and the serendipity of broader context. This paper will further that argument in showing that complexity provides not only a critique of simplistic, 'linear' accounts of learning, but also a challenge to the dualism which underpins how learning is characterised.

Classroom practice in England and Wales is undergoing a painful struggle to shake off the influence of the National Strategies (DfES 2003), which ran from 1997 until 2011. The strategies exemplify a 'linear' formulation in which the progression of a child through predetermined levels became the focus of education, rather than learning (Ofsted 2010, DfE 2011). Such a formulation still underpins approaches to curriculum design (as we heard in the last paper) and also assessment (to be explored in the next), but in the classroom, characterisations such as Bloom's taxonomy (1956), or SOLO (Biggs & Collis, 1982) are presented as hierarchies: from remembering, through understanding, applying, and analysing, towards finally being able to evaluate (and, for the select few, create). Such a formulation flies in the face of experience around how learning occurs

Complexity is a frame which recognises the messiness, unpredictability and joy of classroom practice in a way which 'linear' models of learning do not. However, we here wish to develop the even bolder argument that complexity also challenges the inherent dualism within contemporary education. Educational discourse is still dominated by social constructivism, which is commensurate with the view of learning as the development of predetermined levels of knowledge and skills. Under this view individual minds are inducted into what curricula term "conceptual understanding" (DfE 2014); it is the status of this understanding itself which we contest in this paper.

Ryle (2009 [1949], p.5) argued against "the dogma of the Ghost in the Machine" in relation to dualist accounts of mind, questioning where the distinction between mind and matter should be made. Complexity theory allows us to take this further by seeing that in dynamic, non-linear interactions, which are sensitive to the minutiae of context, it is impossible to sustain a distinction between matter and a supernatural mind with which that matter is interacting. Whilst neuroscience is too young to be trustworthy, the study of brains as complex systems is bringing into questioning how mind can be distinct from body (Cilliers 1998, Freeman 1999, 2000, Edelman, Tononi 2000). Furthermore, cognitive science suggests that mind

cannot be seen as independent from the detail of the contexts in which we learn. For example, body positioning and unconscious actions (e.g. face touching), as well as our prior relationships influence how receptive we are to others (van Baaren, Janssem et al. 2009, Tognoli, Kelso 2015); whether we watch a teacher demonstrating a science experiment or do it ourselves influences how we perceive the results (Jackson, Meltzoff et al. 2006). Studies of this kind link mind, matter and context, but taken with the theoretical frame of complexity theory we might question whether we can see learning as an isolated (and measurable) property of an individual at all.

Yet one can easily point to our ability to communicate and empathise, as well as pass standardised tests. How then can we square the unique and unpredictable dynamics of learning within complex systems with the recognition of shared, social understanding? The theories and models which emanate from the scientific study of complexity are not themselves enough to answer this question and here, as with other questions posed by complexity, we must draw on existing philosophical discourses. The next paper draws upon the work of George Herbert Mead to consider assessment through the complexity lens. Here we shall draw on a different discourse, namely the work of Gilles Deleuze.

Deleuze proposed a 'flat ontology', in which heterogeneous elements can be seen to interact without any claim of ontological hierarchy (Deleuze 2004 [1968], Deleuze, Guattari 2004 [1980]). Taken in relation to a classroom, this allows us to recognise that people, music, textbooks, conversations, ideas, videos and anything else we could name, all interact within a material "hodgepodge" (Deleuze 2007). Deleuze (2004 [1968]) also proposed that understanding emerges from the "difference and repetition" of experience. We learn not through access to some other realm of ideal understanding, but because there are repeated patterns in the world, manifest in unique circumstances. We learn from, respond to and manipulate repeated yet unique patterns of behaviour, symbolic language, expression and thought.

The 'difference and repetition' of classroom events denotes that each lesson is unique, even if the planning, resources and decorations on the walls are identical. Whereas constructivism recognises the uniqueness of learners, it still characterises learning as moving them towards a *a priori*, ideal understanding. In the frame of complexity, the teacher is no longer a gatekeeper to a realm of knowledge that exists independently of specific contexts. They are engaged in unique contexts in which the repeated patterns of shared understanding are contested and dynamic.

Furthermore, by removing supernatural ideas from the picture, we see that we learn *from* contexts rather than just acquiring knowledge *in* contexts. As Biesta's (2007, p.10) points out: "The means we use in education are not neutral with respect to the ends we wish to achieve." People learn from the way things are done and the values implicit in those ways. If we take Deleuze's flat ontology seriously, the very notion of individuals (and learning) as separable from context becomes untenable; learning is an emergent phenomenon, involving people, things and all that might normally be bracketed as 'context'.

A complexity theory informed by a Deleuzian materialism thus provides a frame for challenging simplistic, linear formulations of learning but also provides the basis for a drastically different characterisation of learning. Drawing upon anti-dualist metaphysics learning is seen as unique, contextual, dynamic and emergent. It thus allows us to recognise the gloriously messy and ethical nature of education, in a way that is missed by the dominant view of education today.

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