

Spatial theory in networked learning

Richard Edwards

School of Education, University of Stirling, UK. Email: r.g.edwards@stir.ac.uk

Abstract

Over the years, there has been much discussion of the impact of the internet and new forms of data sourcing and communication for education and the ways in which networked learning breaks down the bounded the institution, classroom, and curriculum. While much attention has been given to the changing spaces of education introduced by new technologies, and the use of spatial metaphors in the framing of educational practices, the impact of spatial theory on the discussion of such education is less well developed. Space is left unexamined as simply a different context, container or backcloth for curriculum and pedagogy. This paper draws upon aspects of spatial theory to examine the ways in which the mobilities and openings made possible by the introduction of technologies also entail mooring and boundary marking in order to give the technologies specifically educational purposes. The paper outlines a number of spatial theories, in particular, the contemporary uptake of theories of (im)mobilities. Work on (im)mobilities has developed from the interplay of post-structuralist theory with complexity and actor-network theory. The paper explores its implications for researching networked learning and suggests that rather than consider education as focussed on practices of learning and teaching, we could more fruitfully consider it as spatial orderings or (im)mobile assemblings in the enactments of curriculum and pedagogy.

Keywords

Space, mobilities, space-time, code/space, networked learning, actor-network theory

Introduction

When using the term *networked* learning, are we being literal or metaphorical? Does it refer to an empirical reality to be described or is it a normative prescription of how things should be? What is the significance of the network in networked learning? Who or what is taken into account when discussing networked learning? Given the contested nature of education, the answer to these questions is almost certainly that the term is used in multiple ways embracing all of the above. The network concept has become pervasive in education and beyond, to such an extent that some (e.g. Latour 2005) suggest abandoning it as no longer useful as a way of conceptualising relations. Others (e.g. McCormick *et al.* 2010, Carmichael 2011) have begun to give more systematic attention to the concept of networks, in order to bring greater clarity to its use. In this paper, I want to contribute to the latter by drawing upon spatial theory, given that a network is inherently relational and therefore spatial.

Over the years, there has been much discussion of the impact of the internet and new forms of data sourcing and communication for education and the ways in which virtual learning breaks down the ‘spaces of enclosure’ (Lankshear *et al.* 1996) of the institution, classroom, and curriculum. While much attention has been given to the changing spaces of education introduced by new technologies, and the use of spatial metaphors in the framing of educational practices, the impact of spatial theory on the discussion of such education is much less developed (Edwards & Usher 2003, 2008, Edwards *et al.* 2004, Ferrare & Apple 2010). Although invoked, space itself is left unexamined as simply a different context, container or backcloth for curriculum and pedagogy (Edwards 2012). In this paper, I want to draw upon aspects of spatial theory to examine the ways in which the mobilities and openings made possible by the introduction of technologies also entail mooring and boundary marking in order to give the technologies specifically educational purposes (see also Edwards *et al.* 2011). This has implications for how we conceptualize networks and how we research them.

The paper is in two parts. First, I outline a typology of spatial theories that are part of existing research, in particular, the contemporary uptake of theories of (im)mobilities. Work on (im)mobilities has developed from the interplay of post-structuralist theory with complexity and actor-network theory. I explore some of the debates and issues surrounding the practices that have been developed in relation to the diverse practices that might be embraced by the notion of networked learning. Second, I suggest that one implication of theorizing space in networked learning is that, rather than consider education as focussed on practices of learning and teaching, we could more fruitfully consider it as spatial orderings or (im)mobile assemblings in the enactments of curriculum and pedagogy. This shifts attention from a focus on the cogito of the individual subject who learns about the world ‘out there’ to a notion of education as a gathering of agencies to experiment and act in the world – an actor-network. Crudely, this is a distinction between individuals learning *about* the world – a distancing – and collectives intervening in or learning as a way of being in or enacting the world – getting closer. Different forms of networked learning may empirically contribute to a range of educational achievements, but, if we take space seriously, I am suggesting we reframe what networked education could achieve. This argument is a work in progress.

Making space count

Space is used by both educationalists and geographers to research education, but often with little explicit reference to spatial theory. Where the latter is drawn upon, space is not considered a static container into which teachers and students are poured, or a backcloth against which action takes place, but as dynamic and constantly being enacted. Space is not to be considered simply an object of study, as for instance, in examining how classroom spaces are designed and used. It is more critically also a theoretical tool for raising questions and undertaking analysis. Issues for education that are often identified include how spaces become learning spaces, how they are constituted in ways that enable or inhibit learning, create inequities or exclusions, or open and limit possibilities for new practices and knowledge. Particularly in networked learning environments, the ordering of space-time has become a critical influence on and way of analysing curriculum and pedagogy as part of and as a contribution to globalization. Increasingly, network metaphors have come to the fore to help frame the understanding of these processes. Spatial theories raise questions about the relations, absent-presences and (dis)locations enacted within networks, what knowledge counts, where, how it emerges in different time-spaces, how subjectivities are negotiated through movements and locations, and how education is enmeshed as and in the making of spaces. They also raise methodological issues in terms of whether we trace the associations in enacting networks or treat them as environments within which people act or both.

Overall, despite the obvious consideration of spatial issues and the use of spatial metaphors in discussing networked and other forms of education, there has been less explicit exploration of spatial theory in education than might be expected (Gulson & Symes 2007). Spatial theory brings to the fore of the significance of the spatiality of actors and actions, the different spatial assemblings that are possible and the recognition of the difference that spaces make. In the 1990’s, for geographers, space was seen as having been under-theorized and marginalized in relation to the previous emphasis on time and history. As a feature of the valorization of time, space was constructed as neutral, fixed and immobile, unrelated to the social and without impact on the formation of subject identity and biography. Space was framed as a container or backcloth within or against which activity took place through time.

In recent decades, there has been a shift in favour of conceptions which bring to the fore the enacted, turbulent, entangled and hybrid nature of space. However, it would be inappropriate to conclude from this that the focus on time has now been simply replaced simply by a focus on space, although it is fair to say that this is often the case. As Massey argued, as the significance of spatial theory grew (1993: 155), ‘space is not static (i.e. time-less), nor time spaceless...spatiality and temporality are different from each other but neither can be conceptualized as the absence of the other’. A network is therefore both spatial and temporal in its enactments. Massey argued that, as with physics, we need to think in terms of ‘space-time’, of a conception and actuality of time and space as inseparable and interactively relational, as for example, we witness in education with timetables and their organization of spaces, times, bodies and artefacts or with electric sockets through which to recharge mobile devices.

Broadly, we can identify four threads of spatial theory that could be drawn upon in researching networked learning. None is entirely discrete from the other and they have emerged from debates within and between the different framings. Each is subject to multiple interpretations. First, there is a political economy framing of

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space. This draws upon Marxist traditions of analysis, in particular those emerging in Western Europe, post-Gramsci. It is associated with such writers as Lefebvre (1991) and Harvey (1989). Such analyses focus on the orderings and representations of space-time as manifestations of changing economic conditions and its effects on everyday life. Development, industrialization, urbanization, globalization and the inequalities they engender through the re-orderings of production and consumption are key themes in such analyses. Second, there is a feminist framing of space. Emerging from the analysis of the public-private binary as unequally gendered and associated with writers such as Massey (1994, 2005), a key focus is the analysis of the gender inequalities in changing orderings of space-time and, more broadly, the power-geometries of their particular orderings. Research on networked learning drawing upon such theories would enable us to examine, for instance, the inequalities, inclusions and exclusions enacted and the ways in which these reflect and contribute to wider changes in relation to the economy and gender relations. Thus, for instance, in 1991, I published an article, 'The inevitable future? Post-Fordism and open learning', postulating how open forms of education could contribute to the global spatial reordering of capitalism being propounded by David Harvey at the time. Currently, we might examine the spatial reach of MOOCs as a further enhancement of consumerism and branding in education. Spatial theory can thus help us consider the political economy of networked learning (Farrell and Holkner 2004). Broadly, we can say that these two threads of spatial theory address 'why' questions, providing broad explanations.

The third thread of spatial theory is broadly what we can refer to as the post-structuralist framings of space, emerging from the work of, for instance, Foucault, Deleuze and Guattari, and associated with writers such as Soja (1989). These analyses have been influenced by the linguistic and cultural turns in social theory from the 1980's and the associated forms of 'post-' theorizing. Deleuze and Guattari's (1988) notions of the rhizome as a way to deterritorialize a contrast between striated spaces – closed and bounded - and smooth spaces –open and nomadic – has been increasingly influential. Key themes in such approaches are questions of subjectivity, representation and power. Associated with this thread are attempts to examine the spaces of marginalized others, with concern being focussed on, for instance, diaspora space (Brah 1996). In such approaches, there is often an implied set of binaries between mobility, openness, cosmopolitanism and freedom on the one hand and place, closure, parochialness and constraint on the other. We can see how some analyses of networked learning drawing upon this thread might result in forms of cyber-utopianism, but more nuanced engagement focus on the constant interplay of open/smooth/mobile and closed/striated/immobile foldings of space/time.

This can be found in the uptake of the metaphor of 'flows' contrasted with those of 'positionalities', originating with Deleuze and Guattari and their notion of rhizomatic branching networks as a critique of fixed boundaries and identities. These flows are held to have a deterritorializing effect – of people, images and information, commodities, money and ideas. Unless used carefully, such concepts can result in spatial ideology rather than spatial analysis. The work of Bayne (2004) is careful in this respect. She has used the contrast between smooth and striated space to analyse digital learning spaces, arguing that they are often more striated than smooth. The important point here is that smooth and striated spaces are not either-or but both-and. Mobility through networked learning is neither inherently emancipatory nor positive and relies upon its own immobilities and moorings. To more adequately reflect this, Urry (2007: 25) uses the concept of flux rather than flow, as 'flux involves tension, struggle and conflict'.

There are those who pursue notions of smooth and striated space, de- and re-territorialization and emerging connectivities as pointing to the significance of mobilities, flux and movements in framing understanding of the spatial orderings of practices (Watts & Urry 2008). This is what is referred to as a materialist (re)turn in framings of space (Anderson & Wylie 2009), the fourth thread of spatial theory. The materialist turn takes many forms, some of which might be seen as rejections of 'theory' articulated in post-structuralist framings of space. For me, the significant work in this thread is associated with the (im)mobilities approach (Urry 2007), in part, influenced by post-humanist and non-representationalist theories, such as actor-network and complexity theories, within which particular spaces are viewed as emergent network effects (Murdoch 1998). A network is not an object to be studied, but an achievement to be traced, the effects of which in education or elsewhere can be diverse, usually drawing upon ethnographic and ethnomethodological approaches. This work has focussed on space as material (dis)orderings, as enactments and performative. Here there is a movement away from framings that assume and reproduce traditional subject-centred epistemologies wherein human intention and action is assumed and given primacy, as 'human life... is never just human' (Urry 2007: 45). Spatial orderings are not about human subjects per se, but are material associations of agencies that interrupt and affect, question and promise. The mobilities theoretical framing can be seen as contributing to the materialist turn in geography, as

‘there are hybrid systems, “materialities and mobilities” that combine objects, technologies, socialities and affects out of which distinct places are produced and reproduced’ (Hannam *et al.* 2006: 14). Here, as with smooth and striated spaces, place is not bounded or separated from flux and networks but arise from them and vice versa.

To research networked learning drawing upon this thread of spatial theory entails a focus on the associations and effects enacted, where the human and non-human are symmetrically the focus of attention. Broadly, it provides a focus for addressing ‘how’ questions. A focus on mobilities points us towards a tracing of the movements, relations and networks of artefacts, people, information and images, and the ways in which flux is made possible and constrained, as ‘all mobilities presuppose large scale immobile infrastructures that make possible the socialities of everyday life’ (Urry 2007: 19). For instance, computers require power sockets and stations to make and supply electricity, aircraft require airports and timetables, mobile phones require satellites and transmitter masts, and rights to travel are restricted for many by laws and borders. How much is black-boxed and naturalized in discussions of networked learning reflects the assumption of a certain set of stabilities in supporting the particular associations. These can be opened and problematized by a set of butterfly wings.

Rather than starting analysis from a space out of which objects move, this approach aims to trace mobilities and the ways in which spaces are moored, bounded and stabilized for the moment, and the specific (im)mobilities associated with such moorings. We might take such spaces for granted, as for instance, VLEs or MOOCs, but a mobilities analysis would examine the ways in which such associations are enacted and become sedimented across time. These mobilities, immobilities and moorings point to the entanglement and complex patterning of spaces, and the requirement to examine particular empirical tracings of relational and network enactments of space (Murdoch 1998) rather than producing some overarching spatial explanation. Research focuses on tracing associations rather than explaining them (Latour 2005). This has implications for how we might research networked learning, the extent to which curriculum and pedagogy are moored and bounded through particular enactments and gatherings of relations and our framing of learning. The mobilities approach points to the need not only to challenge any notion of treating virtual environments as if they are simulacra of a classroom, but also to challenge the very notion of the classroom as a container for curriculum and pedagogy. Theorizing space within networked learning more fully can therefore influence research in the wider field of education and articulate to wider research on enacting the social (Law and Urry 2004).

Having outlined schematically four threads of spatial theory, it is important to bear in mind the associations between them, as, for instance, in different ways, both Harvey and Soja were influenced by Lefebvre’s work on urbanization. Lefebvre himself influenced and was influenced by the Situationists, like Debord, who have also influenced strands of ‘post-’ theorizing. Massey was initially much influenced in her writing by Marxist feminism, although this shifted somewhat with time. Some of those taking up the materialist turn might be said to be extending the range of poststructuralist geographies by drawing upon theories of matter emerging from sub-atomic physics (Barad 2007). Many contemporary cultural geographers and social theorists draw upon the different threads in making their own spatial associations, as is represented in the shift to focus on (im)mobilities rather than place in some spatial framings (Sheller & Urry 2006).

Integral to the discussion of spaces is inevitably the influence of the new technologies and forms of connectedness and mobility. Web technologies can be framed in a number of ways. They are tools for communicating, ordering goods and services, organizing lives. They reconfigure the possibilities for relating, supporting the increased absent-present forms of sociality through the technoscapes of, for instance, mobile telephones and online social networking. Such networked spaces do not represent the closed spaces of virtual worlds, but the complex webs of material practices through which networking is enacted. The active form is deliberate here to once again emphasize that a network is enacted and can fall apart if this is not the case. It is thus never fully stable. Technologies, practices and artefacts enact associations, one’s that can take increasingly seductive and compelling forms. For instance, the

increasingly sophisticated and hyperrealistic graphic representations in video games are able to beckon into being believable environments that possess a genuine sense of spatiality, and often intense sociality, that grips players and pulls them into a compelling ludic realm ‘beyond’ the screen display. (Dodge *et al.* 2009: 1288)

There are therefore important affective engagements within the enactments of different digital spaces.

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Within the explorations of technologically supported spaces, the role of code is being given greater attention as an actor as part of the developing arena of software studies (e.g. Dodge & Kitchen 2011). Web technology is both hardware and software, which combine in the enacting of space in particular ways through their assemblages with wetware i.e. humans. Dodge *et al.* (2009) refer to this as 'code/space', the ways in which code enacts particular associations and spaces, what might be referred to as the hidden curriculum of networked learning (Edwards & Carmichael 2012). In their study of software in people's homes, Dodge and Kitchen (2009) identify the ways in which coded objects, processes, infrastructures and assemblages embedded in everyday life help to enact socio-spatial life, where the virtual remains as 'real' as unmediated face-to-face interaction and is not some entirely separate domain. As Crang *et al.* (2007: 2406) suggest: 'online and offline interactions are constituted and constructed together to sustain and transform the complex temporalities and spatialities of everyday urban life'. Networked learning is here simply a further everyday example of an increasingly pervasive code/space. Yet this is an area largely left unexamined in the current emphasis on learning to code, when as important is work being done by learning through code (Loveless & Williamson 2013). Technologies and coded technologies are the norm in the enactments of networked spaces constructing possibilities for associating to enact educational practices. This raises important questions about what specific forms of association are educational, or whether learning is pervasive and it is assessment and qualification that marks specific spaces as *education*.

Education as associating rather than learning

Some, such as Gough (2004), have experimented with the technological extensions of the human in curriculum and pedagogy, and developed the notion of the learner as cyborg – part-human, part-technology - as a way of formulating the differences in educational practices associated with new technologies and networked learning. However, it is also possible, drawing on the discussion above, to formulate spatial associations as engendering practices of (im)mobility rather than those of teaching and learning. This entails examining education as a spatio-temporal ordering of mobilizing, mooring and boundary marking in the valuing and enacting of certain practices as educational (Edwards *et al.* 2011).

Learning is often positioned as the simple service response to globalized complexity and uncertainty. The more challenges and uncertainty in the world, the more one must learn. Learning is represented as a matter of fact for and by humans, a way of representing the objective world 'out there' to which the separate subject/individual must adapt. The human subject is centred as that which must learn about the world and, as such, is often separated from the world *about* which they learn. The logic is one of privileging separation. Subjects learn *about* objects and 'networked learning' is one of the ways in which this is to be achieved. The means of learning is merely the conduit through which this separation and re-joining through learning about takes place. In many ways, participatory theories of learning (e.g. Lave & Wenger 1991) have attempted to address this separation focusing on the practices through which people learn. However, this has never been entirely satisfactory due to the under-theorizing of participation in relation to wider spatial theory in much work, despite calls for a greater awareness of space in relation to networked learning (e.g. Smith 2012). Learning has remained at the heart of the endeavour, even though learning as a concept has evolved from the study of cognitive psychology alone, which has at its heart precisely the centring of the human subject.

To suggest a future for education without learning and the knowing subject may seem strange, but that is one possible consequence of spatially examining networked learning, and education more broadly. In exploring the uptakes and spatial orderings of networked learning, are we perhaps in a position to question learning as being at the heart of education? Learning is often inferred from other practices, thereby centring the subject. Perhaps the (im)mobilities approach and the emerging work on code/space provide a basis through which the subject is decentred, distributed across space and time, yet also gathered through the technological mediations and associations in which humans and non-humans are entangled and moored. To examine education through this spatial theory suggests that certain associations of the human and non-human enable the enactment of certain practices and representations to be traced. These spatial orderings emerge from certain mobilities, moorings and boundary marking, the purposes of which may be other than simply learning and could, as I have argued elsewhere (Edwards 2010) be the basis for conditionality, fallibility, responsible intervention and experimentation. These need further normative elaboration as not all education, as with learning, is worthwhile.

Certain branches of spatial theory therefore not only open up particular framings of education and technology, but also raise important curriculum and pedagogic questions about what constitutes a specifically educational

association and spatial ordering. To name specific places as educational is not sufficient. Such questions are not new in themselves, but we can gather fresh insights through such tracings. In this way, if we take seriously spatial theory in relation to networked learning, we may gather and associate to enact differing purposes for education. To theorize networked learning spatially drawing from the work on mobilities and actor-network theory also results in not only enacting learning spaces differently, but also that which those associations enact. Human learning is too limited a purpose for education maybe...

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