



**AALBORG UNIVERSITY**  
DENMARK

**Aalborg Universitet**

## **The Relationships Between Policy, Boundaries and Research in Networked Learning**

Ryberg, Thomas; Sinclair, Christine

*Published in:*  
Research, Boundaries, and Policy in Networked Learning

*DOI (link to publication from Publisher):*  
[10.1007/978-3-319-31130-2\\_1](https://doi.org/10.1007/978-3-319-31130-2_1)

*Creative Commons License*  
Unspecified

*Publication date:*  
2016

*Document Version*  
Accepted author manuscript, peer reviewed version

[Link to publication from Aalborg University](#)

*Citation for published version (APA):*  
Ryberg, T., & Sinclair, C. (2016). The Relationships Between Policy, Boundaries and Research in Networked Learning. In T. Ryberg, C. Sinclair, S. Bayne, & M. de Laat (Eds.), *Research, Boundaries, and Policy in Networked Learning* (pp. 1-20). Springer. *Research in Networked Learning, Vol.. 4* [https://doi.org/10.1007/978-3-319-31130-2\\_1](https://doi.org/10.1007/978-3-319-31130-2_1)

### **General rights**

Copyright and moral rights for the publications made accessible in the public portal are retained by the authors and/or other copyright owners and it is a condition of accessing publications that users recognise and abide by the legal requirements associated with these rights.

- ? Users may download and print one copy of any publication from the public portal for the purpose of private study or research.
- ? You may not further distribute the material or use it for any profit-making activity or commercial gain
- ? You may freely distribute the URL identifying the publication in the public portal ?

### **Take down policy**

If you believe that this document breaches copyright please contact us at [vbn@aub.aau.dk](mailto:vbn@aub.aau.dk) providing details, and we will remove access to the work immediately and investigate your claim.

Please refer to original for citation. This chapter is a preformatted version of a chapter appearing in final version as: Ryberg, T., & Sinclair, C. (2016). The Relationships Between Policy, Boundaries and Research in Networked Learning. In T. Ryberg, C. Sinclair, S. Bayne, & M. de Laat (Eds.), *Research, Boundaries, and Policy in Networked Learning* (pp. 1–20). Springer International Publishing. Retrieved from [http://link.springer.com/chapter/10.1007/978-3-319-31130-2\\_1](http://link.springer.com/chapter/10.1007/978-3-319-31130-2_1)

## **The Relationships Between Policy, Boundaries and Research in Networked Learning**

**Thomas Ryberg**

Department of Communication and Psychology, Aalborg University (ryberg@hum.aau.dk)

**Christine Sinclair**

Institute for Education, Community and Society, University of Edinburgh  
(csincla5@exseed.ed.ac.uk)

The biennial Networked Learning Conference is an established locus for work on practice, research and epistemology in the field of networked learning. That work continues between the conferences through the researchers' own networks, 'hot seat' debates, and through publications, especially the books that include a selection of reworked and peer-reviewed papers from the conference. The 2014 Networked Learning Conference which was held in Edinburgh was characterised by animated dialogue on emergent influences affecting networked teaching and learning building on work established in earlier conferences, such as the inclusion of sociomaterial perspectives and recognition of informal networked learning. The chapters here each bring a particular perspective to the themes of Policy, Boundaries and Research in Networked Learning which we have chosen as the focus of the book. The selection of the papers has been a combined editorial and collaborative process based on our own initial review of the conference papers and notes from the conference, as well as an informal survey where we asked conference participants to recommend three papers they found particularly interesting. The papers for the Networked Learning Conference are all peer-reviewed, and as they have turned into chapters for this book, each has been re-reviewed by the editors and other authors. The result is a genuinely collegial distillation of themes from a stimulating conference; a snapshot of a time when national and international policies and boundaries have been changing.

Policy issues seemed more dominant in this conference than in previous ones though they had always been present, along with questions of power and agency. Indeed, the current emphasis on policy and politics was anticipated in the previous

conference held in Maastricht 2012. As Hodgson, de Laat, McConnell & Ryberg (2014a) wrote in the introduction to the book resulting from that event:

‘implementing pedagogical changes and institutional learning environments is always a political process first and only secondly pedagogical’ (Hodgson et al., 2014a, p. 7).

Our authors are alerting us to some of the less visible effects of policy and also to the impacts on boundaries. In turn, what happens at the boundaries of practice will inevitably feed back into policy. Again, boundary work has always been prevalent in networked learning discussions: it seems, however, that the time has come to recognise the implications and scrutinise what may be obscured through complexity and busy-ness. And while exchange of research is what networked learning conferences are all about, this time there is a sense that it is appropriate to pay attention to how the nature of research is itself changing and needs to change to respond critically to an increasingly neoliberal agenda in educational institutions.

As the contexts change, so do opportunities and methodologies for research and networked learning. We return to discuss this further in our concluding remarks after our discussion of the three central themes that each have their own section: Policy, Boundaries and Research in Networked Learning.

## **Section 1 - Policy in networked learning**

This section consists of three chapters that all concern different aspects of policy and politics within networked learning. As Jones argues this is an area that has been addressed previously, though not extensively, within networked learning. He notes that while policy is not always explicitly highlighted in definitions of networked learning (such as McConnell, Hodgson, & Dirckinck-Holmfeld (2012)) notions of critical pedagogy and ethical considerations have always been central. However, what stands out as a strong message from the three chapters here is that policy and politics deserve more attention and recognition within the field. We will briefly summarise the three chapters by Sarah Hayes, Ben Williamson and Chris Jones and then draw out some wider themes we think are particularly interesting across the contributions.

Sarah Hayes takes a transdisciplinary look at ‘rational’ (or common sense) policy discourse about use of technology. She examines a corpus of UK policy texts through the lenses of critical discourse analysis and critical social theory. The chapter demonstrates how policy statements frequently remove or obscure human agency from the notion of ‘the (effective) use of technology’, privileging a narrative of economic gain over higher education labour. Hayes calls for academics to restore the visibility of human labour by writing specifically about how they themselves work with technology.

Williamson's chapter is perhaps the place where the three broad themes of the title of this book are most strongly linked, through a process of policy network analysis bringing together the notion of the boundary broker organisation and the theoretical construct of the sociotechnical imaginary. Boundary brokers work as intermediaries across public, private and third sector organisations and individuals - helping to create a decentralised politics based on networks. Sociotechnical imaginaries are shared visions of future life made possible through technology. Williamson illustrates through contemporary examples how boundary brokers are using sociotechnical imaginaries to envision the governance of education systems through data analytics and database pedagogies, and the concomitant governing of individuals to participate in personalised lifelong learning. These networked technologies can accelerate changes in spatial and temporal aspects of educational governance and signal a move away from more bureaucratic forms of government.

Chris Jones calls for researchers in networked learning to engage with the broader political landscape. The issues at stake can be illustrated through the rise of Massive Open Online Courses (MOOCs) where, Jones argues, utopian aims have been superseded by more neoliberal ones as austerity policies began to affect higher education. Jones draws attention to rhetorical moves – especially the technological determinism argument – that create an impetus for forms of education that are regarded as necessarily dominated by a neoliberal perspective. This necessity is an illusion fostered through newer forms of long-standing positions that ignore or drown out alternative arguments and values in higher education. Jones demonstrates that we need to be alert to moves towards neoliberal and technological determinism in order to mount a resistance.

## *Discussion*

The chapters all concern how political actors and policy networks conjure or mobilise 'sociotechnical imaginaries' to use the term Williamson introduces in his chapter (referring to Jasanoff (2015)). A socio-technical imaginary is a shared vision of a future life made possible through particular technologies or as Williamson puts it:

“a collectively held, institutionally stabilized, and publicly performed vision of a desirable future [...] Sociotechnical imaginaries are the result of relations between technology and society, are also temporally situated and culturally particular, and simultaneously descriptive of attainable futures and prescriptive of the kinds of futures that ought to be attained.” (Williamson, 2016, [this volume](#)).

Although not all three chapters employ the particular term they all in our view concern different socio-technical imaginaries. Ben Williamson discusses data-base pedagogies and learning analytics as contemporary imaginaries; Sarah Hayes scrutinises UK policy text to analyse how 'technology', 'technology enhanced learning', or 'effective use of technology' are used as broad labels of assumed good in future classroom practices; Chris Jones tackles the concept of MOOCs and looks critically

at how such an imaginary (or perhaps a constellation of imaginaries) has shifted its form over the years at it has been co-opted from a pedagogical network to being adopted and circulated in commercial and administrative-managerial networks instead. Common to the social imaginaries are that they linger between an accomplishable now and a close-enough future. They live somewhere between present reality and a dawning brave new world.

The examples drawn out in the chapters are already-existing technologies, services or ideas, but they draw their persuasiveness not out of their current status but out of their imagined potential, in the things to come. As the authors point out, education has always been on the brink of major breakthroughs: all the way back to Sidney Pressey's early 'teaching machine' developed in the 1920s that Williamson is referring to, and to the recently predicted disruptive avalanche of the MOOC Jones refers to. Most researchers within educational technology, and networked learning in particular, probably recognise there is a recurrent narrative of imminent and/or necessary change with the advent of 'new' technologies. In general new technologies are often imagined to bring about immense changes to society in the near future (Jones, 2015). While many researchers and practitioners are probably somewhat resistant and sceptical about many of the claims made by pundits and techno-optimists it could be, as suggested by Selwyn (2014), that the educational technology community has a blind spot for the politics of educational technology. As said, policy, and more widely critical theory and ethics, have been ongoing issues of debate within networked learning. In fact the early 'networked learning manifesto' (Beaty, Hodgson, Mann, & McConnell, 2002) was specifically written to inform policy and to realise an alternative future for educational technology. A future emphasising diversity, inclusion, democratic dialogue and learners' participation in knowledge creation over transmission of knowledge. While these blind spots might be less pronounced within the area of networked learning the chapters certainly provoke us to collectively revisit our thinking of the politics of educational technology.

What the chapters in our view help us see is the extent to which these narratives are not exclusively put in circulation from within the educational technology community, but how they are formed by wider policy networks and how cross-sectoral organizational networks spanning public, private and third sector actors increasingly are driving learning agendas. This is the specific object of Williamson's inquiry where he explores the role of cross-sector boundary brokers in the education political landscape and trace how policy making and governance is performed in mobile networks rather than exclusively in the traditional, hierarchical bureaucracies of the ministries. However, this is equally visible in Jones' critical discussion of MOOCs, where he cites a report from the think tank "Institute for Public Policy Research" written by authors employed by Pearson (which is an example of such a cross-sectoral policy network). Here Jones traces how an original intention of opening up education, born and bred within a public university and envisioned to act with the free, public, university as the backbone was co-opted and superseded by a network of private universities and spin-off companies who transformed also the

very pedagogical idea of the MOOC; from a view emphasising learning as connections towards a more traditional instructional model copying what several open universities had done for decades, but managing to rebrand it as both a pedagogical and educational ‘disruptive innovation’.

This is what is often referred to as the difference between cMOOCs and xMOOCs, although, as Jones points out, this distinction is too crude and overlooks that also the Edx and Coursera MOOCs come in great variety and certainly also with pedagogical innovation (see also Conole (2013)). What overshadows this, however, and should provoke reflection within academia is the speed, veracity and reach with which sociotechnical imaginaries associated with the MOOC have spread within both the administrative-managerial networks within Higher Education, as well as the general public. While it has been propelled from within the academic edtech circuit, there are certainly also other forces in play, and as all the authors suggest there is a strong pressure from several sides to open up education - not to the public - but to more actors such as multinational companies.

This provokes us to reflect on our practices within academia. Do we, as a community, too uncritically embrace technologies or designs without proper reflection? Do we perhaps too uncritically follow the funding streams, shrug our shoulders at hyped concepts and believe we can do as we have always done - just appropriating new words for the same? In case of the latter, do we need to think about whether we just appropriate a new vocabulary, or whether concepts as MOOCs, Web 2.0, 21st century skills, and social media appropriate us and enroll us in particular socio-technical imaginaries that we have little control over? Should we snowboard down on top of the avalanche or should we be working on caving in the snow? Should we as a research community contribute to applications and reproduce the linguistic constructs of ‘effective uses of technology’ and nominalisations that Hayes unfolds and critique in her chapter? Do we need, as Jones suggests, to pay greater attention to formal or ‘high’ politics within Networked Learning? To help us answer these questions the most recent books in the Networked Learning Research series by Jandric & Boras (2015) and Jones (2015) are welcome contributions and can hopefully assist in leveraging the awareness of policy and politics in Networked Learning.

Another theme emerging from the three chapters on policy in networked learning is the gradual disappearance of humans in technology enhanced learning - and not in a critical, considered way to do with actor-network theory or critical posthumanist approaches. Rather, humans seem to disappear or become backgrounded in different ways in the three chapters. In Hayes’ chapter she eloquently shows how this erasure is accomplished through linguistic nominalisation where it becomes hazy as to who the acting subjects are. In contrast, constructs such as ‘the strategy will aim to’ gloss over the actual human work that needs to be done to realise such strategies. As Hayes puts it: “The discourse promises much but is in fact deceptively spacious, because both staff and students are missing from it.” While such nominalisations perhaps often occur within legalese, Hayes suggests that these acts of rendering human work invisible are particularly problematic within areas where there are already hidden workloads acting as silent barriers to the implementation of technology in

higher education. Hayes highlights a particular citation in her chapter: “The use of technology to create digital archives to improve documentation of practice and to support curricular developments as well as more effective use of technology” (Hayes, 2016, this volume). As Hayes comments herself this seems to generate a curious circular outcome where ‘the use of technology’ becomes a means to ensure ‘more effective uses of technology’. This might, however, not be so far-fetched if we direct our attention to the database pedagogies discussed by Williamson. In fact this seems to be the very rationale of algorithmic governance e.g. that traces and activities of humans are aggregated, ordered and analysed by machines and then used to improve the algorithms and machines which can then provide a better service or perhaps help humans to understand better their own learning or skill development. For example this is imagined in the following way by Beluga Learning (as cited in Williamsons chapter):

“The data is allowing the software to make a real-time prediction about the learner and changes the environment, ... the pedagogy and the social experience. ... This process occurs continually and in realtime, so that with every new piece of data collected on the student, their profile changes and the analytical software re-searches the population to compare once more. ... The content and environment then adapt continually to meet the needs of the learner. (Beluga Learning 5-6)” (Williamson, 2016, [this volume](#))

Thus the software is imagined as making (better?) sense of the learner’s learning and surroundings to foresee and adapt in real-time to the learner’s needs. Much is said about the role of the algorithms, less is said about the learner’s or human agency. More importantly, however, what is also rendered invisible is the human labour lying behind the algorithms. Similarly to the erasure of human agency in the policy texts it seems that ‘data’, ‘software’, ‘algorithms’ act almost autonomously (and inherently rational) rather than being designed by particular people (or companies) with particular professional skills, worldviews, pedagogical understandings, and commercial or political agendas. Rather than foregrounding political or commercial actors this erasure surgically removes intent and agendas and place accountability with assumed (rational) machines who seem to autonomously learn through mere (objective) observation and collection of human behaviour.

In the final chapter by Jones, human erasure is seen in a more indirect way. Namely in the sense that some versions or imaginaries of MOOCs are viewed as a solution to what Wiley (2003) termed the ‘bottleneck’ problem i.e. that ‘the teacher’ is a bottleneck which some educational technologists view as replaceable with reusable educational resources and intelligent tutoring systems. Obviously, a model of massive courses with few teachers and with automatic or peer-graded assessments seems a new way of solving the bottleneck problem and delivering education to a massive audience.

While in many ways the idea of replacing teachers with technology seems a way of eradicating human agency in learning, we should not forget that some saw (and see) this as a move to empower other people - namely the disadvantaged learner or the learners who cannot attend an ‘ordinary’ education (Jones, 2015). Access for the disadvantaged learner and to those with no access to educational provision has

been a prominent discourse within the MOOC circuit; although the reality of these ideals has been questioned (Jones, 2015).

What perhaps comes out of these chapters is the need for an increased focus on disentangling discourses and varying perspectives. As mentioned Selwyn (2014) argues that the edtech community seems inattentive to the politics of educational technology. Further, he illustrates how - in principle - irreconcilable perspectives such as anti-institutionalism and neo-liberalism, live happily together around imaginaries such as those associated with MOOCs, the notion of 'open', or social media. While they might have vastly different pedagogical ideals and seek different outcomes they perhaps too easily meet and hold hands to sing edtech's praise. Obviously, as Jones notes, MOOCs can be pedagogically innovative as can learning analytics. What we perhaps need is a heightened, critical sensibility that seeks to render visible possible different agendas enmeshed in these terms; and which agendas we as researchers wish to pursue to avoid uncritically promoting ideas and agendas we are in fact wary of.

## **Section 2 - Boundaries in networked learning**

As we saw in Section 1, Williamson's boundary brokers are operating in a way that suggests that learners have choice and autonomy while at the same time positioning them as subjects managed by unseen forces. Those learners have their own boundary work to do and how they make sense of them will also be affected by how they are positioned and where they can seize opportunities to make choices. The three chapters in our section specifically devoted to boundaries share a common focus on the meaning-making activities in which learners are engaged and the tasks they are expected to do, which may seem less meaningful unless carefully designed and supported. As Goodyear, Carvalho and Dohn point out, tasks and actual activities need to be distinguished, with activity being emergent rather than designed. Activity might be influenced by boundaries that are social or material – or, more likely, both. Boundaries can impose limits on where and how the activities can take place or demand that the learners find ways of transitioning across physical or virtual spaces. Again, we summarise the chapters before drawing out their wider themes and implications for the complex relationships among learners, learning networks and activities.

Gourlay and Oliver pick up on some of the tendencies to decontextualize and obscure specific educational practices identified in our first set of chapters. In their critique of models framing the popular notion of 'digital literacies', they argue that, although the models have been derived from empirical research, their loss of specificity risks turning students into 'standardised components' in digital contexts rather than as meaning-makers in situated learning. Combining ideas from New Literacy Studies and a sociomaterial perspective and their own case studies, they show the value of taking context into account in thinking about digital literacies. This

means paying attention to the unit of analysis for research in this area, which they suggest could be the ‘digital literacy event’ rather than the individual learner.

Goodyear, Carvalho and Dohn ask the valuable question ‘What can be designed and what cannot?’ in networked learning. The authors focus on the architecture of networked learning to identify design features that can be reused, particularly emphasising the material. They stress that while tasks can be designed, actual activities are not – they are emergent from within the complex assemblage that includes things, tasks and people. Revisiting the notion of affordance from a relational-material perspective, they argue that a focus on the affordances of singular things will be inadequate for a networked learning setting. Affordance, then, in networked-learning terms retains its practical significance but marries that with an acknowledgement of the complexity of actual use and practice where ‘meaning’ is important for the situation, human and non-human entities.

The theme of the chapter by Timmis and Williams is how students make meaning when they have to work across boundaries, for instance between work and the classroom. Timmis and Williams use Bakhtin’s notion of the chronotope (the interdependence of time and space), framing student experience through ‘chronotopic movements’ across different forms of practice. Clinical placements and university classrooms operate under different space-time configurations, and networked learning environments can be used to create a hybrid space to allow students continuity in both. New configurations of time and space both emerge from and may be supported by forms of networked learning; but networked learning itself adds to the complexity of the chronotopes and sometimes the result is discontinuity and disruption.

## ***Discussion***

So what are the boundaries implied by our heading for this section? In all cases the authors see boundaries as necessary but permeable, expandable or crossable, and in need of recognition and response. The emphasis is different in each, but there are many crossovers. Our sequence of chapters highlights:

- boundaries imposed by context, which may go unrecognized
- boundaries within the architecture of learning networks that allow practicable framing of design for activity
- shifting boundaries of space and time which open up newer forms of practice

Gourlay and Oliver show that boundaries formed by contexts are important to overcome the notion of the ‘free-floating’ idealized agent learner. The tendency for researchers to create taxonomies of technologies or of student skills leads to decontextualised accounts of digital literacies – and ultimately lets in the unseen neoliberal forces anticipated in the previous section of this book. ‘Free-floating’ is an expression also confronted by Goodyear, Carvalho and Dohn: activity is no more free-

floating than the learner, but emerges as a response to tasks and is shaped by context. That context is in turn shaped and expanded, providing a challenge for designers seeking reusable ideas for settings for activity. Timmis and Williams provide examples of the kinds of contexts that students on professional programmes find themselves in: a mix of the classroom and the work-based placement, each with its own shaping aspects. Their analysis shows that the impact on activity not only includes the social and the material but also space:time configurations, with networks providing opportunities but also entailing constraints. All the authors of these three chapters are optimistic though – working around boundaries offers opportunities for developments in networked learning.

The papers in this trio therefore draw our attention to the dangers of focusing on technological considerations or attributes of learners without reference to wider social and material contexts and the effects of networks. Their concerns about what happens at the boundaries provide further support for Sarah Hayes' case made in Section 1 for drawing attention to invisible human labour. By adopting pedagogical models that position learners and/or their activity as 'free floating', researchers or policymakers are likely to lose sight of what actually happens in practice, the duration of required tasks for students and their teachers, and how that work intersects with what happens in overlapping practices such as those identified by Timmis and Williams. Failure to take these aspects of networked learning into account results in a need for learners to improvise or find workarounds as they find themselves unable to do the tasks as they have been set, but still engage in the activities that they see as essential.

Interestingly, to illustrate such improvisations, each of the three chapters uses an example that focuses on the ability to print materials. The need arises at a point when learners want to apply or display their learning, and include: overcoming a barrier to accessing a printer, using print to overcome lack of access to the Internet, using a bike to overcome failure of email to send material to a print shop. Whether the workarounds have to be instigated by the learner or the design team, they are all evidence of attempts to cross unanticipated boundaries and are all examples of problems with access. Thus these examples indicate not only the need for newer technology-based practices to intersect with those from a pre-digital era, but also the discrepancy between intended and actual practice. This was also a feature highlighted in papers from the 2012 Networked Learning conference by Hodgson et al. (2014).

The discrepancy between intended and actual practice is exacerbated when attention is drawn away from meaning-making and meaningful activity. If learners find their tasks (with or without the use of technology) to be without meaning, the future seems bleak. Gourlay and Oliver lament the loss of emphasis on learner understanding from current ways of talking about digital literacies. They feel this can be restored through a combined recognition of situated meaning-making, as offered by new literacy studies, and a sociomaterial perspective that allows theorisation about the connected nature of learners, texts and devices. Also welcoming the sociomaterial, Goodyear, Carvalho and Dohn emphasise the meaning of situations –

and point to the role of significance both for humans and things. This clears the way for reprieving the notion of ‘affordance’ but now used in a relational-materialist discourse that connects activity and tasks as well as tools, software and other artefacts. Support for meaning-making is arguably most needed at boundaries themselves: Timmis and Williams offer Bakhtin’s concept of the chronotope to help learners to make meaning of their transitions between workplace and educational boundaries. Learners (and teachers) do not notice the extent to which we conventionalise and operationalise our space:time configurations until they are disrupted through crossing a boundary into a different type of practice.

While the three chapters share perspectives on the value of the sociomaterial, the need for improvisation and the importance of meaning-making, they may suggest different stances on, for example, the value of taxonomies in networked learning, or the role of space and/or time in the conceptualisation of complex assemblages. Gourlay and Oliver seek to reject essentialising taxonomies of the digital or the human, while Goodyear, Carvalho and Dohn ask: ‘What can be designed, and what cannot? Are these designable things all of one kind, or is a taxonomy needed?’ The latter do suggest the potential of taxonomies or at least patterns of design that bring together the digital and the human. There are echoes of the chronotopic movements identified by Timmis and Williams in the question Gourlay and Oliver asked students about ‘associations between spaces, tasks and times’ but it’s probably fair to say that time and space for the first two chapters in this section are more associated with emergence than with transition.

The differences in emphasis and potential contradictions across these papers relate to some extent to different theoretical influences and where the authors perceive barriers associated with boundaries to arise. What they have in common is stronger, and has some practical implications for people involved in networked learning who want to ensure their learners are engaged in meaningful work.

Section 2 draws our attention to the need to take account of everything relevant in our networked learning environment and not to allow a limited perspective or ideology to determine what we can say about teaching and learning. While boundaries can be helpful for sense-making, they are constantly changing especially as people have to make creative or improvised decisions to ensure that activity remains meaningful. In an environment where other people’s practices – along with technologies, artefacts, tasks and intended learning outcomes – change in response to shifting dynamics, we need ways to theorise the boundary work so that we can see how politics and policy can limit or expand our work in networked learning. Because the theorising and pedagogies are themselves subject to hidden or unanticipated forces around and across boundaries, they are also likely to need to change, a topic which is considered in our final section.

### **Section 3 - Research in Networked Learning**

This section encompasses three papers that address in various ways research in networked learning and reflections on how to do networked learning research. Further they again touch upon policy and boundaries though to a lesser extent than the previous chapters. The common core of the three chapters is a concern with research in networked learning, albeit at different levels of scale.

In their model of mobile and field learning, Gallagher and Ihanainen emphasise the need for a pedagogy that takes account of time, space and social presence and their simultaneous relationships. The ephemeral nature of learning in open environments does not deter them from attempting to do this, though it does point to the need for reflective practice. The multifaceted 'pedagogy of simultaneity' model the authors present provides a framework for considering continuums of pedagogical field activities. However, it also presents a way in which researchers can collect data together with colleagues or students. They conclude that meaning emerges from the establishment of trust especially at the point where students select their focus in the field, discussion and sharing of knowledge, and the construction of collages resulting from formal and informal learning practices.

Along with the other authors in this volume, Dohn stresses the importance of context, as might be expected from her practice-grounded approach. She highlights the notion of 'primary contexts' that 'anchor' our understanding and are important to who we are. She employs two metaphors to explore context: the container (from an individualist-cognitive perspective) and the rope (from a sociocultural one). The learning context as container is pre-established and bounded; the rope is formed of discontinuous elements but presents as a unity. Dohn uses these concepts to critique current uses of motivation and engagement in networked learning and to offer some new questions.

How we research networked learning is itself opened to scrutiny in Jandric's chapter. Petar Jandric's exploration of the dialectical relationship of academic disciplines and research methodologies surfaces the problems that this relationship causes for networked learning. The nature of networked learning leads to the use of postdisciplinary methods; yet, Jandric argues, these are still 'haunted' by disciplinary perspectives. Jandric considers the emancipatory potential of various forms of postdisciplinarity: multidisciplinarity, interdisciplinarity, transdisciplinarity and anti-disciplinarity to seek the best options for critical emancipatory research, favouring the final two.

### ***Discussion***

The first two chapters are in different ways concerned with studying and understanding contexts, and more so learners' engagement with context. In Gallagher and

Ihanainen they explore the mutability and complexity of context when engaging with 'mobile' pedagogical field activities - an idea that also relates well to Timmis and Williams' reflections on chronotopic movements across different forms of practice. Whilst field activities are well-known pedagogical practices, the inclusion of mobiles and mobility adds new layers to the data collection process including both multimodal data (audio, video), but equally geo-spatial data, as well as classic field notes, maps etc. However, what is more important is how learners may engage with the messy, cacaphonic field of opportunities they are presented with when entering real-life contexts outside the classroom. Here Gallagher and Ihanainen present three variables, or perhaps continuums, as part of their pedagogy of simultaneity. The continuums represent tensions between serendipity vs intentionality, informal vs formal, initiative vs seduction and all concern the ways in which the students engage with the context at hand; are they seduced by its offers and serendipitously experience in a very informal way what it has to offer; or are they intentionally taking initiative and engaging more strategically with the setting to satisfy perhaps more formal requirements. What the continuums highlight is that engagement with learning context is highly complex and multifaceted.

This resonates very well with the chapter by Dohn who introduces two distinct understandings of contexts - that of the rope and the container. These stem from a socio-cultural and an individual-cognitivist perspective respectively. Dohn contrasts and discusses these two perspectives as ends of a continuum of motivation and engagement. The socio-cultural view emphasises how motivation is socially negotiated, whereas the individualist-cognitive perspective sees motivation as a highly individual process of pursuing conscious, self-determined goals. However, the latter often ignores the 'learning context' and understands this as merely a container that learners as self-contained entities move in and out of. Unlike the container metaphor the rope metaphor suggests that contexts are not just something we are 'in'; rather they are practices we are deeply enmeshed or entangled with. Other threads (or fibres) are part of the rope and even if our own engagement might only be for a shorter period of time the rope (or practice) will sustain. It also suggests that contexts are not solitary containers for isolated individuals, but rather something we co-create. Further, the social aspects are part of why we are motivated to engage in a particular practice i.e. that motivation is not (only) an individual trait, but something that emerges as part of the social practice. This is a perspective we also see explored in Gourlay and Oliver's notion of literacy, which emphasises socio-material practice and context over an individualised and de-contextualised idea of 'digital literacies'. However, while Dohn in principle agrees with the socio-cultural perspective on context, her point is that sometimes contexts may be mere containers to the learners. Those are contexts we do not enthusiastically or fully engage with, but yet we enter, learn and leave. This, she argues, is related to whether something appears to the learner as part of their primary context. Primary contexts are those which carry a significant meaning to the person in question, those they are involved with as persons and they consider important in relation to who they are. These are contexts which are related to our development of identity and contexts

that may more likely appear to learners as ropes or ‘becoming ropes’ rather than containers.

While Dohn highlights the different metaphors and their underlying (and conflicting) theoretical outset her real purpose is to develop a practice-grounded approach that can include both perspectives. Thus, she argues that even though motivation may often be a negotiated social enterprise, we also see examples of highly self-chosen enterprises, such as a kid picking up bird-watching on her own with no apparent cue or support from the environment. Likewise, she argues that while some contexts might be ropes, others will forever remain containers to the individual learner. This also eschews ‘motivation’ from being imagined as a designable issue where particular pedagogical levers and sliders can be manipulated and set to become an optimally motivating experience to become an empirical issue where we can ask questions such as ‘which of the learning activities students cared about and why’. Dohn phrases it in this way:

“The overall point is that we need to accept a continuum of possible states and processes, anchored in the individual, as ‘motivational’ or ‘engaging’. This continuum will range from the very self-directed to the fully socially constituted. Accepting this amounts to taking the claim seriously that it is always an empirical question what ‘sets us going’ and how.” (Dohn, 2016, [this volume](#))

Bringing Gallager & Ihanainen and Dohn together we are confronted with a more complex understanding of how people might engage with particular learning contexts - mobile or not, formal or informal. It reminds us of the often discussed notion of indirect design within networked learning which is the notion that learning can be designed for but never directly designed (Carvalho & Goodyear, 2014; Jones, 2015). This is also, as written in previous section, what is explored in the chapter by Goodyear, Carvalho and Dohn when they ask what can be designed and what is emergent. The notion of indirect design suggests that there is no direct relationship between the designer’s or teacher’s intentions (the tasks they set), and then what will happen in practice or the learning that might emerge from this (the learners actual activities) - as Goodyear, Carvalho and Dohn phrase it:

“Unless learning is very closely supervised and directed (which it rarely is), there will usually be some slippage between task and activity, for good and bad reasons.” (Goodyear, Carvalho and Dohn, 2016, p. [this volume](#)).

What they all stress is that designing for learning and motivation cannot be thought of as a process of setting up a space and an elaborate plan for tasks, which can then unproblematically be executed with a particular outcome. Designing as Goodyear, Carvalho and Dohn argue, is crucial but it is important that the designer has a good understanding of what can be designed and what is emergent. The continuums presented by Gallager & Ihanainen as part of their pedagogy of simultaneity, as well as the metaphors of ropes and containers are conceptual tools which can help designers of networked learning reflect on the tensions between the designable and

the emergent. This reflects and extends also what was discussed in the previous book in the conference series:

“The messy and unpredictable nature of networked learning highlights the tension between the expected and unexpected, and squarely emphasises ‘teaching or facilitation’ as a practice. While productive networked learning certainly hinges on a carefully crafted and reflexive design, we should equally view it as considerate and careful reflection-in-action (Schön, 1983).” (Hodgson et al., 2014, p. 24)

Another important issue brought up by Gallagher & Ihanainen and Dohn (which also ties in well with the chapters discussed in the previous section) is that of the materiality and place-ness of networked learning. While traditionally, as noted by Goodyear, Carvalho and Dohn, networked learning has been thought of as online courses with individuals sitting in their homes, connected through their desktop computers to other learners in virtual conference rooms it is also clear that networked learning is becoming increasingly more diverse than that. The pervasiveness of internet access (in some parts of the world) and the dramatic increase in ownership of mobile technologies (laptops, tablets and smartphones) are changing the places of where and how networked learning is happening. From virtual learning environments being mainly used by ‘distance education’ to becoming a standard component for all higher education students. From ICT & learning being an esoteric activity in labs to becoming a pervasive part of campus and lecture hall activities (whether consciously or not on behalf of the teacher). From working primarily from home to people being on the move and engaging in online activities while being on the train or in cafes, and students alternating between distributed work and meeting on campus. Mobile field activities, informal learning communities are other examples. These concerns are reflected in a recent book titled *Place-based Spaces for Networked Learning* (Carvalho, Goodyear, & de Laat, 2016) and in the Networked Learning Conferences over the past years there has been an increasing interest in sociomateriality and socio-material practices. These intersections between place, space, time and activities are reflected in all of the chapters in section 2 as part of discussing the boundaries of networked learning. This obviously also speaks to how we should understand research in networked learning and what are the boundaries of networked learning as a field compared to Technology Enhanced Learning, Computer Supported Collaborative Learning or other fields of enquiry? Can networked learning encompass also learning networks that are not primarily technologically mediated? Can we imagine any contemporary form of learning that does not - in one way or another - include the use of technology? It seems a challenge in the years to come to better understand the boundaries of research in networked learning.

These boundaries are what Jandric is challenging us to revisit. In his chapter he acknowledges the emancipatory and critical roots and ideals of networked learning, but he also challenges the networked learning community in suggesting that it might still be struggling with breaking the chains of the traditional disciplinary perspectives rather than embracing fully a post-disciplinary perspective. The latter, he argues, is a prerequisite for true emancipation.

“Disciplinarity, multidisciplinary, and interdisciplinarity are imbued within the existing social and technoscientific orders. In spite of significant epistemological and practical achievements, therefore, these methodological approaches are structurally unable to provide radical social change.” (Jandric, 2016, [this volume](#))

Further, Jandric poignantly criticises the tendency for research being politically steered towards more short-sighted goals of immediate applicability, while also pointing out that research and teaching are riddled with questions of class and privilege. In relation to this Jandric argues how there are increasing gaps between those researchers and institutions who are allowed to focus on research and the growing mass of non-tenured, loosely affiliated teaching assistants, post docs and/or adjuncts who are becoming part of what has been termed the ‘precariat’ (class of people who have job conditions with little predictability, stability and security (Standing, 2014)). There are some interesting tensions raised in the chapter by Jandric, which are some that could be explored in the years to come. We would comment that in times of scarcity, austerity and insecurity one could perhaps expect that many researchers would be less inclined to pursue the more ‘risky’ transdisciplinary modes of research; particularly when pursuing tenure or at least more stable working conditions. There might seem to be more refuge and comfort in the soothing arms of ‘traditional’ research and it might seem an easier path in terms of publishing papers. Further, one could also speculate whether insecurity might lessen the inclination to fight for social change and social justice and becoming an advocate for radical pedagogies or pursuing a feminist agenda. This brings us back to section 1 and the discussions of policy and politics in networked learning. The area of Networked Learning is not only affected by educational politics, but equally by wider political decisions and currents. As Jandric and others in this book suggest this should encourage us to reflect, think deeper and perhaps also act in a more politically sensitive way to make sure that the field of networked learning remains an area of research grounded in emancipatory perspectives and critical thinking - an area that remains open and oriented towards transdisciplinarity and social change, as suggested by Jandric.

### *Concluding reflections*

Following from our summaries and discussions on the three sections of the book we shall reflect on how these resonate with and extend our current understandings of networked learning. In doing so we found it valuable to return to the concluding chapter of the book following the 2010 conference in Aalborg: the relational model of networked learning presented in that chapter is worth revisiting in the light of the chapters in this book. This integrated a number of dimensions that are central to a holistic perspective on networked learning to understand how digital technologies can be designed and enacted to support networked learning (Hodgson, McConnell, & Dirckinck-Holmfeld, 2012, p. 295).

In reflecting on the shifts emphasised in the 2014 conference, it seems helpful to add additional concepts and an extra bullet to this relational model:

- A pedagogical approach (values, principles, *politics*, emancipatory perspectives)
- Organisation and *policy* at different scales and levels (group, institution, the collective)
- The learner, the teacher, and *the designer* (their individual choices)
- *Different contexts and places* (*formal/informal, home, mobility, primary/secondary*)

In the list above we have emphasised the additions and will discuss these in more depth.

### **Politics and Policy**

As we have discussed across the three sections, policy and politics grow increasingly important to networked learning. We have suggested that politics could be added to the first of the bullet points concerning pedagogical approaches, values and principles, as these are often political or at least reflect a particular position on learning.

As explored in the previous sections many terms within educational technology are spacious and specious in the sense that they can take on different meanings, and it might be unclear what is meant by e.g. effective or productive: Cost-efficient, scalable, democratic or high-quality? This is true for many terms and concepts within educational technology such as: MOOCs, Web 2.0, 21st century skills, and Technology Enhanced Learning (Bayne, 2015). They are deceptively spacious and work as linguistic ‘boundary objects’ (Star & Griesemer, 1989) i.e. terms that facilitate understanding and action across differing disciplines and actors whom however might individually conceive and read the boundary object differently. This might be part of the reason why, as Selwyn (2014) shows, quite different disciplines and ideological perspectives can rally under the same flag within educational technology. Perhaps we see only our own ideals reflected in the terms and then come to see technology X as a means to accomplish those. Thus, MOOCs, Web 2.0 or Learning Analytics become boundary terms that are commonly used, but pursued with widely different pedagogical agendas. This could be, for example, delivering educational resources and instructional support for flexible, self-paced learning (broadcast view) versus enabling new relations and patterns of collaboration between facilitators, learners and robotic agents (discussion view). Likewise, these commonly used terms might gloss over widely different political agendas, as Jones shows with his analysis of how MOOCs have changed substantially from a university driven idea of education as public good to a ‘disruptive innovation’ to ‘fix education’ with the help of private companies and strategic partnerships. We can also sense how

different agendas might be underlying ideas of 21st century skills and digital literacies - from being situated accomplishments dependent equally on the environment to being understood as compartmentalised, individual skill-trees that can be 'nurtured and grown' to become an enlightened citizen and/or productive, valuable asset to society. With this we are not suggesting that networked learning designs should necessarily be political and aim for social change and emancipation. However, we argue that networked learning as a field should cherish and expand its critical roots and heighten its critical sensibilities in relation to disentangling and critiquing different underlying agendas within educational technology.

We are also suggesting adding policy to the second bullet point (organisation and *policy* at different levels of scale). While policy and politics are related and high politics seep into policies and practice as many of the authors show they also function at different levels of scale. Policies can be quite mundane, yet still affect learners, as illustrated by Gourlay & Oliver showing how not having access to a staff printer can render a task more cumbersome. In a similar vein in one of our home institutions students cannot leave material on a shelf in a seminar room because the department has only invested in the cheapest 'cleaning package' which prescribes that all shelves must be emptied every day. This, however, means that it becomes difficult for students to store models, post-its, paper, pens and other stuff they use as part of working on campus. Policies thus often gloss over or remove the actual work that needs to go into realising 'effective uses of technology'; nor are they concerned with how they might collide with existing micro-policies, established practices and the nitty-gritty work of making educational technologies function in practice. As with learning, policies are not something directly transmitted from the management to the individual employees, from state to citizen, and while we often speak of 'implementing' policies, doing so creates complex organisational dances. This for example was what John Hannon (2014) explored in analysing how a particular use and vision emerged for the local adoption of a LMS ie. how the LMS was assembled and coming to being through organisational power games and negotiations. Likewise, Nyvang & Bygholm (2012) show how 'the implementation' of a learning system is a cacophony of multiple voices and perspectives. Perhaps as Gourlay and Oliver suggest in relation to understanding students' digital literacies we need to inspect more carefully processes of how 'deceptively spacious policies' are implemented in practice and which voices eventually come to dominate the pedagogies and practices (what we could possibly term 'organisational sense mining'). Maybe it is important to strengthen the focus on institutional and organisational aspects and understanding pedagogy, course management systems and other learning technologies as socio-technical systems that encompass issues of power, changes in division of labour and responsibilities; issues often explored in information systems research and social informatics and connected to networked learning by Creanor & Walker (2012). Thus, we should perhaps be more attentive to that designing for learning encompasses more than pedagogy and could be viewed as organisational change process where ideas from participatory or cooperative design could be relevant as suggested by Gleerup et al. (2014).

### **The role of the designer**

We added the notion of the designer for a couple of reasons. Carvalho, Goodyear and Dohn, as well as many others, are arguing for understanding teaching as the art (or science) of designing for learning, and the area of ‘learning design’ is a major field of research within TEL-research and within networked learning. However, we would equally like to stress the fact that the teachers and the designers may not always be the same persons. Courses may be designed by others than the teacher or - as often with online courses - be a collaborative enterprise where multiple persons with different backgrounds are part of co-designing courses instructional designers, learning technologists, tutors, and teachers may be part of designing and running courses. However, there might also be disconnects e.g as Jandric explores in his examples of the precariat of adjunct professors that step in and teach courses in which content and sequencing have been decided by others. Thus, they have less agency and little control over the means of production. Jandric explores these potentially emerging gaps between the haves and have-nots within academia - between the precariat and the ‘tenured faculty’ or a ‘teaching aristocracy’ and a ‘pauperised teaching labour force’. This could potentially be aggravated by political agendas of seeing the main benefits of online learning as a means to reduce the number of teachers (the bottleneck problem) and thus the costs. At least the fast development of Universities’ interest in ‘teaching at scale’ warrants critical inquiry into issues of ownership and rights in the relations between ‘the designer’ and the ‘teacher’.

### **Different contexts and places**

The changing nature of networked learning as noted by several of the authors is challenging us to think more carefully about the placeness and materiality of networked learning. This is reflected in a review of the networked learning book following the 2012 conference (Hodgson, Laat, McConnell, & Ryberg, 2014b) by Peter Goodyear (2015). In the review Goodyear advises the networked learning community to:

“So my second, future-oriented, point is that networked learning researchers should be taking a few more gambles about the likely nature of the tools and artefacts that will be bound up in networked learning in the next decade or so. There has been too much (premature) fuss about the ‘the internet of things’, but we do need some strategies to ensure our research methods and problems aren’t locked to technologies that were new in the 1980s.” (Goodyear, 2015, pp. 271–272)

This is specifically addressed in the chapter by Carvalho, Goodyear and Dohn, but is a theme across many of the chapters particularly in section 2. Carvalho, Goodyear and Dohn also argue that the domain of networked learning has become more diverse than primarily being concerned with off-campus, online programmes. Mobility and the pervasiveness of mobile devices and web-access reshape the boundaries of networked learning and networked learning research urging the development of

concepts such as place-based networked learning, chronotopic movements, a pedagogy of simultaneity, materiality and artefacts to name a few. Likewise, the significance of context has been highlighted by a regular contributor to the Networked Learning Conference, Nina Bonderup Dohn, who proposed in the 2012 conference (and has reiterated in this volume) a change to the frequently-cited definition of networked learning offered by Goodyear et al. (2004). Dohn's addition is highlighted in the statement below:

“Networked learning is learning in which information and communications technology (ICT) is used to promote connections: between one learner and other learners; between learners and tutors; between a learning community and its learning resources; **between the diverse contexts in which the learners participate.**” (Dohn, 2014, p. 30 emphasis added)

We could feel tempted to rephrase this into ‘between the diverse contexts and places in which the learners act’. While mentioning both context and places could seem a bit double they are nevertheless distinct concepts, although their difference and similarity would warrant much deeper theoretical discussion. Even though contexts as presented by Dohn can be places, they are not necessarily physical (or virtual) places; they could equally be certain conditions or situations people are in. Therefore adding places also suggests a careful consideration of the material aspects of those places and to interrogate or question distinctions such as virtual and physical.

The perceived need to augment a longstanding way of looking at networked learning is thus reflected throughout the chapters of this book. This is not a call to reject what has gone before - far from it - but to build on it and value the reflexivity that is prevalent in this community.

### *Special Acknowledgements*

The conference held in Edinburgh 2014 was the ninth networked learning conference and we would like to call attention to the tremendous work of Vivien Hodgson and David McConnell in sustaining and developing the conference over the years. Since the first Networked Learning Conference in 1998 Vivien and David have been co-chairs of the conference and have, together with many others, been vital in sustaining and expanding a network of researchers and research environments that have endured and grown over the years. The 2014 conference was the first conference in which Maarten de Laat and Thomas Ryberg took the role as co-chairs to run the conference together with Sian Bayne, Christine Sinclair, Hamish McLeod and Jen Ross as the local organisers. We would all like to thank both Vivien and David for helping throughout the process by providing advice and sharing their experiences, but more so for their continued work to develop the conference and the research area of Networked Learning (together with many other people too numerous to mention in full). Their work has crystallised into the biennial conference, the present book series on research in networked learning, of which they serve as series editors

and also a host of various research networks and projects on networked learning in and outside the EU. While the two first books in the series were reworked papers from the conference (Dirckinck Holmfeld, Hodgson, & McConnell, 2012; Hodgson et al., 2014b), as is the present book, there are now two other strong titles in the book series (Jandric & Boras, 2015; Jones, 2015) and hopefully many more to come. We would also mention the role of Chris Jones, who has served as a permanent member of the scientific committee for the conference and has been invaluable in the process of planning the 2014 conference, as well as Alice Jesmont who has been the conference secretary since 2006, and involved in the planning of the 2016 conference in Lancaster.

## References

- Bayne, S. (2015). What's the matter with "technology-enhanced learning"? *Learning, Media and Technology*, 40(1), 5–20. <http://doi.org/10.1080/17439884.2014.915851>
- Beaty, L., Hodgson, V., Mann, S., & McConnell, D. (2002). *Towards E-Quality in Networked E-Learning in Higher Education*. ESRC Research Seminar Series. Retrieved from <http://csalt.lancs.ac.uk/esrc/manifesto.pdf>
- Carvalho, L., & Goodyear, P. (2014). *The architecture of productive learning networks*.
- Carvalho, L., Goodyear, P., & de Laat, M. (2016). *Place-based Spaces for Networked Learning*. Routledge.
- Conole, G. (2013). MOOCs as disruptive technologies: strategies for enhancing the learner experience and quality of MOOCs. *Revista de Educación a Distancia*, 39, 1–17.
- Creanor, L., & Walker, S. (2012). Learning Technology in Context: A Case for the Sociotechnical Interaction Framework as an Analytical Lens for Networked Learning Research. In L. Dirckinck-Holmfeld, V. Hodgson, & D. McConnell (Eds.), *Exploring the Theory, Pedagogy and Practice of Networked Learning* (pp. 173–187). Springer New York. Retrieved from [http://link.springer.com/chapter/10.1007/978-1-4614-0496-5\\_10](http://link.springer.com/chapter/10.1007/978-1-4614-0496-5_10)
- Dirckinck Holmfeld, L., Hodgson, V., & McConnell, D. (Eds.). (2012). *Exploring the Theory, Pedagogy and Practice of Networked Learning*. Springer Verlag.
- Dohn, N. B. (2014). Implications for Networked Learning of the "Practice" Side of Social Practice Theories: A Tacit-Knowledge Perspective. In V. Hodgson, M. de Laat, D. McConnell, & T. Ryberg (Eds.), *The Design, Experience and Practice of Networked Learning* (pp. 29–49). Springer International Publishing. Retrieved from [http://link.springer.com/chapter/10.1007/978-3-319-01940-6\\_2](http://link.springer.com/chapter/10.1007/978-3-319-01940-6_2)
- Gleerup, J., Heilesen, S., Helms, N. H., & Mogensen, K. (2014). Designing for Learning in Coupled Contexts. In V. Hodgson, M. de Laat, D. McConnell, & T. Ryberg (Eds.), *The Design, Experience and Practice of Networked Learning* (pp. 51–65). Springer International Publishing. Retrieved from [http://link.springer.com/chapter/10.1007/978-3-319-01940-6\\_3](http://link.springer.com/chapter/10.1007/978-3-319-01940-6_3)
- Goodyear, P. (2015). Review of: Hodgson et al. (2014) *The Design, Experience and Practice of Networked Learning*. *Technology, Knowledge and Learning*, 20(2), 269–273. <http://doi.org/10.1007/s10758-014-9243-3>
- Goodyear, P., Banks, S., Hodgson, V., & McConnell, D. (2004). *Advances in Research on Networked Learning*. Dordrecht: Kluwer Academic Publishers.
- Hodgson, V., Laat, M. de, McConnell, D., & Ryberg, T. (2014a). Researching Design, Experience and Practice of Networked Learning: An Overview. In V. Hodgson, M. de Laat, D. McConnell, & T. Ryberg (Eds.), *The Design, Experience and Practice of Networked Learning* (pp. 1–26).

- Springer International Publishing. Retrieved from [http://link.springer.com/chapter/10.1007/978-3-319-01940-6\\_1](http://link.springer.com/chapter/10.1007/978-3-319-01940-6_1)
- Hodgson, V., Laat, M. de, McConnell, D., & Ryberg, T. (Eds.). (2014b). *The design, experience and practice of networked learning*. New York: Springer.
- Hodgson, V., McConnell, D., & Dirckinck-Holmfeld, L. (2012). *The Theory, Practice and Pedagogy of Networked Learning*. In L. Dirckinck-Holmfeld, V. Hodgson, & D. McConnell (Eds.), *Exploring the Theory, Pedagogy and Practice of Networked Learning* (pp. 291–305). Springer New York. Retrieved from [http://link.springer.com/chapter/10.1007/978-1-4614-0496-5\\_17](http://link.springer.com/chapter/10.1007/978-1-4614-0496-5_17)
- Jandric, P., & Boras, D. (Eds.). (2015). *Critical learning in digital networks*. New York, NY: Springer Science+Business Media.
- Jasanoff, S. (2015). *Future imperfect: Science, technology, and the imaginations of modernity*. In S. Jasanoff & S. H. Kim (Eds.), *Dreamscapes of modernity: Sociotechnical imaginaries and the fabrication of power* (pp. 1–47). Chicago: University of Chicago Press.
- Jones, C. (2015). *An Educational Paradigm for the Age of Digital Networks Networked Learning*. Springer Verlag.
- McConnell, D., Hodgson, V., & Dirckinck-Holmfeld, L. (2012). *Networked Learning: A Brief History and New Trends*. In L. Dirckinck Holmfeld, V. Hodgson, & D. McConnell (Eds.), *Exploring the Theory, Pedagogy and Practice of Networked Learning*. (pp. 3–24). Springer Verlag.
- Nyvang, T., & Byholm, A. (2012). *Implementation of an Infrastructure for Networked Learning*. In L. Dirckinck-Holmfeld, V. Hodgson, & D. McConnell (Eds.), *Exploring the Theory, Pedagogy and Practice of Networked Learning* (pp. 141–154). Springer New York. Retrieved from [http://link.springer.com/chapter/10.1007/978-1-4614-0496-5\\_8](http://link.springer.com/chapter/10.1007/978-1-4614-0496-5_8)
- Selwyn, N. (2014). *Distrusting educational technology: critical questions for changing times*. New York ; London: Routledge, Taylor & Francis Group.
- Standing, G. (2014). *A precariat charter: from denizens to citizens*. London ; New York: Bloomsbury.
- Star, S. L., & Griesemer, J. R. (1989). Institutional Ecology, “Translations” and Boundary Objects: Amateurs and Professionals in Berkely’s Museum of Vertebrate Zoology, 1907-39. *Social Studies of Science*, 19(3), 387–420.
- Wiley, D. A. (2003). *The coming collision between automated instruction and social constructivism*. Retrieved from [https://kb.osu.edu/dspace/bitstream/handle/1811/26/Wiley\\_OLN.pdf?sequence=4](https://kb.osu.edu/dspace/bitstream/handle/1811/26/Wiley_OLN.pdf?sequence=4)