Open Research and Open Learning

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Abstract

This paper describes the authors' journeys from traditionally closed to open research. Using a narrative approach, the authors draw on their recent research experience to explore the influences on this shift and how it aligns with their increasing work in emergent learning. The shift has itself been an emergent process. Changes in both open research and open learning are based on 'social software', which changes the relationship between public and private space, and formal and informal forms of speech and writing. This creates a new hybrid, or 'mashup' between open research and open learning, which goes beyond 'open scholarship'.

Key words

Open research, open learning, MOOC, emergent learning, open scholar

Introduction

Open research is, broadly speaking, research in which a substantial part of the research process takes place in open forums, collaboration, open 'courses' (e.g. MOOCs: Massive Open Online Courses), and a range of informal social networks. This opens up the process of research and writing to what has been called 'ante-formal' communication and knowledge (Williams, 2008, 2011): i.e., knowledge which is 'not-yet' formalised, but which could quite possibly be transcribed and re-versioned into formal, peer-reviewed knowledge and publications at a later stage.

This is a radical change, as although it preserves, and continues to value the production of formal research 'artefacts' which are produced *for formal circulation* – to contribute to the body of peer-reviewed knowledge, it also values, and starts to circulate and tentatively validate, this 'ante-formal' knowledge at a much earlier stage – what might previously have been dismissed as just 'thoughts in progress'. In semiotic terms, it opens up and re-invigorates, the relationship between 'parole' (live, contextualised, inexact 'speech') and 'langue' (formalised, abstract, precise 'writing'), and rebalances the traditional 'asymmetric' hegemony of formally written text.

This takes place, ironically, through the new forms of written texts, which are based on one of the richest affordances of social media, namely 'recorded conversations'. So many of our previous instances of 'parole' that would in the past have been 'lost in the air' once the conversation was over are now recorded, *en passant,* because this new type of hybrid 'speech' takes place through keyboard and keypads – in blogs, email, txts, wikis, tweets, etc. This not only provides new resources for interaction and writing, it also provides affordances for resituating, reworking, and transcribing thoughts across private and public spaces. Thoughts that might, for instance, start off in a private space (like an email), can move across to informal public spaces (blogs, etc) and eventually end up in formal public space (in journals and books).

However, what have not been adequately addressed are the implications for identity. There are many lists of what an academic should do, how an academic should act to become an open scholar/researcher – but not how an open researcher should *be*. There seems to be the assumption that if you just start sharing openly that will solve the problem, but Martin Weller has said that this will lead to a new type of elite (Weller, 2011). The key issue is perhaps something more specific, i.e. that it will only suit a particular type of personality. Those who are naturally open and don't mind conducting their working relationships in the full glare of open networks will be the people who will be acclaimed as open scholars. This won't help those who do not naturally behave in this way; it will also involve a substantial cultural shift for some.

To put it simplistically: 'if you don't tweet, you won't *count*' – but Twitter is likely to follow the typical 'bubble' that follows the introduction of new media. What is more fundamental is that 'openness is 'a state of mind' (Weller, 2010), which is not based on twitter-trending-celebrity status, but rather on a more old fashioned value, namely 'intellectual generosity'. The current research on Ash tree die-back disease is a case in point – most if not all of the DNA analysis of the fungus, of Ash trees, and of fungal-resistant Ash trees is being shared openly *as it happens* across Europe and beyond. There are quite different 'states of mind' to choose from – from Creative Commons and Open Source (both effectively 'some rights reserved') right across to Richard Stallman's Free Software, or 'open code' approach.

Moving into Open Research

Between them, the authors have extensive experience and expertise in areas which have culminated in a move towards open research: areas such as elearning (participation, design, consulting, evaluation and teaching), communities of practice, knowledge management and the application of Complex Adaptive Systems Theory, affordances, ecological psychology, and 'lite' social structures (Williams, Karousou & Mackness, 2011; Williams, Mackness & Gumtau, 2012; Williams, 2012). Both authors are members of open and closed communities, facilitators of elearning, designers of online learning courses and environments, and teachers in both face-to-face and online environments. They are also education consultants, working on a variety of projects in Higher Education, in schools and within the commercial sector. The authors originally became aware of each other and met virtually in an open online environment: the massive open online course CCK08 (Connectivism and Connective Knowledge, 2008). Both attended the MOOC because of their prior interest in elearning, prior experience of large-scale online learning in Knowledge and the Public Interest's 72-hour online global seminar (or 'JAM'), closed online courses, and virtual communities of practice.

For one of the authors, a recognition of the tension between the constraints of traditionally structured, hierarchically organized teaching environments and the negotiated meaning experienced in virtual communities of practice, led to an interest in autonomous, self-determined learning, and hence registering for CCK08.

For the other author this arose directly out of work in the Affordances for Learning project, which developed the Nested Narratives methodology (Williams, Gumtau & Karousou, 2009) for reflection and professional development, in which reflection is no longer framed by the needs of the institution, but is rather based on the agency and self-determination of the learner. The development of these interests was also supported by the availability of an expanding range of freely available software platforms, such as blogs, wikis, YouTube, Twitter, RSS, Facebook, LinkedIn, Twine, Ning, Pageflakes, SecondLife and Flickr, which were all used in varying degrees in CCK08 (Fini, 2009).

Although there were open courses as early as 2007 (Alec Couros' course, EC&I 831: Social Media and Open Education), CCK08 was the first one, which set out to test the principles of a proposed new learning framework: connectivism (Siemens, 2004). The basic premise of connectivism is that knowledge exists in a

network of connections and that learning consists of being able to make connections across the network and see patterns of connection.

At its heart, connectivism is the thesis that knowledge is distributed across a network of connections, and therefore that learning consists of the ability to construct and traverse those networks. (Downes, 2007; 2012)

This is consistent with basic semiotic and discourse theory, which states that all meaning is social, as it is situated primarily in discourse, which in turn is situated within discourse communities and practices (Barthes 1968, Foucault 1975, Wenger, 1998). It is also consistent with new perspectives on synaesthesic ability (Ramachandran, 2003; Williams, Gumtau & Mackness, in press), which emphasise our ability to perceive and create not only patterns, but also patterns of patterns across all sensory modalities.

This notion of networked knowledge does not, in itself, address the issue of the relationship between structure and agency, teaching and learning, and how one actually acquires the ability to construct and traverse those networks though Downes and Siemens do begin to address this in their four key principles for connectivist learning: autonomy, diversity, openness and connectedness.

CCK08 was designed to maximize each of these principles and in the event, learner experience of them was ensured by the surprisingly large number participants, over 2200, who registered for the course. This led Dave Cormier and Bryan Alexander to coin the term MOOC – an acronym for 'massive, open, online course'. Networked-knowledge MOOCs have subsequently become known as 'cMOOCs' after the original 'connectivist' MOOCs.

Whilst subsequent cMOOCs offered by Downes and Siemens have increased their dependence on distributed platforms, leaving participants to find their own connections and 'meet' in locations of their own choosing, the original CCK08 MOOC, which the two authors attended, did offer Moodle discussion forums, i.e. a central location: a 'forum' in the sense of a market place for ideas - for meeting and interacting. These forums significantly influenced the types of connections that were made, the tone of discussion and knowledge exchange.

CCK08 was in many ways a radical experiment to see how far openness could be pushed, as an *in principle* affordance for learning. Downes has frequently written about his belief in the ability of, and the desirability for learners to organise their own learning. This is an interesting idea, but the devil is, as always, in the detail. Not all people have the time, leisure, resources and luxury, to find out how to learn, and what to learn, from first principles. Many of them want and need some structure and guidance.

Radical openness is, ironically, only really open to those who already have a basic academic grounding (and often an undergraduate degree at least, see the example, in Figure 1, from moocmoocher):

What is your highest level of education?

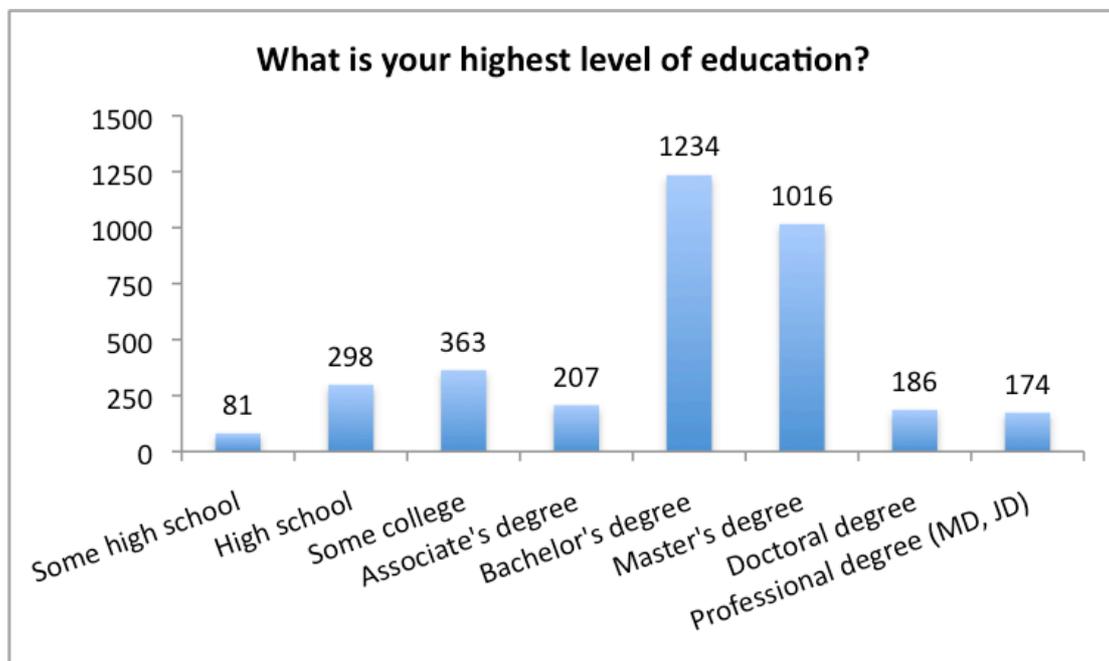| Category	Value
Some high school	81
High school	298
Some college	363
Associate's degree	207
Bachelor's degree	1234
Master's degree	1016
Doctoral degree	186
Professional degree (MD, JD)	174

Figure 1: Coursera exploratory survey, from moocmoocher

and access to reliable broadband services and internet-devices. It's a moot point whether radical openness increases or decreases the digital divide, particularly in the short to medium term (Weller, 2012). It could turn out to be another example of the Sesame Street Paradox, in which an excellent, innovative television programme, which was designed to boot-strap preschool learning for marginalised communities turned out to be most useful, and most used by well-resourced middle-class communities instead.

The affordances of social software clearly provide new and exciting opportunities for 'opening up' interaction, authorship, publishing, collaboration and sharing, and even knowledge construction, outside of the traditional strictures of traditional educational institutions, including: age cohorts, financial, class and cultural 'thresholds' and patronage, etc. However, there is an implicit assumption in many MOOCs that peer-learning, and even more so, peer-facilitation and peer-moderation, can provide all the structure and guidance that is necessary for an entirely spontaneous, self-organising and self-correcting learning network, or learning ecology. This is very altruistic and idealistic but, as we shall see in the practice of CCK08, as well as in the theory of complex adaptive systems, such systems require constraints – albeit constraints of a special kind (see below).

The question is: How can we create and balance new forms of structure and constraint, to allow the new affordances of social media, and of learning, to flourish together?

Or to put it another way, how can we rebalance individual benchmarking and mastery with open teaching – teaching which celebrates the development of individual and social agency and thought, rather than compliance with micro-managed 'outcomes'?

There were four important influences on the authors' and other participants' learning experiences in CCK08.

- The huge number of posts to the forums (at least in the many hundreds), particularly in the early weeks, and the intensity of discussion in one location.
- The presence of a 'troll' (a deliberately disruptive and provocative presence) in the discussion forums in the early weeks of CCK08.
- A demonstration of power by one of the MOOC facilitators, in which he subscribed all forum participants to receive multiple email notifications of posts.
- The option to leave the forums and participate from blogs.

The two authors, who did not interact with each other during the MOOC, reacted differently to these influences. One of the authors maintained a high presence in the Moodle discussion forums throughout the MOOC, engaged in initial discussion with

the 'troll' before deciding to follow the Open Source principle of 'Don't feed the troll', and strongly objected to the demonstration of power by the MOOC facilitator when this resulted in the participants' email inboxes being filled with unsolicited notifications. The other author, on finding the discussion forums overwhelming, moved to participation from a blog, had a brief 'skirmish' with the 'troll', but was able to control this from the blog and having left the forums, was not affected by the MOOC facilitator's demonstration of power.

At the end of the 12-week MOOC, one of the participants suggested researching the different experiences of CCK08 participants who engaged with the MOOC from blogs and/or forums. Ultimately four participants, including the two authors of this paper, engaged in this research, which was conducted collaboratively in a wiki. At this time none of the researchers had met each other. Extensive in-depth discussion continued for many months in the wiki. A survey was designed, email interviews were conducted, the data was analysed and finally two papers were written by three of the team and ultimately presented by the two authors of this paper at the 2010 Networked Learning Conference (Mackness, Mak & Williams, 2010; Mak, Williams & Mackness, 2010). The fourth team member withdrew from the research for personal reasons.

Throughout the process the research team was aware of the tension between working in the open, sharing the ongoing research process with the CCK08 community, and having to work in a closed wiki to ensure that the data was not in any way 'contaminated' by consensus building between the researchers and their fellow participants in other conversations, or ethically compromised by using information from confidential or private communication with these colleagues without their consent. At the time of working on the research (in 2009) the researchers took a number of steps to try and remain true to a belief in the value of 'openness' as a learning and research principle for the 21st century.

- The initiator of the research, Sui Fai John Mak, extended an open invitation at the start of the research to all CCK08 participants, to join the research team. This resulted in a team of 3 researchers initially; later the team was joined by a fourth member.
- There was an implicit commitment to collaborative working in a wiki, open sharing of ideas and information, lack of hierarchy and mutual respect.

- News about the on-going progress of the research was shared with the CCK08 community through the researchers' blogs.
- When the analysis of the data was complete, the <u>wiki</u> was opened to the CCK08 community and the public in general, and it remains open. (CCK08 itself is now open again as a learning and research resource tool).
- The researchers committed to publishing in the open and ultimately both papers were presented at the Networked Learning Conference 2010 and published on the conference website.

The research itself shifted substantially during the process. It started off looking at whether there was a difference between 'bloggers' and 'forum-users', and between different people's learning styles. During the process of designing and administering the questionnaire and conducting the follow-up email interviews, as well as during the on-going discussion in the research wiki, it became apparent that the nature of the research 'object' – social media and people's responses to social media, had begun to influence and shift the whole research process.

The data started to show that although some people were, for the most part, bloggers, or forum-users, many people used blogs and forums interchangeably. Behaviour, in other words, was separating off from specific media and platforms. So although some people might explore particular, new affordances in blogs, for instance, they soon started to use and adapt these affordances in wikis, and vice versa.

So the course was not only open in the sense of being free in that it lacked any entrance qualifications, and very few participants paid for the course (only 20 or so, who were also doing the course for formal accreditation at the hosting University of Manitoba). More interestingly, it was also 'free' in the sense that the form and structure of the course was open *because the social media offered affordances which were, in principle, open to different and innovative uses,* and because the course convenors deliberately encouraged open and unrestricted exploitation of these media.

That led to an initial surge of participation and intense interaction in the forums in the radically open and free MOOC. It also, almost immediately, raised ethical and management issues. One particular participant was deliberately disruptive, rude and

provocative on a personal level. She was also very astute and well read, and provided, at times, inviting opportunities for intellectual engagement. The fact of the matter was that her rather stereotyped behaviour (as a troll) could have been shut down quickly by applying the established rule of thumb in open software development forums, namely: DNFT – do not feed the Troll – ignore them, and don't respond in any way. But the rule was never implemented or explained to anyone.
As a result, a substantial number of people left the forums, and some left the MOOC altogether. This flight from the forums was exacerbated when one of the course convenors imposed large amounts of unsolicited updates on everyone later on in the course (Mackness, Mak & Williams, 2010).

There is an ethical issue here, in that the 'rules of the game' (or even worse, the absence of any rules) were not disclosed. It appeared to most people who were interviewed that there were no rules at all – the 'inmates had taken over the asylum'. Ethics aside, there was also a more general issue, which is the issue of the balance between structure and agency in open courses. Agency, self-organization, confidence, trust and a cooperative environment all depend on some constraints – ground rules if you like.

Without constraints such a course might work (and to a large extent CCK09 did work in this fashion), but there are no assurances that it might not go 'off the rails' at any point. For participants - both fee paying (in this instance) and people investing just their time and energy, this can be an unacceptable and even unethical risk. Open affordances can, in other words, turn into 'disfordances'. Social media, like any other media, are not innocent, and can be 'misused' to increase discrepancies in power – in teaching, and in social relations.

The authors expressed their concerns about the meaning of openness and how this might be interpreted in publications immediately following participation in CCK08; subsequent research collaboration has led to an increasing interest in some of the associated dilemmas. In particular, CCK08 had a significant effect on the authors' personal identities as researchers and led to an increasing and emergent opening-up of practice, which is still developing.
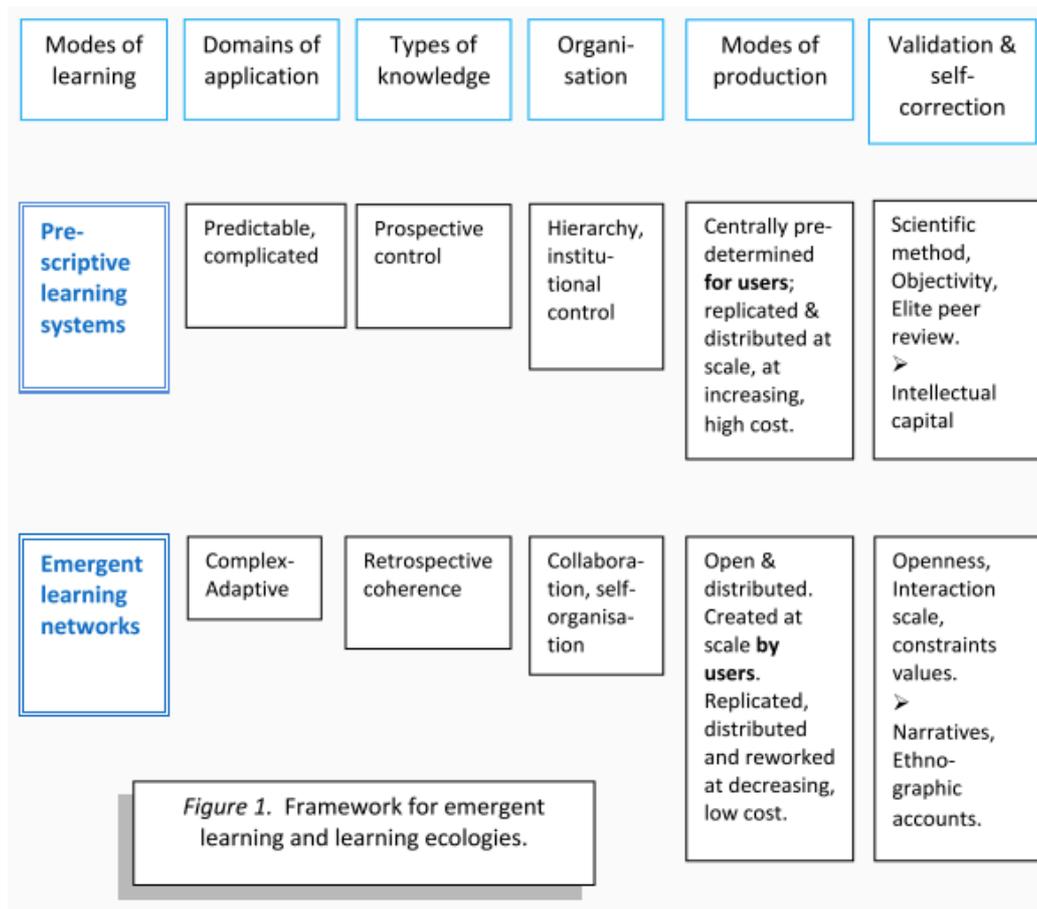
Theorising Open Learning

CCK08 was a radical and ground-breaking experiment. It raised many issues, quite starkly:

- Are ground-rules and limits necessary, and if so, what kinds of rules?
- How much, if any, disruptive behaviour can contribute to learning?
- Is a central, virtual 'space' or forum necessary?
- What kinds of learning are suited to what kinds and degrees of openness?
- What kinds of theoretical frameworks might help us to balance structure and agency, teaching and learning?
- What positive and negative affordances (or 'disfordances') for learning and for self-organisation are enhanced by what kinds of social media?

Following CCK08 and the subsequent publication of two papers, on-going public interest in the research, and invitations to run online webinars about the research, the authors started a new wiki, to discuss the need for a more rigorous theoretical framework to describe what was happening in their open research and in open learning. Of particular interest to the authors were learning environments such as MOOCs, where participants are self-organising, where learners and the system co-evolve, where knowledge is co-constructed and where learning is surprising, unexpected and cannot be prescribed, in other words: *emergent learning*. These environments are typically 'open', and offer learners considerable autonomy and social interaction. However, the authors recognized that

*Web 2.0 provides the necessary conditions for emergent social behaviour to flourish, but this does not necessarily lead to knowledge or to emergent learning. (*Williams, Karousou & Mackness, 2011).

Drawing on their knowledge of connectivism, social learning theory (communities of practice) and complexity theory the authors looked for case studies where the learning environment would exemplify more or less emergent learning. *Emergence* is quite clearly defined in the literature on complexity theory (Cilliers, 2005), as adaptive behaviour that occurs when large numbers of self-organising agents interact frequently, within some broad constraints, but with considerable degrees of freedom. This forms an ecology of learning, in which agency and structure co-evolve.

However, as the concept of emergence was applied to learning, it became apparent that neither emergent learning nor 'openness' are sufficient on their own, as learning always also involves some prescribed, or fixed learning and knowledge, which is often the foundation for further, open learning. So although the framework draws heavily on emergence (and complexity theory), *emergence* needs to be both *defined against, and balanced with* prescribed learning. The framework for the learning ecology was therefore expanded into an ecology of *prescribed and emergent* learning, see below (from Williams, Karousou & Mackness, 2011):

Modes of learning	Domains of application	Types of knowledge	Organi-sation	Modes of production	Validation & self-correction
Pre-scriptive learning systems	Predictable, complicated	Prospective control	Hierarchy, institu-tional control	Centrally pre-determined **for users**; replicated & distributed at scale, at increasing, high cost.	Scientific method, Objectivity, Elite peer review. ➤ Intellectual capital
Emergent learning networks	Complex-Adaptive	Retrospective coherence	Collabora-tion, self-organisa-tion	Open & distributed. Created at scale **by users**. Replicated, distributed and reworked at decreasing, low cost.	Openness, Interaction scale, constraints values. ➤ Narratives, Ethno-graphic accounts.

Figure 1. Framework for emergent learning and learning ecologies.

This has applications for open learning, and by implication for open research too – the balance between openness and constraints applies to both. In a paper published in 2011, the authors concluded that:

The degree to which the learning can usefully be based on self-motivation and self-organisation depends on three things: the quality of the interaction afforded by the resource and the facilitator, the range of affordances for open interaction with other peers (or micro-agents), and the moderation of the balance between openness and constraints. (Williams, Karousou & Mackness, 2011).

The authors' exploration of emergent learning within online and face-to-face environments has revealed 'openness' to be a complex phenomenon. Tschofen and

Mackness (2011) have discussed individual psychological dimensions of openness, and openness as an internal state rather than an external expression, manifest through open sharing and engagement. They point to learners' needs for privacy, reflection, solitude and contemplation and do not think that these preclude the notion of open sharing. Rather, they see openness as being on a spectrum of structured to open learning, and learners being in different places on this spectrum at different times. This aligns with the authors' consideration of the balance between prescribed and emergent learning. 'Learning in the open' is not considered to be a 'free for all', but a complex dynamic between prescribed and emergent learning, openness and structure, agency and control, solitude and interaction.

A Framework for exploring open learning

Following publication of their paper on emergent learning in 2011 the authors continued to reflect on and discuss these issues and openly shared their work and thinking on their blogs and through presentations and webinars, e.g. CIDER webinar, ELESIG webinar, (Williams, Mackness & Karousou, 2011).

These activities led to an invitation to write a follow-up paper for a special issue on emergent learning to be published by IRRODL. This invitation provided the incentive to develop the ideas outlined in the first paper, particularly with reference to how the dynamics of how people learn (or do not learn) in emergent, open and unpredictable spaces can be described, and whether it is possible to design curricula and learning environments, which will promote emergent learning. The authors realized that although much has been written about the need for open sharing of knowledge, expertise and resources in this age of information overload, and although learners increasingly interact in participatory, collaborative and innovative learning networks, we need practical tools to help us describe how learning occurs in these complex environments, where learners self-organise and learning outcomes are unpredictable.

The authors were joined by a third author, and for several months they explored the full range of factors which might influence the degree to which learners experience learning as prescribed or emergent, and tried to create a possible graphic representations of the dynamics of learning experience. Drawing on the framework developed in their 2011 paper and past experience of using radar graphs as a tool for description, and informed by Wenger's work on landscapes of practice (Wenger,

2010), Siemens and Downes' (2008, 2009) design for connectivist learning environments, and Cilliers' writing about constraints and adaptation in complex learning environments (Cilliers, 2005), the authors developed a 3D model which they tested against a range of case studies.

MOOCs

The three authors set themselves the rather ambitious task of developing this comprehensive and rich framework for describing emergence in practice, in an ecology of learning. Whilst they were fascinated by MOOCs, it had already become clear that designing and running MOOCs is complicated, so they decided to take a step back, and first try to learn more about *emergence* by casting our research net wider than just MOOCs. We had by now identified emergence, and the balance between emergent and prescribed learning, as core issues. The idea was to build on, and operationalize, the definition of emergent learning developed in the earlier 2011 paper:

Emergent learning … arises out of the interaction between a number of people and resources, in which the learners organise and determine both the process and to some extent the learning destinations, both of which are unpredictable. The interaction is in many senses self-organised, but it nevertheless requires some constraint and structure. It may include virtual or physical networks, or both.

Accordingly they embarked on a cycle of development, testing, and redevelopment of the *footprints of emergence* framework and the 3D graphic palette, by applying it to a wide range of kinds of learning: MOOCs (e.g. CCK08), Masters courses for entrepreneurs, Teacher training courses, interactive installations for children on the Autism Spectrum, and a Montessori pre-school.

This started with factors from existing research and practice, such as Wenger's *community, identity and network*, the connectivist factors: *connectivity, diversity, autonomy and openness,* and Snowden & Boone's factor of *risk* (2007), but soon found that although some of these were useful, they did not adequately describe the range of factors affecting emergent learning in our case studies.

The research focused on developing a way of *describing and communicating how people learn* (or don't learn) in these *emergent/prescriptive* ecologies, in which part of the learning is designed to be unpredictable, and emergent, and in fact in

which the curriculum itself might also be emergent (Williams, Mackness, Gumtau, 2013).

A key factor in *emergence* is the idea of *co-evolution* –of structure and agency, which simply means that adaptation takes place in both the agents and the environment, but more importantly that it is a reciprocal adaptation – i.e. co-evolution is the *result of the interaction* between the adaptations of the agents and of the environment. Accordingly <u>four *clusters*</u> of factors were identified: *Open / Structure* (the creative tension between openness and structure), *Interactive Environment* (the way openness / structure is realised in practice), *Agency* (developing your capability, on your own terms), and *Presence and Writing* (exploring, articulating and networking how you present yourself, your ideas and feelings.

Within the four clusters, we identified a total of <u>24 factors</u> (e.g. *risk*) which enable researchers, designers and learners to map out, in detail, the dynamic of how they learn, using as many of the factors as are relevant to their own experience.
The result is a beta footprint palette, which is freely available on the web for anyone to try out (See the <u>Template in Word.4</u> that can be downloaded).

The model was also shared and tested with participants of an online closed course, Wenger-Trayner's Academic BEtreat (July 2012) and at a theory clinic which the authors presented at the Theorising Education 2012: The Future of Theory in Education: Traditions, Trends and Trajectories Conference, University of Stirling. Both these events allowed the authors to see how the model might be used in practice and raised further implications for the research, but not in time to influence the paper, which had already been submitted for publication.

In November 2012 this work, *Footprints of Emergence,* was published in IRRODL, but not in the special issue on emergent learning (Williams, Mackness & Gumtau, 2012). Again, it was considered important to publish in an open journal, and whilst the authors conducted this research in a closed wiki, they have continued to blog about the work during the research process and discuss it in a variety of venues, such as the CPsquare community, and with colleagues from the University of Applied Sciences, Austria and University of Lancaster, UK.

See here for some examples of *footprints …*

Ongoing discussion about the Footprints of Emergence paper and follow-up work on further developing the footprint tool has in itself been an emergent process. It has become increasingly clear to the authors that the model they have developed for describing emergent and prescribed learning environments is dynamic and is of most use when used by curriculum designers, teachers and learners to discuss the learning process. Contrary to other research methodologies, the *Footprints of Emergence* are intended to explore and articulate tacit knowledge of unpredictable, changing, and different experience of learning – by individual or by groups of learners, designers, teachers and facilitators. The purpose is not to establish norms, or *good practice*, but rather to describe *interesting practice*, and use that as a rich, empirical resource to have conversations about future learning and design (See Snowden & Boone, 2007, on the broader aspects of this kind of application of complexity theory).

Conclusion

The research, in its current form, is based in the practice of description, but draws on a wealth of theoretical insights. The authors are keen to apply the methodology and the tools to widely different learning events and installations, and openly share their developing thinking and work cooperatively with others interested in emergent learning. They have therefore established two wikis for continued sharing of this work – one is public and open to anyone who applies to join. This wiki encourages members to use a shared template for drawing their own footprints and to upload these footprints to the wiki. It also shares other resources, such as bibliographies and descriptions of the factors, which might influence prescribed and emergent learning. Currently the model developed for describing emergent learning includes 25 factors. At the time of writing, the authors are using the wiki to collaborate on how the description of these factors might be clarified for ease of use.

The second wiki is private, but the authors have invited members who are interested in the broader aspects of this work, and who are using the footprints model for their own publication and development purposes. In this wiki the authors grapple with practical and theoretical issues still to be resolved. For example, work with various groups since the publication of the paper has suggested that a more concise list of factors might be needed for users new to drawing footprints, and this work is in progress. This wiki is also used to post tentative footprints, where the author wishes

to discuss or clarify the scoring of factors which have been used for drawing the footprint, before posting on the public wiki.

By 2012, an unprecedented explosion of different types of MOOCs was offered by a growing number of institutions, leading to a distinction being made between the original connectivist MOOCs (cMOOCs) and the well financed xMOOCs of Coursera, and Udacity, the Open Source EdX, and the mechanical MOOCs (like the recent MOOC on Python. Siemens (2012), and Roberts et al. (in press) point to an increasing hybridity of MOOCs which mixes design elements.

However, CCK08 and subsequent cMOOCs, in addition to adhering to the four key principles mentioned above, also continue to promote four key activities; aggregation, remixing, repurposing and feeding forward. These four activities are important for encouraging openness through the use of open source technologies for open sharing of knowledge and ideas.

These recent developments shift the debate within emergent learning, from the broadest level, where the concern is for balancing structure and agency, to a more specific concern for the way this is operationalized.

1. DIY MOOCs (Do-It-Yourself)

At the one extreme are MOOCs which are e-variations of correspondence learning-with-do-it-yourself-study groups, even though they use slightly more interactive web-resources, and encourage social software use, and some aspects of AI-upgraded 'programmed learning'. The [Python MOOC](#) in 2013 was a good example of this. For people who are focused on a 'prescribed' task (like learning to programme in Python) and who might be familiar with, and comfortable with old-fashioned bulletin boards and LISTServes, this can work well. Cheap (no humans involved in the teaching), but they need to be tightly focussed, and pretty much restricted to prescribed learning, rather than open or emergent learning.

2. Automated-feedback MOOCs. These are variations of televisual broadcast 'education', or 'show-and-tell' MOOCs, which typically provide lectures, but with instant feedback to dynamically interactive questions and answers, both in multiple choice, and in text-recognition modes. The recent AI MOOC (late 2012) was an excellent example. It took the warmed-over television 'education' (of Khan

Academy) and made it into e-enhanced real-time feedback lecturing. A big step up, but also only really suitable for highly prescribed learning. This can be run in live-human mode (where the lecturer is 'present', synchronically, and adapts the teaching to responses to the real-time feedback) or it can be run in zero-human mode, which is a kind of Khan Academy 'on vitamins' (rather than 'on steroids').

3. Bagel-MOOCs, or Doughnut-MOOCs

These are MOOCs which are designed to have no centre (hence the name). It's a back-office-humans model, in which there is no (or very little) direct human feedback or intervention, but in which humans are involved in setting up, monitoring, and adapting the 'aggregation, remixing, repurposing and feeding forward' (see above). There is no 'course centre', in the form of a course discussion forum with at least some facilitation. This has variants from zero-human to light-touch human, to facilitated back-office, ongoing, *structuring.* It is radically open, but it provides no easy options for your typical MOOC learners to create their own discussion 'forum' centres – so you can't easily add your own 'centre'.

Most of these might more appropriately be called MOONs – massive open online networks, rather than MOOCs (courses), although they generally do provide a series of events in a particular sequence. The CCK MOOCs after 2009 were designed to as Bagel-MOOC, as was the MOOCMOOC in 2013.

4. Centred MOOCs

The field of MOOCs continues to develop, rapidly. It is difficult to find an appropriate name for this category of MOOCs, particularly as the name cMOOC has already been taken by 'connectivist MOOCs', even though these are already splitting up into what we could call bagel-cMOOCs and cMOOCs (i.e. with and without a centre). So, centred MOOCs have a central forum (as well as many of the other features, (aggregation, remixing, repurposing and feeding forward).

Business Models

Research needs to explore how these different ways of structuring MOOCs enables various kinds of learning (or not). This includes not only the issues of teaching, learning and design, but the business and sustainability models, and the ethical issues involved.

One of the author's posts to the debate in the *EDC*MOOC on Coursera explored some of these issues, and tried to put them into a broader context. ...
Coursera clearly introduces a different business model into education, based on selling, using, and re-using 'personally-generated' content (basically anything that you is post to a Coursera course), for any purposes of Coursera's choice (including marketing). Coursera's rights seem to replace and exclude those of the learner, even to their own material, as a participant in a Coursera MOOC. There does seem to be a 'consent' clause somewhere in Coursera's user login process, which in principle allows users to opt-out. But this is different from an active opt-in option, which would be far more transparent.

Coursera is however not the only game in town (see the other discussion forums in EDCMOOC, which unfortunately are only available to registered participants), as there are established and successful technical and business-model alternatives. The alternative is edX, which is Open Source, and which has been sponsored by MIT and Harvard to the tune of several million dollars, as well as several courses which use Open Source platforms like MOODLE and various wikis and blogs.

So if a University chooses Coursera, there's nothing inevitable about it. Whether Coursera will go the way of GM food (which was rejected by consumers in the UK), or not is an interesting, but different question. It might not even be a good business model; we'll have to wait and see. Selling personally-generated and/or personal content, which is at the heart of the Coursera business model, seems to matter much more to some people than to others. Some people on the EDCMOOC said they didn't care either way.

More interesting is the way that this issue (of 'monetarization' and commercial exploitation of personally-generated content) is part of a much bigger debate, which links directly to the utopia/dystopia theme of the early weeks of the EDCMOOC, and to the debate in week three on what it is to be 'human'.
This is not a new debate, but it is a fight, over big money and power; it's not just an 'academic' issue. For instance:

Google: their business model is based on selling and manipulating data on personal use of goods and networks - 'customer and consumer profiling', which is

done elsewhere via all sorts of technologies, e.g. 'store-loyalty' cards. Google pushes this one as hard as they can, for commercial gain and market share, and they have already had to 'fine-tune' some of their practices that the public objected to as exploitative and intrusive.

Facebook: a similar business model, but not nearly as successful (compare the healthy share price of Google, with the rather sickly one of Facebook, with some investors even threatening to sue them around the integrity of the date used to establish the IPO share issue in 2012). Facebook also got into a storm, earlier, when they announced that they were going full-steam ahead on exploiting personally-generated data, and claiming exclusive copyright on user-generated content – which they had to retract in a few short weeks.

Picture-sharing apps. One has already been killed off for similar reasons (see here ...) , but others have already popped up (in early 2013).

So ... clearly there are a lot of people out there who care (one way or another) about these issues. Coursera MOOCs are just another thread in the way our society is moving towards 'utopia' or 'dystopia'. The extent to which monetarization dominates (or does not dominate) our society affects basic freedoms and rights (see here); autonomy and privacy, security and surveillance, and the role of the state: see the UK debate on the state's right to monitor and store all txts, emails, tweets, etc etc, which recently caused a storm (in late 2012 / early 2013), and has at least been watered down, if not rejected.

Openness is clearly a complicated issue. There are issues of sustainability, which have been around in Open Source debates for many years. There are also a whole range of ethical issues on 'digital rights', both social and personal, e.g. the questions of privacy and individual's rights to their own data.

Openness does not mean handing over all your thoughts and writing, co-constructed knowledge etc. for free to some previously unknown private institution - it means a change of attitude (spirit, psychology, becoming, being) at an individual level and a change of culture at an institutional level. Openness therefore needs much more research to fully understand it and this research in itself needs to be more open. In other words, openness and emergence are linked to agency, to

developing capabilities, and contributing to a sustainable learning ecology for learning and research.

The development of open learning to be open is an emergent process. It is not something that will happen overnight. MOOCs offer great potential for exploring the meaning of openness, so long as they themselves adhere to the spirit of openness. The alternative is that MOOCs will just be appropriated for the next venture capital project (e.g. Coursera), with scant regard for the value of learning as a public good.

The authors own research has gone through substantial changes, which share many of the characteristics of the 'new open networks' and the way they create affordances for both open research and open learning. Weller (2012) suggests that open researchers use Open Source software and open educational resources, explore the concept of open courses, participate in open online conferences, make use of crowdsourcing to inform their research, and share research proposal and data, and publish in open journals. In the case of one of the authors (who is independent of an institution and the associated research funding requirements), the potential for open research and open publication is high. As Weller points out, the issues are more complicated, and potentially more difficult, for researchers working within institutionalised higher education.

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