Reassembling learning contexts and learners

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Learning it seems has escaped the boundaries of educational institutions. Indeed learning is now understood as lifelong and lifewide (Edwards 1997, Field 2006). In other words learners and learning are on the move. Learning happens here there and everywhere and embraces all domains of life. Understanding learning from a social perspective characterises learning by its social, cultural and physical location. This location might be in an educational institution, a workplace, home or a community context. Learning contexts such as these are often constructed as *self contained* realities, fixed and tangible, anchored in singular time and space. However we believe such a view doesn't adequately account for the complex ebbs and flows of learning across time and space. This paper along with other recent writings (eg. Edwards, 2006; Boud, Rooney & Solomon 2006; Fenwick 2004, 2006, Chappell et al 2003) takes up the challenge of investigating complexities inherent in the idea that everyone is a learner and learning is on the move. A key challenge is how we attend to these complexities without being submerged in chaos (Mol & Law, 2004).

This paper focuses on just one kind of learner on the move - the 'researcher-learner'. In the spirit of the ubiquitous nature of learning, it is easy to understand the researcher as a learner. Researchers learn to be researchers by undertaking formal research methods training, and through research apprenticeships within disciplinary areas, but researchers also keep learning through their research practices and informal networks. Moreover there is a constant ebb and flow of learning in-between the research spaces. This ebb and flow is tightly coupled and enabled through the emergence of networks, which include human, physical (e.g. computers, machines, charts) and semiotic (e.g. data, methodology, writing bids) actors (or actants).

The paper draws on a recent study within the Technology Enhanced Learning (TEL) Research programme in the ESRC Teaching & Learning Research Programme in the UK. TEL is an important site for researching learners and learning on the move given the multiple learning times and places enabled by technologies. One aspect of the study explored the way researchers personalise digital artefacts and how this draws on their disciplinary practices. Our aim in this paper is to critique a location-based understanding of 'learning to do research'. This means taking up the idea of learning in motion so that 'when we act we're simultaneously interacting with the people and things in the immediate environment *and* with people and things spatially and temporally removed from us, but none the less present in the situation in some way' (Nespor, 1994:3). We demonstrate the process of tracing patterns of learning in action, by drawing on Actor-Network Theory (Latour, 2005) and the methodological concepts of enactment, multiple worlds, and fluidity (Law, 2004).

This paper is organised in the following way. First there is a description of the project and source of our data. This is followed by an introduction to our framing of the ideas around 'learning in motion'. The next sections engages with the work of Law (2004), and draws on research data to demonstrate a reassembling of a learning context. Finally the discussion draws conclusions about our current understanding of learning in motion and the pedagogical implications of reassembling the researcher-learner.

The project

The study was funded by the ESRC/TLRP as a developmental project. The title, 'Personalisation of learning: constructing an interdisciplinary research space', draws attention to the two key aims of the project: to *collaboratively research personalisation of learning using digital artefacts* and to research the *discourse processes, practices, opportunities and management challenges of interdisciplinary collaboration*.

The research team was an interdisciplinary one, where the co-investigators had various academic and institutional locations: computer science, business studies, cognitive psychology, human interaction design, education and social sciences. This is symptomatic of the increasing interest in *interdisciplinarity* and *collaboration* in contemporary knowledge production, professional practice, and education. These blurring of boundaries have contributed to the current emphasis on 'practice' and 'working knowledge' (Symes & McIntyre 2000).

However as experienced within our project while the concept of interdisciplinary 'makes sense' its realisation is often fraught and problematic. Each of our discipline areas is located within a particular set of discourses and histories, within specific social structures using particular kinds of language – all of which inform particular kinds of research interests and questions. At times the dialogue between disciplines occurred within a contested space requiring a considerable amount of negotiation (see Scheeres & Solomon 2000a & 2000b; Solomon et al 2001) as the participants work around various stakes, investments and power relationships.

During the writing of the research proposal the difference in our disciplinary differences was considered key to a successful application, and this overrode any problematic within our different 'locations', as did our shared interest in the personalisation of learning using digital artefacts. However while the research design was agreed upon for the purposes of the writing of the application, once we began we were immediately challenged by our different understandings of personalised learning, interdisciplinarity, and importantly research practices. The team had to learn to work as an interdisciplinary one at the same time as reflexively learning how interdisciplinary research works (an aim of the study). Consequently we chose to understand ourselves as learners and the research project as a learning context. Furthermore we were researching the practices in the personalisation of digital artefacts with different user groups, and indeed we were users as well. Our identities however, as with the people in the other user groups in the research, were not

only as users. We were also researchers, learners, and teachers to name just a few. This range of identities was mobilised within and across the various domains of practice in our lives, and resonated with emerging understandings of learning as lifelong and lifewide, as introduced at the beginning of this paper.

We understood ourselves as *researcher-learners* and users of personalised artefacts as we move between domains of practice, so our analysis of this data was framed by the question: if learning is lifelong and lifewide, what makes something a learning context and how do we research and conceptualise learner, learning and learning context.

The idea of a *researcher-learner* draws on a growing interest in understanding the relationship between learning and identity work (Solomon 2005). This relationship is connected to particular understandings of identity, knowledge construction and pedagogical practices. It takes a discursive approach to identity, where the self is configured as a subject in motion, neither quite complete nor ever unified, rather than as a self that is constituted as a product of the social. Moreover identities comprise multiple processes that come about through different and often intersecting discursive practices. Importantly these multiple identities are not discrete bounded ones but overlap as people and the knowledge and practices that they bring, move across the domains of practices – with each domain influencing the other.

Learning in motion

The phrase *researcher-learner* draws attention to both the 'construction of knowledge through research' and 'learning to do research'. Socio-cultural researchers of 'learning to do research' are more often than not, more or less *constructivist*, where knowledge from research is constructed in research practices. We argue that this is not the same as saying that knowledge is wholly constructed by researchers themselves (collectively or individually). Rather research and learning practices include and imply technologies, places and spaces, architectures, articles, reports. Indeed data comprises a whole range of *actants* that extends beyond people (Latour, 2005). At the same time practices also encompass overlapping identities and movement of people, things and ideas across time and locations.

Yet within this mobile and fluid research and learning practice there are, and need to be, moments of stabilisation (and agreement). This can be seen in our research proposal that sets out 'research questions' and 'outputs'. In material terms this is *text* as were the accounts of our discussions, individual writings and the researchers' diaries. We used these 'stable' texts to reassemble the context of learning. Importantly though our working of the texts was not in a temporal sequence. In other words the time that is mobilised is not chronological or linear. Rather as suggested by Law and Mol (2002:13) 'Time flies, but flies like a swallow, up and over, off quickly and then coming slowly back again'.

For us, ‘learning in motion’ means going beyond treating learning situations as a kind of vacuum-sealed context. Instead the concept ‘learning in motion’ allows us to trace ideas, things and people coming in, including the complex, the unlikely and the contradictory. This means reassembling the context of learning and to do this we take up three themes from Law’s work (2004):

- Differences in *enactment* of constructing accounts of what we do.
- Multiplicities as varieties of ways of understanding objects and modes of ordering.
- Fluidity as paying attention to ebbs and flows for example what is complex may be made simple and later resurface as a different type of complexity.

Working with enacted differences

As a research team we approached our various disciplinary backgrounds, not by battling through our differences to arrive at easy or early consensus but by working with these differences – to lay them on the table – in a relatively ‘safe’ place. Each of us agreed to undertake a particular writing task that recognised that we were all learners and users of digital artefacts. Importantly for this task, the writing was in a genre that was not typically located within any of our disciplinary worlds. The title was ‘Me and my artefacts’ in the style of ‘A day in the life of….’ We agreed to use ‘I’ in the writing. These accounts were anonymous and treated as qualitative data as they articulated everyday personalised usages of digital artefacts as people operate between domains of practices in their everyday lives.

It was recognised that this task while outside our usual disciplinary practice, would still be approached and influenced by each of our particular disciplinary homes. Indeed an analysis of these personal accounts of ‘Me and My Artefacts’ provided important understandings of our differences. We had predicted that the accounts would relate to the researchers’ institutional and disciplinary locations within the university, and that these locations would be manifest in the range and type of digital artefacts employed by the researcher. And this to a certain degree proved to be the case. The texts of those with computing science backgrounds include descriptions of the use of digital technologies across a wide range of domains, and involved technical language to talk about them. But a comparative analysis of these texts also drew attention to additional information. Given the space constraints for the purposes of this paper we will discuss here just a few extracts from two of the texts to consider the structure of the account as presented in Table One.

Table One: Comparison of two 'Me and My Artefacts' text	
Text 1: Professor of Information Science Title: The day I washed my To Do list	**Text 2:** Prof of Education Title: Disconnected
Introduction: I am habitually in a condition of over-commitment… hence the need for a 'To Do' list, that can fold up in your pocket	Introduction: My working life and personal life are conducted through the use of digital artefacts – home and work computers, and not one but two mobile phones
Orientation: Paper lists have become key artefacts in my self-organisation. I consult my list on way to work and review progress towards never-achieved nirvan of 'the fully crossed out list'	Orientation: and when they work I am engaged with the local and global constantly. But when they don't work.
Complication: So when I left one of the To Do list envelopes in a shirt pocket and washed it a few months ago, I knew I was in trouble… I have tried many ways to produce a digital To Do list that could be linked to emails/calls/databases, but while my mobile device has multiple wired and wireless connections, access to VLE's and databases are still best using my laptop large screen	Complication: A few weeks ago a thunderstorm struck home.. a lightning strike and no Broadband connection, and coincidentally Australian mobile stopped working and sim card not transferable to UK phone
Evaluation: No technology is good enough at the moment. This is tied up with where and how I work – in the office, at home, and on the move	Evaluation: The consequences were wide-ranging and effected multiple parts of who I am.
Results: Technology has affordances. We need discoveries of affordances and design of new technology solutions.	Technology is both enabling and disabling
Coda: And so the list on the back of an envelope still survives and the washing machine remains the enemy	Coda: I am disconnected and therefore disabled – unable to make contact with my world and unable to access any web information, unless I am sitting in my office at work! I am disconnected not through choice but as a consequence of the vulnerabilities of technologies and a lack of dialogue between providers and digital artefacts

The assumption in Text 1 is that 'technology' has a unified singular presence and inherent affordances. There is a suggested difference between committed digital users and others (perhaps less interested). Underlying this is the implied dependence on 'technology affordances' and 'design solutions' some of which have not been discovered yet and await further investigation. Technologies for this writer are for solving problems. In contrast, in Text 2, 'technology' is tied up with personal and work identities and the shifting experience of a non technical academic who is part of a local and global academic and private network. Here the emphasis shifts away from 'solutions'

to the socio-cultural interpretation of dialogue (or lack of it) between actants both human and non-human.

As a tentative observation, the shape of the text can be read as two different epistemological orientations. On the one hand: (Text 1) the world is out-there, independent of and prior to our research work to know it. Moreover it is definite, even if we have still to discover this definite form, and it is singular. On the other hand: (Text 2) there are different ways in which things in the world including human identity are constructed and connected and take on meaning and that this can and does change.

Texts 1 and 2 are by academics from different disciplines and have been selected to illustrate the contrast. However the *enactment* of the two positions is not necessarily discipline specific and can shift in the same account. For example consider two accounts from people with an e-learning background. One talks about 'identity' in terms of out-thereness:

"On the journey to work I use my computer to check email, calendar, to do list – most of my professional identity resides within this little black box."

The other person's account seems to be caught up in relations that are simultaneously global and local, physical and virtual, about meaning and material things, and both familiar and anonymous.

"I sit in a café somewhere between St Pauls and the Barbican, get out my laptop ……Behind the counter the Turkish art student runs tap water though a German filter into an Italian coffee machine, and measures out some French coffee beans. Wireless resonates. The home page opens, familiar as a friend's living room. I enter into the forum automatically scanning titles of posts, names of posters, new threads, ...I don't know anyone in this place, and they certainly don't know me."

In our terms deconstructing narrative is a form of disassembling and reassembling both the certainties of *out-there-ness* and the ambivalence/uncertainty of *in-here-ness*. These ideas are equal actants. Focusing on other and own enactment, and accepting contradictions legitimates differences in understandings of 'technology', 'personalisation', 'academics' or any other phenomena. It also pre-empts the modernist drive to establish absolute truths and instead sanctions the take up of ideas from other epistemological positions. This opens up the pedagogical possibilities of running different epistemological scenarios.

Working with multiplicities

Another way into reassembling is through accounts which traverse time. The 'Day in the Life…' accounts suggest that in practice *what is regarded as* personalisation is not singular. Consider the different examples of location, time and technologies and the implication for what is regarded as *personalisation* in table two.

Table Two	**Personalisation differences**		
Location	**Time**	**Personalisation is regarded as:**	**Technologies**
a number 4 bus	routinely	Personal collection: my mobile stuff and how I use them as I move in between locations	Hearing aid, watch remote, laptop, mobile phone, gear management jacket
bedroom	everyday	How I like it: personal to me digital clock set 10 minutes early, dim light (I am sensitive to light)	digital clock
on the move	weeks months	Tailored work practices: I through in data, names, quotes, quick summaries of conversations, keywords, websites that "accumulate and become a very unwieldy yet utterly rich source of references "	laptop/email
home/office	frequently	Convenience: house on four floors with an office at the top. A wireless phone which can move around the house with me	wireless phone
classroom	regularly	Careful selection: I choose devices and means to engage my learners in spite of themselves	VLE, email, conferencing, voting, e-pedagogy tools
at work	work time	Personalise applications: VLE system status as a priority – are we fulfilling the martini promise – anytime any pace?	City Space System Interface
London	global clock	Essential combination of digital artefacts for connecting work and home in London and home on the other side of the world	home and work computer and Australian and UK mobiles

At the same time in the project proposal, *digital artefacts* (a physical thing), and *personalisation* (an idea) are constructed as different perspectives. The story signals gaps which the project will identify and research. For example all of these very different public strands were referenced in the proposal as evidence of our collective expertise and currency implying a single reality. The referencing suggests that *personalisation* is a single topic which if not unified has been taken up in a number of established discourses.

"The verb personalisation emerged into public discourse in 2004 as part of the debate on education and standards it was hailed as the next big idea. In 2005 a number of case studies funded by the Teaching and Learning Research Programme (TLRP) were reported as innovative practice developed through action research (Personalised Learning A commentary

by the teaching and learning research programme, 2005). In addition the term is evident in accounts of new technology inventions (EU Information Society 2001); and in E-learning applications (e.g. Interactive LogBook Final Report, 2006); and in application and critique of learning styles (e.g. Coffield et al 2004; Guldberg 2004)."
(Solomon, Patel, Solkin, (2006) TLRP phase 1 FULL 050508 case in support, page 6).

However this simplification becomes multiple when as a group we discussed possible definitions of the term *personalisation* generating a list including the following examples:

1. Personalisation is teaching defined by the needs of individual learners.
2. Personalisation of learning is and isn't about individual learners. While there is an interest in individuals, the individuals are active participants within particular sets of social, and professional, networks and practices.
3. Adaptive personalisation is where the system changes behaviour depending on what the user does, dynamic personalisation is where the user uses the system to do creative original or derivative work often in collaboration with others.
4. Personalisation is partly about learners learning to exploit the affordances of…….. communication tools such as blogs, My Space, BeBo, facebook, Flickr etc.. to create social and learning networks of their own choosing.

The definitions embody assumptions about the nature of learning and the learner, and the conceptions of design and uptake of technologies. While the group discussed the various definitions and conducted a consensus building exercise the definitions came from different practices which was represented here as a reified signatures (minimal definitions) from different and disparate discourses. There was discussion and some insight into how different realities can and cannot coexisted. However any notion of consensus building or interdisciplinary assumes that there is some external true 'thing' that is *personalisation*. At the same time the multiple understandings of *personalisation* suggest different ontological realities.

Reassembling the context suggests perhaps a slower and more modest pedagogy that recognises multiplicity before leaping into critique, synthesis, assimilation or some other abstract reduction of complexity. Reassembling calls for an ethnographic imagination in fighting familiarity and working with taken for granted practice as data.

Working with ebb and flow

The ebb and flow of knowledge construction is fluid. When we recognise multiplicities and pay attention to time and power relations, what is simplified at one time may resurface the next time in a different way. This is not to denounce all simplifications that take place in practice. Indeed, simplifications such as funding applications, paradigms, research methods and design specifications are important *actants*. For example consider this extract from our project proposal:

"ICT digital artefacts are interesting because they are tools, which *augment human capability* but have no obvious reference point in human physical form. At the same time digital artefacts contribute to *identity* formation and for commercial purposes digital artefacts like other products can be appropriated into manifestations that are expensive and exclusive.

Decades of *social constructivist* research suggest, "Learning requires the active engagement of the learner, underpinned by *positive learning dispositions*." (Personalised Learning, 2006: 25). Personalisation of digital artefacts requires engagement and as part of a life style people invariably choose technology that has an *affective function* and makes them 'feel good' (e.g. mobile music devices). Digital artefacts are *cultural technologies* in that they accessorise identity by signifying *life style*, status, values and beliefs. Users who personalise digital artefacts are also learners and this raises some important questions. What can personalisation activity tell us about the construction of learning identities and the design of technology to enhance learning? What would constitute an *authentic* lifelong and life-wide context for learning about and from personalisation in situ?"
(Solomon, Patel, Solkin, (2006) TLRP phase 1 FULL 050508 case in support, page 6. Italics added).

This text, written by the three lead writers in the team, partly responds to and also suppresses other voices from the project team. Consider, for example the commentary provided in the researchers' notes and what they indicate about these other 'voices'.

"I don't get the first sentence"; "well… tools like hammers supplement human physical limitation, but I am probably mixing paradigms or is it metaphors";
"*Identity* is individual we need common characteristics of users groups and specific technologies this is too vague"; "but identity is socially constructed";
"*Social constructivism* has been damaging for e-learning innovation…"
"What is *positive learning disposition* and *affective function*? Is it like emotional intelligence – we don't want to go there";
"*Life style* or learning style?", "what about choice and flexibility", "Cityspace is a good example";
"If you are going to talk about *cultural technologies* what about referencing work on business culture",
"Using the term *authentic* implies dualism as if you will find one truth a real reality!"
Researchers notes 19-03-06

As the deadline approached the lead writers assert authority in presenting a collective position which hides complexity – it is a simplification. But the researchers are learners here and learning to do 'interdisciplinary research' is an active matter. Once the project is funded the text acquires a new authority. The discursive voices re-emerge but are also changed. In this sense simplification is not the opposite of complexity instead "We need other ways for complexity to be accepted, produced or performed" (Law and Mol, 2002:6).

Working with complexity means treating data to make room for what is not made explicit. For example generalisations around 'techies' and 'none techies', 'web 0.2 generation and before' are so pervasive, their status as troupe is not obvious. In contrast this duality was not so obvious in our data. For example, the use of metaphors suggests a more fluid symbiosis between person and digital artefacts. Consider the following:

human feels powerless like her technology: "I am disconnected and therefore disabled";
some artefacts are needy like people: "If I forget this artefact for 24 hours –which I do increasingly, it needs to be recharged fully, retuned to my main computer at work ….and find those precious minutes totally uselessly wasted.".
These metaphors are used by the same person:
I am like my technology: "I scan through my personalized news, ";
but it does not like my identity card: "….. two card systems that very often just don't like my card";

the relationship is a struggle: “After fighting with all the available Microsoft packages (word, excel etc)”;
relationship gives pleasure so a Google home page : “is a cool place to start my e-morning”.

This form of reassembling takes the researcher-learner beyond espoused theory or text book methods and invites an examination of how methods, audience and purpose help to create what is discovered.

Discussion

We began this paper by questioning how a learning context can be specific to a location and time and at the same time both lifelong and lifewide. Clearly formal learning situations do have a time and location, just as research projects have a fixed duration and sites of practice which we can continue to call ‘context’. We showed that in our research project the before, beyond and elsewhere, and actants that are human and nonhuman *coexist* in the learning context. This is our current understanding of learning in motion. At the same time the learner is neither a complete nor unified subject, or without contradictions, so understanding learning in motion sits alongside understanding the learner as a subject in motion.

This framing invites complexity and uncertainty and our approach to managing this has been to analyse it as a landscape - topographically. By using qualitative methods to assemble pathways though the conceptual space of enactment, multiplicities, and fluidity, we found that:

1. The enactment of differences between and within disciplines shows that epistemological differences cannot be collapsed into consensus, and at the same time these differences are not trivial or irrelevant. On the other hand ideas and research methods did cross over disciplines and were taken up unexpectedly. Disciplines are after all disciplining but the researcher-learner can safely enter other ways of thinking through simulation and play.
2. Critical thinking and creativity are regarded as key skills for the academic researcher but new representations and abstractions are valued above description. Working with multiplicity advocates a slower and more modest pedagogy one in which the researcher-learner is more painstaking in treating taken for granted practices, abstractions, representations and ‘truths’ as data. This means valuing rich descriptions as important resources.
3. The ebb and flow (fluidity) in the learning context shows that different complexities and simplifications coexist. What needs to be simplified for one purpose or audience may need more complex treatment for a different purpose. Research methods helps create what we draw attention to and what is relegated to the background or suppressed.

This paper illustrates the reassembling of learning in motion. We do not claim that the implications are representative of some larger law or scheme, “a case may still be instructive beyond its specific site and situation, and this tends to be why it is studied, but the lessons it holds always comes with the condition that, elsewhere, in other cases, what is similar and different is not to be taken

for granted. It remains to be seen to be experienced, to be investigated." (Law & Mol, 2004:15)

Another reservation is prompted by the puzzling absence of power in our reassembling. In project meeting and workshops we had to work around different levels of commitment, expectations and power relationships, and ultimately we only worked together because of our mutual goal of bidding for larger funds (Patel et al 2007). Perhaps the power relationships have been simplified because our discursive work was largely through anonymous written text which was produced as conversational, provisional and work in progress. Our data for this paper was mainly this anonymous text. Reassembling the learning context and the learner is more like pages in a sketch book than a grand meta narrative, and our future work will draw on ethnographic data to investigate the absent presence of power.

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