

Stewarding and power in networked learning

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Abstract

A study is conducted of twenty groups, of 5-7 learners each, who are enrolled on a postgraduate course unit oriented toward development of professional practice in the field of educational technology. On the unit, students are assessed through their contributions to online discussion boards in which their groups are engaged in learning tasks that increase in complexity over the course and require them to make critical judgments about a range of informational and technological resources that can help the group meet its shared learning needs. Through the accumulation of these judgments, the group *stewards* its own digital habitat (Wenger et al 2009), modifying and enhancing the set of resources that the tutor provides to each group at the start of the course unit. The study investigates how this process draws on the power that flows in different ways through the course environment. Students discipline themselves and each other to conform to practices that they perceive as being those rewarded by the tutor, but they also resist this institutional power and authority when they introduce new resources and practices. The study shows how practices emerge at the very earliest stages of the formation of a community of practice, and bring with them a proto-hierarchy that supports the more complex information tasks but also introduces differentiation into the community. Visibility and scrutiny of the emerging practices and proto-hierarchy are what help the environment meet its learning needs and give students an experience of variation in power and authority that helps them develop informational practices in ways that are relevant to later work in professional settings.

Keywords

Communities of practice, stewarding, digital habitat, groups, online discussions, learning.

Introduction

In attempts to understand how networked learning communities use ICTs and develop information practices, Wenger, White and Smith's *Digital Habitats* (2009) is a valuable reference work. Building on Wenger's earlier studies (e.g. 1998) of communities of practice (hereafter, CoPs), Wenger et al describe how communities that share learning needs create a 'digital habitat': a set, or ecology (Luckin 2010), of technological and communicative resources. Through the constant configuration and reconfiguration of this habitat, and the accumulation of choices made by community members, the CoP collectively negotiates what it means to be competent and digitally literate within their particular context. Each digital habitat emerges from these operations in distinctive ways: no two configurations are exactly alike.

Wenger et al (2009, 23-33) highlight the contribution to this process of *technology stewards*. Stewarding is a creative, leadership role (*ibid*, 25), involving ongoing critical judgments that continuously optimise the habitat vis-à-vis the needs of the community. Yet despite the significance of the notion for our understanding of how networked learning environments are configured by learners, the stewarding idea has been subsequently under-developed. Wenger et al (2009) is a guide for practitioners, and does not discuss how stewarding may be conceived, and manifest itself, in different ways, depending on both the internal dynamics of a CoP, and the external setting(s) within which that CoP must operate and with which it must engage. As Druckenmiller and Mittleman (2015, p. 572) say, "little is known about the early life cycle of CoPs.". Can the act of developing and configuring a digital habitat spark the emergence of a CoP in the first place? How can community members *learn* to be stewards of a digital habitat, and what factors shape their learning? How do members of groups make decisions about what information and technology are relevant to the CoP, and how they are to be organised into particular configurations? And how do relationships and boundary zones with other contexts, and the relations of power that flows between and around these boundaries, affect the stewarding process?

This paper reports on findings from a project, SPIDER (Stewarding and Power In Digital Educational Resources), that addresses these questions through analysis of a large dataset generated by groups of online learners, that has recorded micro-scale dialogues as they emerge during networked learning tasks. The data reveal how proto-practices emerge from the group interactions. The ‘starter’ digital habitat is first defined by the course tutor and reflects his power and authority, but the habitat then evolves as much through *resistance* to this power as acceptance of it. While the authority to steward the digital habitat and, thus, the information practices of the group is, to some extent, distributed across group members by this resistance (cf. Whitworth 2014), proto-practices emerge alongside a proto-hierarchy that creates a level of differentiation in the members’ experience of stewarding. The pedagogy in use in this setting makes these practices and differences visible and open to scrutiny. We propose that this visibility is a significant contributor to how digital and information literacy practices can be developed in HE in ways that make them relevant to subsequent professional practice.

Background: stewarding the digital habitat

A CoP is a social site in which learning needs, identity, definitions of competence and judgments about relevance are constantly being negotiated. These judgments are rarely overt and/or formal. In many cases they are made implicitly as community members draw on established procedures or routines. However, whether provoked by specific problems, the discovery of a new technology by a community member, or the imposition of a new rule by management, the need for some kind of reconfiguration of the resources available to a CoP may be addressed more explicitly at times (Wenger et al 2009, 23). Some members of the CoP may have formal roles to play in *stewarding* the digital habitat, such as purchasing technologies, moderating web sites and defining a technology policy for the group. There is also a more informal, but equally important educational aspect to stewarding: good stewards do not just configure technologies but assist the group in developing the capacities it needs to make best use of them. Stewards act as brokers (*ibid*, 28); a boundary zone, bringing new information into the CoP where it encounters other practices. In essence then, stewarding is the means by which the CoP collectively enacts its digital and information literacy (Whitworth 2014). The digital habitat is the accumulation of the judgments about relevance, and the configuring/structuring work, that have been made by the CoP’s members. Stewarding is thus a “creative practice that evolves along with the community and reflects the community’s self-design... as a vehicle for learning” and a “critical part of community leadership, facilitating a community’s emergence or growth” (*ibid*, 25).

There are few research studies that focus on how stewarding emerges and can be taught and learned. Gibbs, Wadley and Ng (2012) investigate the micro-interactions of a learning community, via the use of discussion board data, but their paper only sketches the emergence of new practices through these interactions. The authors do note how the messages exchanged in their studied CoP go beyond just ‘Q & A’ and include community-building and negotiation of identity; not just solving problems but “sharing... tacit understandings of what it means to be a LITE [Local Information Technology Expert], how one should behave as a LITE in the workplace...” (Gibbs et al 2012, p. 5). Davidson, Gulka, Valle and Castonguay (2014) describe a MA Educational Technology course in Canada which engages its students in technology stewarding as a form of ‘service learning’, but although there is detail on the stewards’ (students’) motivations and insights, the focus of the chapter is on outcomes rather than the interactions. This interestingly illustrates that digital habitats can be shaped by stewards and they learn by doing so, but there is no investigation of how the community and stewards (and institution) interacted. Ayling and Flagg (2012) research an online CoP for teachers in New Zealand, via a survey of the 280 members and observation of postings on the site (powered by Ning) for three months. They draw attention to how the community members create “artefacts” that other members of the community can use in their own professional settings. This is not work that is distributed equally among community members. Ayling and Flagg define the blog posts made on Ning as artefacts in this sense, but most of them are created by two members of the group; large numbers of group members post nothing, thus identify not as ‘contributors’ but ‘information seekers’. Nor does this study mention anything about how CoP members configure the broader informational space – including Ning, but not limited to it – to meet their learning needs.

Each of these studies has problems in common when it comes to analysing the educational elements of stewarding. Data on the *evolution* of the habitats are difficult to generate, as the community interactions that are the basis of these studies are not focused or directed. They emerge spontaneously and not as the result of pedagogical design, making it difficult to track the impact of particular interactions, and how these coalesce into practice. If people are to be *taught* how to be stewards then this may occur informally, within workplaces and the CoP itself, but this could also be done within formal educational settings. In SPIDER we therefore investigate how stewarding could be taught, and emerge from teaching, in higher education (HE), specifically a professionally-oriented postgraduate environment.

This requires us to consider the question of how power and authority are manifested in the structuring of the digital habitat, and how this authority can be drawn on in positive ways, to help learners develop informational practices relevant not just in the HE context but transferrable to the professional context. Higher education has many highly asymmetrical relations of power and authority. The 'lecturer' has authority invested in them, both by the institution and the students. They define core elements of the students' ecologies of resources (syllabi, reading lists etc.: see Luckin 2010) and the criteria by which student performance is then judged. Tutors thus have a level of discursive control over the learning environments they manage, and the practices which emerge there. Techniques of disciplinary power, particularly surveillance (see Foucault 1977), come into play, and students are likely to modify their interactions accordingly (see our 'findings' section, below).

However, power in HE is not simply imposed on students from above, but can be generated by them and on their behalf, through dialogue and other forms of pedagogical interaction. This is explicit in any intention to *empower* the learner, to have them develop capital and the ability to make changes to their own ecology of resources and the habitat of the community. Implicit in the criteria by which students in HE, particularly at postgraduate level, are assessed is the expectation that learners exercise independent information- and knowledge-generating capacity. This is a Foucaultian view of power, as something in "flux" within a discursive environment, with structures of knowledge being the permanences that arise out of this flux (Kendall and Wickham 1999, 55), and power used to affix these structures in place within the discursive structures – the ecology of resources – of a given community. This is not power as an oppressive tool, but as an enabling quality, and in this sense is never asserted without a parallel *resistance* to that power (*ibid*, 50).

Our interest is therefore in how the design of a networked learning environment can encompass and generate power in these ways, and how this can develop in learners the capacity to steward, not only their present (HE) digital habitat, but those they will go on to engage with in later professional life. It is how the agency of the students and the structures of the university systems interact that is at the core of our enquiry. Distributing authority over stewarding requires students to begin to make their own claims to knowledge, to make their own judgments about the relevance of particular resources, and decisions about how to configure their digital habitat. We are interested in studying a proactive shift in power relationships, from the lecturer to the learners. How can authority be dispersed from the 'authoring' academic to the empowered student, and how does this enable learning, stewarding and the development of information practices?

Methodology

The setting

The setting for the SPIDER study is a core course unit on a postgraduate degree in educational technology. Graduates from the programme often take up roles as educators or learning technologists with responsibility for stewarding technology in a range of settings, where they need to make informed judgments about the relevance of informational and technological solutions to educational problems. The unit runs for a full academic year and is the spine of the degree, in that it most explicitly encourages learners to develop core skills and abilities in deconstructing learning environments, understanding how they have been shaped by prior decisions and practices, and proposing enhancements to meet the needs of diverse stakeholders.

The unit is taught to both on-campus and distance learners, both being part of online tutorial groups comprising 5-7 learners. As part of their assessment on the unit, these groups engage in a series of three online discussion activities, each lasting two weeks. These activities increase in complexity over the series. In the first task, learners read and critically discuss an academic paper. The second places them in a simulated decision-making environment in which each group represents different stakeholders, and the third requires them to, as a group, propose designs for a technology enhancement to the learning environment of two museums (educational environments). The tasks increase in complexity in terms of the information required. The first two tasks are defined in ways that provide groups with the information they need (the text in the first, the scenario in the second), but in the third task groups must gather for themselves the necessary information, through a field trip to the museums and a subsequent class. The first discussion is actively moderated by the course leader and a teaching assistant, as this encourages learners for whom this is likely to be their first encounter with this mode of learning (a majority of the students are from outside the UK), and helps build the learning community. But this scaffolding is progressively withdrawn, and by the third activity the boards are only being monitored by the teaching assistant to answer procedural questions or address technical problems. Thus, the series of activities are designed to promote independent, problem-based learning, and to do so in an environment that encourages learners to develop stewarding skills, that they can take forward into subsequent professional life.

It would be remiss to identify these groups as ‘full’ CoPs as there is no requirement that the members engage in sustained interaction, after the course unit finishes. But though the tasks are, to some extent, simulations of actual professional work, the activities are graded, meaning that the groups have an *authentic* and *shared* objective: to complete their tasks in ways that are rewarded in the marking scheme (the rubric being publicised to them from the start of their engagement). To do this, as we will show, they draw on the digital habitat provided by the instructor and the institution, but also introduce into the habitat their own resources. These introductions are, or are not, validated by other members of the group, through the dialogues that occur during each activity. That being the case, it seems fair to define these groups as proto-CoPs, using the techniques of stewarding to help meet these learning needs by (re-)configuring the ‘starter’ digital habitat.

The dataset

We undertake a documentary analysis of the dialogues as recorded on the Blackboard discussion boards provided as part of their starter habitat. These are not *post hoc* reflections or memories of judgments made, but on-the-spot records, open to documentary analysis due to their stability. Insights can be generated through analysing both postings’ content and metadata, for example, patterns of interaction between group members, whether some groups were more inclusive than others or excluded certain members from certain tasks. Such analysis, using larger-scale data mining techniques, is in progress at the time of writing (September 2017).

Here we focus on more qualitative data, drawn from the detail of particular interactions, and the transcripts of ten interviews conducted with learners after the course unit was concluded. We also interviewed the course tutor. These interviews were focused on deriving underlying motivations for activities or perspectives manifested on the discussion boards and (in the tutor’s case) the design of the learning environment, but not immediately apparent from the text itself. Ethical consent for the research was gained from the local approval committee. Confidentiality was achieved by the removal of all institutional and personal identifiers. All learners referred to in the discussion board posts have had their names reduced to the initial letter of their forename (e.g. student G), whereas students interviewed are referred to by number (e.g. student 2).

The study gathered data from two academic years, 2015-16 and 2016-17. The course materials and assessment activities were the same in both years. Each cohort was divided into 10 online discussion groups (given various colour codes for identification, which have been incorporated into the metadata), of 5-7 students each. In the sections following, quotations from discussion boards are tagged according to the following conventions:

[15/Blue/1] [16/Green/3]

The first two digits show the academic year from which the data are drawn, that is, 2015-16 or 2016-17 respectively. The last digit is the number of the activity in a given year (1-3).

Findings

Stewarding and the development of community artefacts

Each of the twenty groups has a ‘starter’ digital habitat. This configuration is principally comprised of the course content, the administrative architecture into which it is placed (syllabus, course schedule, assessment requirements), the technical architecture (Blackboard VLE, discussion board), and the communicative and facilitative skills of the tutor and teaching assistant (TA). This starter habitat reflects the decisions and judgments of the tutor, but there are also elements that have seeped down from the institution, e.g. the need for there to be some kind of summative assessment, and the use of Blackboard as the VLE (tutor interview).

This starter habitat has been stewarded by the tutor and, in a secondary way, his teaching and development assistants. But this has taken place prior to the implantation of the embryonic CoPs into this landscape: it is a habitat without inhabitants. Yet from the very earliest stages, the learners begin to act as stewards in their own right, adding to and reconfiguring the ‘starter’ habitat: “Specific artefacts are designed, developed and adopted by the community to meet its requirements” (Druckenmiller and Mittleman 2015, 575). These artefacts consist of more than just discussion board posts (cf. Gibbs et al 2012, Ayling and Flagg 2012). Students introduce, firstly, new sources of information into the habitat, and later on, new technological tools and spaces. For example, take this discussion from the third activity, in which students are tasked with designing an application for at least one context, a museum, that they have no direct experience of (see Webster and Whitworth, 2017). Student W here responds to an earlier post by A [15/orange/3]:

[A], nice suggestions for the first app! Let's hear a few more and come to a decision by when? Is Tuesday evening (6pm UK time) too soon? I also have suggestions for the second museum. I visited the Origins centre in Johannesburg - you can view it at <http://www.origins.org.za/>

Note how he successively:

- Validates the prior suggestion of student A for the form of the design task
- Proposes a schedule for the group to take a decision on how to proceed to the next step
- Suggests a source of information where colleagues can learn about his suggested museum (context).

Other students provided similar information in image form, sharing photographs of their chosen museum, while still others drew on anecdote, giving a narrative account of their visit. These introduced resources are then subject to validation by other members. Here is student A replying to the post from W quoted above:

I like [W]'s suggestion about Origins museum, so I vote to [*sic*] it with [C]. I have checked the website and it sounds interesting. I suggest the idea about VR to be to this museum and we will think more about it next week. It could move the museum to be virtual. the visitor can walk virtually inside the museum and be close to the exhibits and so on.

From a different group, this next student acknowledges how new information provided – in this case about how a museum in China uses tablets to help display visitor information – has changed their ideas about what the group could propose. They then follow up this with further suggestions [16/Diamond/3]:

[Q] and [G] have made me think about the interaction visitors expect when they go to any kind of museum. The iPad idea in the Chinese exhibit was an eye-opener for me in what you can do for the visitor.... the iPad is something I want to expand on. How about using Bar-Coding or QR Codes next to exhibits that take you directly to an interactive program preloaded on the iPad for that display....

These utterances and responses coalesce into both different outcomes and different information practices for each group. The 16/Diamond group propose a design that uses QR codes, whereas 16/Blue suggested an audio guide (for the same museum), and so on. Thus, the same pedagogical processes can lead to diverse outcomes. Not only that, but the digital habitats of each group evolve differently, without any *explicit* direction from the course tutor. 15/White, for example, introduced a wiki into the habitat (see the next section); other groups used WhatsApp or videoconference tools to co-ordinate work. This variation might seem a 'natural' outcome of discussion, but that is precisely the point. Each group separately and distinctively works towards optimising the practices that they perceive as allowing them to meet their instrumental goals (getting the grade).

Introduced artefacts are also knowledge-based, drawing on *authority*. In two other working groups, two members had previously worked in museums and were able therefore to bring prior professional experience to their group discussions. In one group, student B describes his visit to an art museum in Asia and draws upon his previous work experience [15/Blue/3]:

Before moving to Asia I lived and worked in Europe at a [Contemporary ART Museum]. I was part of the education department creating and imparting guided tours.

This prompted student H to reveal that she was a keen museum goer, had a shared interest in art and therefore common ground with B. As a result of this, H shared a video with the group that she had made (for a separate academic project) analyzing how music is used within a specific art museum in Europe. The dialogue that included B's claim to authority in this context has led to a new resource being introduced into the habitat, in ways that would be unlikely to happen in the more constrained, face-to-face classroom environment.

Questions introduced into the discussion also serve as 'hooks' for subsequent utterances, and are therefore also a form of stewarding, or 'shepherding' the dialogue, to help both the group and the individuals within it meet their learning needs. Take this example [15/orange/3], where student C tries to find out from his colleagues about the museum context that he did not visit, but (as part of the task) is still expected to make critical judgments about, in dialogue with the other students. He uses various prompts to elicit the information he needs:

What about the lighting and layout of the museum? Was there a set path? Were you guided along ... or could you move around freely and revisit other exhibits?...Can I ask a few questions..... Only basic answers needed of course!...

Power and resistance

Students' practices, and their CoP, are not emerging in isolation, but from a nexus where various flows of information and power intersect. The most direct of these flows is that by which the tutor's authority influences the emerging practices, particularly due to the three discussion activities being assessed (collectively accounting for one-third of the overall unit grade). Student 3, in interview, explicitly acknowledged this influence:

There were many times I didn't want to contribute to the discussion but I knew I had to do it. In fact I had a talk with another person yesterday who asked if the discussions had not been marked would you have contributed? I don't feel I would have contributed as much, if I didn't feel it would have impacted my grades I would speak but not as much.

However, a Foucaultian view of power sees it as not only wielded from above, by dominant interests in a setting against subordinate ones, but as something which emerges at the micro-level, from discursive interactions.

Kendall and Wickham sum up Foucault's view of power well (1999, 50-51):

Power... is not essentially repressive; it is not possessed, but is practised. Power is not the prerogative of 'masters' but passes through every force. We should think of power not as an attribute (and ask, 'what is it?') but as an exercise (and ask, 'how does it work?').... In addition, forces have a capacity for resistance, such that power is only exercised in relation to a resistance, each force having the power to affect and be affected by other forces... Resistance, then, is not a source of despair or celebration. The task of analysts... is to describe the way in which resistance operates as a part of power...

There is an essential *visibility* of the practices that emerge on the boards, At first sight, this seems to support a view of the boards as a 'Panopticon', a tool for surveillance and continuous discipline (Foucault 1977).

Brookfield (2006, 135-6) describes how "[c]ompulsory visibility... a relation of surveillance,... is inscribed at the heart of teaching.... as a mechanism that is inherent to it and which increases its efficiency". Students *self-discipline* by trying to act only in the ways the tutor expects, and will grade highly. Moreover, they in turn take on a disciplinary role with regard to other students in the group. Student 3 continued in her interview:

There was another girl who was not very active so me and [Student L] were trying to get her to speak so if she didn't appear on [course VLE] we had to find a way to speak with her. So we started a discussion on Facebook and said "look this is what's going on". Whatever we discussed with her we posted to the discussion board. *There were a lot of times when we told to log on and speak and write something because we were all marked.* (our emphasis)

But there are two important things going on here. Firstly this is not a direct imposition of power, but a *construct*: the actual operations of power here are constructed and negotiated by the students themselves, just as much as the other practices which are in play here. The tutor only occasionally makes any posts that direct students to contribute more, or in certain ways, even in the first activity; more frequent is that he and the TA provide 'hooks' (see previous section) that help link the ideas of one group member with another (e.g. "A, what do you think of B's idea here?"). But by the third activity the tutor completely withdraws from the discussion. Any perception of his ability to intervene and direct the discussion must therefore be entirely based on a kind of residual presence, indirectly expressed through texts such as the parameters of the set activity, the marking rubric and the formative feedback given after the first two activities. Secondly, the visibility of the contributions to the emerging practice, as well as just providing useful data for judgments about the students grades (and, indeed, viable data for our SPIDER project), allows *the members of the community* to scrutinise their own emerging practice. And it is in the new practices that enter the CoP that resistance arises in relation to the pedagogical and institutional power in this setting.

Both these are illustrated by the ways students introduced new artefacts into the digital habitat that were a perceived improvement over the Blackboard discussion spaces. From student 4's interview:

Our own *VLE proved to be tricky sometimes*. ..I valued that, as a team, we made use of different ways to communicate, group our ideas and give shape to our preliminary decision and strategy. Gmail, Facebook, Google Drive, and the chat room in [course VLE] helped us explore the use of social media and Web 2.0 tools to *better communicate and write collaboratively*. (our emphasis)

A detailed example of this comes from the [15/White] group. Having experienced the boards in activity 1, the group, prompted by student J, reconfigure their information landscape by introducing a wiki to help them manage the more complex activity 2. This from J:

I have created a wiki page for us, how would you all feel about using that to share all our ideas etc? It would make information it easier to summarise too I think.

J goes on to mentioning the practices around the wiki, the division of labour that the group has agreed on, and another technological resource they filter in, a videoconference:

To ease the number of threads perhaps after the wiki has been edited by all (answering the questions posed to us...) we could try to summarise/do our own parts... then post them to the bottom of the wiki so we can all read what will be posted for the group? We can then use the adobe connect session to make sure we are all in agreement? How does that sound?

The group complete activity 2 with the use of these tools. A few weeks later at the beginning of the third activity, J suggests setting up a wiki again. C supports this suggestion immediately, saying [15/White/3] "Not only do you like a good wiki.... We all like a good wiki now!"; showing how J's stewarding has been validated by members of the group, and led to changes in group information practice.

Yet self-discipline, based on the *perceived* and *indirect* surveillance of the tutor, is once again generated by concerns that this will damage the group's instrumental goals – getting the best grade. Prompted by a reminder about the activity parameters from a fellow student (not the tutor or teaching assistant, note), J worries that the wiki posts will not 'count' in assessment:

I'm sorry, feel a bit guilty that I lead us down the wiki path without realising the fruits of our labour would not be seen but at the same time I feel it made the discussion a lot more effective than the threads would have done!

The following day she reposts the wiki content onto the board, as different posts attributed to their authors, even though this somewhat defeats the object of using a wiki (collective creation of a text); she does it because as grades are given for individual work, she seeks to ensure different posters achieve their individual outcomes. Thus, in the end, she configures not only her individual information practice, but the other individual practices (contributions) of the members, to conform to what are perceived as the demands of the grading system, so that the group can *collectively* benefit.

This case epitomises the way that the power within this environment is innately bound up with resistance. These new practices – creating different spaces in which to coordinate work – were developed independently, and, on the surface, counterposed to those mandated by the tutor; viewed by the group as beneficial to *both* the instrumental and communicative outcomes of the task. Through this act of resistance, a new resource is introduced, validated by other members, and the habitat evolves.

Proto-hierarchy within the proto-CoP

The starter digital habitat is the same for all twenty groups, but that does not mean each group or member interacts with it in the same way. Variation occurs due to differences in members' personalities, command of English, professional, technological or prior managerial experience, and so on. As the learning tasks increase in complexity over the series, for the groups to complete them in ways that meet their instrumental goals (a good grade), they need to establish divisions of labour. In the guidance given by the tutor, Laurillard (2002, p. 155) is cited to suggest that amongst the different roles that can come into play here are those of summariser, moderator or source-checker. The value of these roles is something the group learns through engaging with the activity. But this is also an aspect of the work that introduces elements of stratification into the 'starter' habitats.

Take this post from student G [16/Diamond/3] who alludes to the role played by A in the previous activity:

I do feel like we are at least going to need a leader (someone who is going to guide us, tell us to move on, make a decision etc.). Last time [A] did an amazing job at leading us so I think we should give her a break this time. Unless [A] you really want to lead us to victory again. It's up to you really.

A replies:

I agree - I think it's helpful to have a leader for the discussion task. I'm happy to let someone else have a go this time around! I think it may also be helpful to have a summariser - we wrote a lot last time and it was really helpful to have someone drawing all those ideas together so we didn't need to search through masses of posts when referring back. I'd be happy to have a go at this role, unless anyone is really keen to have a go. In terms of the other roles, I think we're starting to become more self-regulating as a group, so I'm not sure they're necessary - i.e. we're all pretty good at backing up our points with literature, drawing others into the conversation and generally moderating the discussion.

A credits the group as a whole with good information practice (e.g., "backing up our points with literature") But she and G both also recognise the instrumental and the communicative benefits of establishing divisions of labour within the group, and propose that they take on particular roles here. Thus, they are suggesting a reconfiguration of the CoP's habitat, the information flows and practices therein.

Reaching a consensus within the groups is not something that happens spontaneously or just because it is called for by the parameters of the task. Just as students introduce resources such as web sites, photographs and technologies to help build digital habitats, so these *roles* are themselves resources. This introduces an unevenness into the distribution of authority within the group, as observed by student 2 in their interview:

There were some occasions, however, when I felt that we were not going anywhere... I have been a manager before, and making these sorts of difficult decisions is part of being a manager. *That's why I felt the need to take the lead sometimes* and make certain decisions for the team. (our emphasis)

Here, then, is where we can see the outcomes of the group work as including not just practices, but a proto-hierarchy; stratification and difference within the group that *did not exist* prior to the start of the series of tasks.

Conclusion

Our data reveal that stewarding the digital habitat is something that takes place from the genesis of a CoP. The informational environment, though at first reflecting the power of the tutor and institution, evolves in response to the students' learning. These practices involve group members drawing on the power that flows around the setting. Thereby, practices and, ultimately, *new knowledge* emerge within the learners. Power and knowledge are *not* the same thing in Foucault's worldview: to think they are is a "vulgar reading" of his work (Kendall and Wickham 1999, p.55). "Power is non-stratified, local, unstable and flexible; knowledge is stratified, stable and segmented." (*ibid*). The power that has been invested in this setting through the pedagogical design of its information landscape by the tutor is simultaneously resisted by the group; it is this resistance that then contributes to the formation of knowledge and, consequently, proto-practices. Whenever a student makes a suggestion, such as the use of a wiki instead of the discussion boards (a move in dialogue) and that is validated and built on by others, a proto-practice emerges – and with it, proto-hierarchy, the first steps in stratification.

This must not be seen as an undesirable outcome of the pedagogical design. Indeed it is central to exploiting the value of *difference* in the groups and giving students material for reflection, an understanding of how stewards work at the boundary zones, bringing in new (different) practices from other contexts and, through dialogue, reaching agreement on how to shape the digital habitat of the community. These learners are developing a sense of the *value* of stratification to the development of information practices in communities of practice they will go on to *subsequently* join. The grading of assignments is thus not incompatible with learners' developing authority over their information practices (Whitworth 2014). This encounter with institutional practices is a generator of power in the Foucaultian sense: something that can later be used for personal, professional, and social change, and the professional and effective management of the digital habitats used in networked learning more widely.

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