

Information Challenges, Challenging Information Digital Workplaces

Andrew Whitworth

University of Manchester, UK

E-mail: Drew.Whitworth@manchester.ac.uk

Recent Research on Collective Management of Informational Resources

My research programme focuses on how communities and groups in workplace settings collectively manage, or in Wenger et al.'s (2009) terms, steward "information landscapes" (Lloyd, 2010). Lloyd defines the information landscape as a dynamic and ever-changing set of informational resources that may be textual, pictorial or held in other formats that are amenable to digitisation and thus being managed through ICT, and additionally includes procedures, tacit knowledge, one's place in a social network and so on. The landscape is not an objective phenomenon as much as it is an "intersubjective agreement", constantly negotiated by workplace groups and communities in ways that are sometimes conscious and formalised, but as often, are unconscious and based around habits, routines and tacit knowledge.

Thus, stewarding is an integral element of how members of a workplace meet their shared learning needs and negotiate competence within digital workplaces. It is a creative, leadership practice (Wenger et al, 2009). Stewards are, in effect, the loci of critical judgments about information resources within the landscape. However, stewarding can also become a locus of authority over information practice, particularly when the role of steward is formalised. How are the judgments of the stewards checked, by the members of the community? Wenger et al (2009) note that if the stewarding role is invested too strongly in one person, the community becomes vulnerable to either the departure of that individual or their sub-optimal performance of the role. Thus, good stewarding practice also involves distribution of stewarding capacity — it is educational, as well as managerial. In my monograph *Radical Information Literacy* (Whitworth, 2014) I explore the teaching and learning strategies that help distribute authority over information practices in this way.

These ideas have informed my research into the ways that individuals and groups bring to bear and connect up the information practices, cognitive strategies and technological aids available in the information landscapes of digital workplaces. I am particularly looking at how these methods

connect with the techniques in use for navigating and learning about the physical landscape.

The Bibliotek i Endring project (see the case study below) adopted mapping as its cognitive device. Mapping a landscape is something done, consciously and unconsciously, through a sustained engagement with and exploration of the landscape (Lloyd, 2010, p.2). A map of a landscape is a representation of the layout of and connections between resources in a landscape, and as a result, can communicate information about a landscape to others. It is also, potentially, a way of discovering new information about a landscape that one might already be familiar with. More importantly, however, beyond the product of mapping (the map, that is), mapping is also a learning process — a formative visualisation (Masud et al, 2010) — a way of reflecting on what the landscape offers and making judgments about what should be represented on the map, and how.

As visual informational representations, what gets placed on the map is a selection made depending on the audience for the map, its purpose. These judgments may be made in consensual, distributed ways, but may also reflect the concentration of authority. It is when maps — conceived in a broad sense, as the products of cognitive enquiries into practices and resources in the landscape — do not correspond to the schema in use “on the ground” in workplaces that there can be seen dislocations between the informational practices and judgments made at different levels of an organisational hierarchy. Ways of thinking that emanate from (and support) dominant interests in an organisation can be pushed onto subordinates, obscuring their own, more context-specific and relevant practices and judgments (Blaug, 2007). A good map, however — one which is contributed to and then regularly scrutinised by a broad cross-section of the different stakeholders with an interest in stewarding the information landscapes of digital workplaces — serves as a boundary object (Star, 1989), a cognitive artefact that can be productively drawn on by multiple communities of practice as they scrutinise practices to determine their continuing relevance in given landscapes.

Maps are just one possible cognitive device useful when navigating landscapes. Recently I have begun developing another project (one with rich possibilities for collaboration with other researchers), looking into how individuals and groups develop and communicate the interconnections between the cognitive aids and strategies available to navigate the digital workplace. I want to look specifically about how the capacity to effectively navigate and steward a landscape is connected to the strategies used when navigating physical landscapes. What does it mean when people claim they have a “good sense of direction” or conversely a poor one? Humans are not homing pigeons, with some innate direction-finding sense; instead what is coming to play here is that those with a “good sense of direction” are, often unconsciously, bringing to bear information-finding skills

(including mnemonics) and judgments. The range of devices in a landscape, partly innate (the sun as an indicator of direction, for example), but also things embedded in it (signposts, street signs, landmarks), cognitive aids (maps and, increasingly, digital devices and representations). The good navigator also has an ability to self-regulate. How quickly does one realise that one has taken a wrong turning? Does one possess necessary psychological and effective skills, such as the confidence to retrace one's steps, try another route? How is authority perceived in this process and would the subject consider challenging the authority of a navigational device?

This developing project will first investigate how individuals bring to bear cognitive aids when navigating. Participants will be set a task to find a route between two points in an urban landscape, undertake the journey, then repeat it, to test their learning. A "think aloud" protocol will be used to gather data on how they bring various aids to bear, firstly when the route (information need) is being followed for the first time, and then when it is more familiar. Then, the project will consider how these strategies and techniques may or may not be applied in their digital workplace. There are a range of questions that such research could answer including:

- Psychological and affective issues are well-researched when it comes to information seeking (e.g. Kuhlthau, 1993), but not so much with information management and stewarding. If people have personal constructs that they are 'poor navigators', how can they learn to challenge these constructs?
- Can practical work on improving one's navigation skills in a physical landscape help people develop the skills needed to optimize their information landscapes?
- How do groups embed various forms and representations of authority in the landscape, as a result of stewarding processes, and how are these representations used, scrutinized, and if necessary, reviewed?
- Does the increasing delegation of navigation, in both physical and information landscapes, to technological devices (sat-navs, search engines, information agents) retard people's ability to learn to navigate these environments?

In summary this research program aims to illuminate a range of theoretical, conceptual, methodological and practical issues which arise in the quest to better understand, and facilitate, the collective management of informational resources in workplaces that are diffused across physical, virtual and communicative space.

to be taken by the next session. These factors cluster around topics, represented by the oval leaf in this diagram. Small circular markers indicate priorities. For example, around the topic “Teaching” in this region of a map appear tasks (brown leaves) such as “teaching information literacy”, “Endnote”; and “mentoring students”. Next to the last task was placed the information need (yellow leaf), “Knowledge of curriculum”, and the source (green leaf) of the teaching and learning administration of different academic departments. A relevant action might be to then chase up the needed information.

Each session after the first one began with a review of actions placed on the map at the end of the previous session, recording which member(s) of staff were the agents of actions that were undertaken and/or completed. Maps from the previous session were then revised. In the case mentioned, if someone had indeed chased up the necessary information on curriculum, both the action and the information need might be removed. Thus, the maps throughout the project served to record changes in resources and connections between them, revealing the evolution of the information landscape. Importantly, these data are also immediately available to project participants, helping reveal gaps in knowledge and areas of work which need prioritizing.

Ketso is not the only group concept mapping tool which we might have used. In an ideal world groups would design their own stewarding tools. At the same time, the specific form of Ketso brings a structure and continuity to the sessions. The mapping methodology highlights different aspects of these landscapes, and shows the relationships between them:

- Tasks, and the topics around which they cluster, represent a structure for the activities undertaken in the libraries, at different scales.
- Needs and sources represent boundary objects and brokers, particularly with sources; every one of these is at least potentially a broker between different communities.
- Actions and priorities are the result of scrutiny, and potential loci of changed practice, although this potential is not always realized: information landscapes can also evolve in their absence.
- Blocks retard change but can also become the foci of learning.

Participants were also interviewed at the beginning and end of the study period. These interviews gathered data on their perception of the resources available in their landscape, data that were then mapped in other ways, including the production of sociograms that depicted the social networks operating at each library, channels for the exchange of information that were not

necessarily in accordance with the formal hierarchy and lines of management at each location. These were later cross-referenced with the data collected on agency to help determine the distribution of tacit knowledge and authority in each landscape.

Data generated were not just useful for the project team, after the fact. They were immediately available to project participants. One interviewee stated:

Sometimes you 'see the leaves' later, and remember that for certain activities you linked them with pieces of information, and sources, and people that you had said you would contact. Also it solidifies or consolidates some practices that you are unsure about, or insecure about. After the discussions you feel, yes, that was the right way to do it.

But the maps were not consulted between sessions. It is the mapping process that is valuable to staff, more than the map itself. Staff valued the opportunity to acquire information about colleagues' priorities and problems, in a space that was less mediated by the agendas of regular meetings, and the buffers of line management relationships. A senior manager at one location said:

It was a good opportunity to take time out with members of staff and reflect where we are at and how we understand the situation around us. What are the hot topics? What are the priorities and how do we perceive them?... I got more out of it than from the normal monitoring and meeting process. The amount of information I would normally get [directly] would be a lot less, and particularly the perceptions of the staff. Previously contact would be mediated through middle management, but even though they were there in the sessions, the mediating aspect was removed.

Thus, there is evidence that the collective judgments being made in the mapping sessions were inclusive, and actively contributing to evolving practices during the change period.

In conclusion, although the tool used in this case was not a digital one, the insights the project provide remain highly relevant to the digital workplace as it is an application of mapping to the questions of, as noted in the call for the ENWI symposium, "how to create, discover, share and enhance information, and how to design and manage the systems that support these functions... the essential understanding increasingly is with how people... interact with information objects and each other".

For more information on the project, see <http://mappinginformationlandscapes.wordpress.com>.

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