Mapping the Landscape of Practice across Library Communities

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abstract: Two academic libraries undergoing significant organizational changes were the location for a project that researched how staff members and subunits of the libraries made collective judgments, negotiated what is sometimes called the “landscape of practice”—the collective body of knowledge of their profession—and thus came to collective understandings about how to manage the changes they faced. Over a year, participants engaged in a series of facilitated sessions of concept mapping in which they created maplike diagrams depicting their knowledge of the library’s operation. These sessions both facilitated and recorded the intersubjective agreement that staff members reached regarding the relevance of the resources available to them. These mapping sessions helped participants cross the boundaries between different communities of practice, groups of people working in the same professional area. The sessions enhanced participants’ reflection on their own practices and their knowledgeability of other practices across the landscape of the library. The project shows how techniques for learning stewarding and enhancing knowledgeability can be integrated into a workplace environment, whether an academic library or elsewhere.

Introduction

This article discusses research into the management of change in academic libraries. It specifically focuses on the use of concept mapping as a technique by which the different professional groups in these workplaces can collectively negotiate practices and enhance their knowledgeability or awareness of practices elsewhere in the library.¹ In this case, knowledgeability means more than just possessing knowledge; it includes, for example, understanding the skills and expertise of people within the organization and how they can work collectively to get things done. Joseph D. Novak and Alberto J. Cañas, who originated the idea of concept mapping, define such maps as “graphical tools for organizing and representing knowledge.”² There is no fixed
form for a concept map, with a variety of techniques available: some take the form of
hierarchical “tree” diagrams, others are more weblike in structure; images as well as
words may appear on the maps. A concept map does not just list concepts, however, but
also depicts the relationship between them, possibly via proximity on the map alone,
but sometimes also through linking words or phrases. The increased awareness that the
library groups gained from concept mapping enabled them to manage change in a more
inclusive and consensual way.

Many academic libraries face significant changes, triggered by budget reductions,
organizational mergers, digitization, pressures for open access, and other factors. All
provoke learning needs and require librarians not just to manage but also to envision change
in ways that bring together different stakeholders. Our research into how mapping can help
this envisioning is significant for practitioners, managers, and researchers with an interest in
how academic libraries are organized, how staff collectively make decisions, and how these
decision-making processes influence, and are
influenced by, workplace learning processes. Although our work took place in academic
libraries, the conclusions drawn regarding the efficacy of mapping could apply to other
units and departments in higher education.

The Norwegian National Library (Nasjonalbiblioteket) funded the project, called in
Norwegian Bibliotek i Endring (hereafter BiE), which means “Changing Libraries.” The
study used a mapping methodology that worked at two levels. First, the methodology
generated rich data that provided an overview of the learning process and subsequent
organizational changes at the two libraries over the study period. Secondly, the project
continuously yielded data that were immediately useful to participants, enhancing their
knowledgeability of other practices within the library. Concept mapping is thus a means
to raise awareness of and to scrutinize information practices across the “landscapes” of
the workplace, much as conventional maps help people navigate the physical features
of an area of land.

Change management in libraries has been studied before, but many of those studies
use methods that cannot fully explore the rich and dynamic nature of organizational
change. Studies often take a top-down approach, focusing on designing training pro-
grams aimed at adjusting staff practices and exploring how to overcome resistance to
change, rather than attending to how staff learn about and thereby construct change.
Many studies employ interview and survey-based methods that generate data for the
researchers, but not in ways useful for participants. These studies also do not examine
actual practice, only participants’ reporting of that practice. Finally, there is a tendency
for otherwise rich descriptions of a context to take a “snapshot,” looking at practice at
one point in time rather than over a period.

BiE was a study of change, information management, and organizational learning
as collective, dialogic, and social processes “that underlie knowledge sharing between
the different subunits of a single organization.” As George Siemens notes, “Complete
knowledge cannot exist in the mind of one person . . . Diverse teams of varying view-
points are a critical structure for completely exploring ideas.”10 Even relatively small and well-defined organizational subunits such as libraries cannot be treated as a unitary group. Subunits such as research support, collections, and user service may lack opportunities to share knowledge with one another directly and informally, particularly across different buildings or campuses. Different histories mean that, while the practices developed within these groups may be related, there are nevertheless clear boundaries between “regions” of practice with characteristics that distinguish them from others.

Etienne Wenger-Trayner (formerly Etienne Wegner) and Beverly Wenger-Trayner argue that, rather than seeing boundaries as divisive, they can be turned into “learning assets” for members of a community of practice, a group of employees who share a work context and learning needs within that context. Boundaries between different communities are fuzzy, rather than fixed, and any boundary relation can potentially serve “systematically to trigger a learning process . . . We cannot be competent in all the practices in a landscape, but we can still be knowledgeable about them, their relevance to our practice, and thus our location in the broader landscape.”11 What Wenger-Trayner and Wenger-Trayner call “local reflective communities” can assist in reflecting on one’s own practice and developing knowledgeability of other practices, and thus, becoming better able to collectively manage complex changes that spread across a whole landscape.12 How, then, can such local reflective communities be integrated into a work environment, and how can these communities optimize the processes by which they develop knowledgeability?

Communities of Practice

The work of Etienne Wenger is essential when seeking to understand organizational change as a collectively constructed practice.13 He identifies the “community of practice” as a key location for this work. Communities of practice are not coterminous with formal organizational structures and their discrete subunits. They are more fluid, and they develop relevant, practical knowledge about work on the ground, often informally, without attracting the notice of management.14 In this knowledge—the collectivity of practices—resides a “communal memory that allows individuals to do their work without having to know everything.”15 These local knowledges provide a basis for the scrutiny and review of existing practice.16 Thus, practices are fundamentally intersubjective, dynamic, and collective. To understand change within an organization, one must understand how its practices are collectively developed, communicated, adopted, and negotiated.

Members of communities of practice are not homogeneous,17 and their diversity allows the organization to operate more effectively. Competencies overlap and, ideally,
complement one another. Thus, diverse perspectives come into play as different communities draw on and continuously transform a range of informational, technological, and social resources in the community’s “habitats.” Through brokers—intermediaries who link groups otherwise without access to one another—and boundary objects—the different views, symbols, sayings, and customs that identify the boundaries of a habitat—these habitats are connected in a wider “landscape.”

This notion resembles Annemaree Lloyd’s description of the “information landscape.” For her, “Information landscapes are intersubjectively created spaces . . . characterized by the signs, symbols, artefacts, sayings and doings that define these spaces to . . . members and identify the boundaries of the environment to outsiders.” Through engagement with the resources in this landscape and through their continuous exploration and organization, practices emerge into a setting; or, more precisely, criteria emerge by which members of the community make judgments about particular practices and collectively negotiate what counts as “competence” or “literacy” in a given setting. Thus, landscapes are a terrain that is constantly negotiated (in both senses). The negotiation allows practitioners “to map the landscape, constructing an understanding of how it is shaped.” Individuals and the community as a whole continually make critical judgments. What resources are relevant? What practices? At what points are the community’s boundaries permeable, and under what circumstances? What other communities should be engaged with, and how can members develop an understanding of practices that may be relevant to the work of the community but that emerged from different contexts?

These questions are seldom articulated explicitly. Typically, people make these judgments unconsciously, and they become deeply embedded within practices. As a result, the bases for these assessments are difficult to uncover. Yet Wenger’s is a social theory of learning. His work implies that, over time, a community of practice in a supportive environment, offering opportunities to scrutinize existing practices and to build connections between members and with others from different communities, can learn to work together more effectively. That is, the communities communicate and negotiate understandings of practice and competence, and they cocreate an environment that optimizes knowledgeability and, as a result, helps sustain learning processes. Etienne Wenger, Nancy White, and John Smith invoke the idea that this sympathetic environment is created when a community collectively learns to steward the resources it uses:

Stewardship is a critical part of community leadership, facilitating a community’s emergence or growth. It becomes a very creative practice that evolves along with the community and reflects the community’s self-design—the process by which a community “designs” itself as a vehicle for learning.
Wenger and his coauthors observe that, in real communities of practice, the stewarding role—the ongoing optimization of the community’s learning environment—often becomes concentrated in one individual, or possibly, delegated out of the community altogether. Concentration in a single person makes the community vulnerable to that individual’s departure, abdication of responsibility, or poor performance. A good steward should therefore help distribute stewarding capacity among members of a community. This distribution guards against dependence on certain people, allowing diverse perspectives to check and balance each other within the community as it scrutinizes its own practices and those of other communities with which it must engage. The smaller the subset of the community that examines and reviews information practices, the more authority within the community is concentrated. Wenger uses the term *reification* for this process, contrasting it with a more distributed *participation* in the ongoing learning of a community. Reification contributes to a reliance on habits and routines and to the application of automated procedures for information handling (and, thus, change management) that are not subject to scrutiny. Instead of being created as the result of continuous dialogue between the various stakeholders in a setting, the practices are imposed upon them by an external authority.

Thus, for effective change management, whether in academic libraries or any other subunit within higher education, communities of practice need to find arenas in which they can collectively steward their information landscapes. They also need to build and maintain spaces in which they can develop common understandings of the change and underlying practices. Few prior studies have adequately researched the ways in which this kind of distributed stewarding actually plays out within communities as an intentional, collective educational practice, and how this can be facilitated. Tefko Saracevic suggests that how groups make collective judgments about the relevance of landscape resources to their practice, and how these judgments can be captured, are inadequately understood. The BiE project therefore developed and applied methods that begin to plug this gap in the literature.

**Boundaries as a Learning Asset**

Knowledge sharing can be retarded between subunits if they lack common boundary objects—that is, beliefs, understandings, customs, resources, and spaces that they share across the boundaries of each subunit. Communities that do not share boundaries have nowhere to “learn each other’s language”—the values, the bases for critical judgments about practice, and the terminology that characterize and distinguish specific workplace contexts. The diversity and complementarity of members’ expertise are key assets for any community of practice, but for stewarding to be a collective endeavor that spreads across a broader landscape, spaces are required in which cross-boundary communications can take place. Through the provision and maintenance of such spaces, communities and individuals become proximate to one another, and knowledge will flow more easily between them.

Maria Rita Tagliaventi and Elisa Mattarelli, following their study of working practices in a hospital, observe that certain spaces become boundary zones encompassing staff from different communities (in the case of the hospital, the communities of doctors,
Building a shared repertoire of practices across the landscape of a library becomes more difficult where there is a lack of operational proximity.

and enduring values, as well as the expertise to solve specific problems.”32 Wenger-Trayner and Wenger-Trayner refer to this accumulated group expertise and competence as knowledgeability.33 Building a shared repertoire of practices across the landscape of a library becomes more difficult where there is a lack of operational proximity.

Informal processes can, and do, produce liminal spaces and operational proximity. Justin Waring and Simon Bishop invoke this idea succinctly with their term “watercooler learning.”34 Macro-level design, such as building premises in an open-plan style rather than partitioned offices, can also support information sharing in workplaces.35 But these practices cannot be put in place everywhere, particularly given the physical layout and infrastructure of many academic libraries. There are potential benefits, then, in attending to the establishment of specific liminal spaces in which subgroups can cross boundaries and develop a shared understanding of practice. Wenger-Trayner and Wenger-Trayner argue:

Bringing together multiple voices that reflect the structure of the landscape is crucial in several respects. First it helps people locate themselves in the landscape and its constitution through the politics of knowledge. It also enhances the potential for reflexivity in the practices involved: It is difficult for communities of practice to be deeply reflective unless they are confronted with the perspective of other practices. Combining multiple voices can produce a two-way critical stance through a mutual process of critique and engagement in reflection.36

They then pose a list of relevant questions:

• What kind of boundary activity, joint project, visit, joint or mutual storytelling can serve as a productive encounter for negotiating and exploring a boundary?
• How to use boundaries systematically to trigger a reflection process?
• What kind of boundary objects and activities can support this boundary-oriented pedagogy and create points of focus for engaging multiple practices?
• Who can act as brokers to articulate regimes of competence across boundaries?37
Creating such spaces, unlike “water-cooler learning” or broader, macro-level design, makes boundary crossing intentional. The BiE project created a space that was deliberately designed with educational, information-generating objectives in mind: to create a point of focus, to trigger reflection, and to record the negotiations that took place as competence was articulated across the boundaries of these libraries. The following section describes what form the space took.

Methodology: Mapping across Boundaries

The overall aim of the BiE project was to facilitate change management and the scrutiny of information practices by providing communities of practice with an environment that facilitated cross-boundary learning and collective stewarding of local information landscapes. The project was a shared operational space, aimed at facilitating knowledge sharing, both between researchers and those researched, and between different areas of the libraries being studied. Such a space could enable these groups to develop a shared understanding of the information landscape and reach a consensus on how to move forward at critical points in the change process.

Conceiving of the project as a boundary object is an important element. Wenger writes: “A key implication of our attempts to organize learning is that we must become reflective with regard to our own discourses of learning and to their effects on the ways we design for learning.” The methodology was designed to promote this level of reflection. The project sought not just to record the change process externally, in a “hands-off” way, but also to facilitate the stewarding of the landscape of practice by participants. The researchers needed to step into the practice and become part of the context, but the participants also needed to step back, collect, experience difference and variation, “make the familiar strange,” and become researchers themselves, exploring their own practice. The project collaboration addressed what Wenger calls the “paradox of design”: that no community can fully design its own learning, but neither can a community fully design the learning of another. The project sessions became boundary objects, operational proximity zones in which the participants could gather and review the collected data.

Mapping acted in the BiE project as a way of, firstly, recording how these libraries’ information landscapes changed over the period of the project. The next section explores the technical methods by which this was done. But mapping was more deeply integrated into the aims and objectives of the project than simply serving as a recording device. As Lloyd notes, exploration of an information landscape or of a landscape of practice is not only a product of engagement with that landscape but also a means of facilitating such engagement. Some projects, such as theirwork, an online, open-source map project in Cornwall in the United Kingdom, have used collective mapping as a way of protecting (and stewarding) a natural environment. The theirwork participants are “collectively finding a way to share knowledge about a place.” But the technique of mapping is in no way restricted to the representation of physical landscapes or the stewarding only of natural environments. Concept mapping can represent the informational resources that exist within a landscape of practice and can show the relationships, dependencies, and connections between them. To ask someone to create a concept map is to require them to make tacit knowledge explicit. Thus, it is a process that helps raise awareness, in both learners and teachers, of what local knowledges consist of and how they are perceived.
For instance, Rob Kitchin and Martin Dodge show how different levels of conceptual development can be ascertained in learners by analyzing the structure of their concept maps. David Kirsh believes that external representations such as concept maps enhance cognition because, unlike thoughts and tacit knowledge, maps are persistent and can be shared, rearranged, and reformulated. He states, “Physical interaction with tangible elements is a necessary part of our thinking process . . . There are cognitive things we can do outside our heads that we simply cannot do inside.” Maps have a materiality—a map (even if digital and displayed on a screen) is a tactile object, something to be handled and engaged with in material ways. Luca Masud classes mapping as a “formative visualization,” which can be targeted at work groups and oriented to action, using the map and the mapping process to determine how, when, and why to intervene in a given context.

To draw conclusions about the effectiveness of mapping at creating a liminal space in which different communities of practice can mutually enhance their knowledgeability, it is necessary to explore the fundamental nature of mapping in more detail. Mapping is a dialogic practice, with the outcome of the dialogue captured, or congealed, in a product: the map itself. A map is therefore not just an image, or even a framework for diverse visual representations of knowledge. It is a set of assertions about the world. As a “graphic register of correspondence between two spaces” between the map and what is being mapped—a map says: “This is here.” But what “this” is depends on what is perceived and what is in focus. A map is therefore a way of bounding a territory, defining what a landscape consists of (or is seen to consist of) and what is important within it and thus worth mapping. All mapmakers must make this fundamental framing decision. At each stage of mapping—defining a field, extracting observations, and plotting them on the map—the mapmaker needs to form critical judgments about what to exclude, what to include, and how to plot these observations and the relationships between them. Maps are also bounded and framed by the techniques used; the territory a map describes will contain only those elements that were susceptible to the mapping technique. Collecting data for research loses some of the texture of the experience of practice itself. Therefore, all practices in the landscape have a fundamental ‘locality.’

Nevertheless, what is important is not the map per se, but the practice of mapping. Mapping is a dialogue, captured in a physical artifact, the map itself. Thus, maps are not final representations but unfinalized “constellations of ongoing processes.” Rob Kitchin, Martin Dodge, and Chris Perkins state:

Maps are of-the-moment, brought into being through practices (embodied, social, technical), always re-made every time they are engaged with; mapping is a process of constant re-territorialisation. As such, maps are transitory and fleeting, being contingent.
relational and context-dependent. Maps are practices—they are always mappings; spatial practices enacted to solve relational problems. There is a direct link between that explanation and Lloyd’s statement that ongoing, intersubjective agreements in a workplace help define the boundaries of a landscape and, thus, the points where different communities interact. The core “relational problem” when it comes to knowledgeability is understanding where the boundaries are most permeable, at what points information and practices can cross most easily between different subunits in an organization.

The employment of mapping for purposes of enhancing knowledgeability gives rise to essential educational issues regarding how to structure these liminal spaces. First, formative visualizations require expertise to use effectively. Thus, two members of the project team, Andrew Whitworth and Bodil Moss, facilitated the concept-mapping sessions. Facilitators bring an external perspective and are therefore essential elements in the liminal space. In this project, they played a crucial role in talking the map into being. The “Results” section addresses the specific role that facilitation played in the mapping practice.

As with any other text, map users benefit from a certain level of literacy when it comes to making use of the map: one cannot learn to produce maps without also learning to read them. As Lloyd avers, literacies are developed in practice. Thus, facilitation is intended to ensure that project participants are not just mapping but also learning to map and learning to use the map. What needs investigating is how participants, and the different communities of practice that they represent, find their own use for mapping, entwining this practice with others, in different ways depending on their local context and information needs.

The mapping space becomes not just a liminal space that brings together members of different communities of practice: in principle, it becomes a community of practice in its own right, with its own boundary zones and literacies. A final question to pose at this stage is therefore whether the competence of the mapping community is recognized as knowledge in the wider landscapes of practice of the project participants. Wenger-Trayner and Wenger-Trayner state, “Whether the competence of a community is recognized as knowledge depends on its position in the politics of the landscape.” They add, “There is local knowing in each practice, whether or not this local knowing is recognized as knowledge in the broader landscape.” If mapping is to enhance knowledgeability, then this recognition is essential—the practices developed in the community of (mapping) practice are the “local knowing,” but we must ask whether these local knowledges are recognized as valid outside the community that develops around the mapping practice.

**Research Design and the Mapping Method**

Data collection took place between June 2013 and September 2014 at two academic libraries, hereafter referred to as library A and library B. During this time, library A underwent a significant transformation, with its host institution merging four of its five campuses into one new location (the move happening in summer 2014), and a parallel reorganization of the structure and administration of the library. Library B’s director retired in summer 2013, and a new director was appointed in January 2014. Both changes, albeit
in different ways, impacted how information flowed around each library, the judgments to be made about practice, and the stewarding of the landscape.

There were 28 participants in the project, 13 at library A and 15 at library B, representing around 50 percent of full-time staff at each location. Participants were drawn from all the subunits of both libraries, including middle and senior management, collections, user service, research support, digital specialists, and teaching librarians, and from across all campuses that existed at the start of the project (five for institution A and three at B). The main phase was bookended by two interviews with each participant, the first in June 2013 and the second in September 2014. Two members of the project team conducted these interviews face-to-face, recorded them, and coded them directly, with the whole team then checking the analysis. Only one participant dropped out of the project, from library A—this withdrawal is discussed briefly later.

The main phase consisted of six group concept-mapping sessions held over a 12-month period (October 2013 to September 2014). The mapping tool used was a non-digital concept-mapping tool called Ketso. It is worth outlining some of the principal features of this tool to show how the map anchored the discussions that took place in the sessions, giving them a structure and common “language” of representation. As Wenger-Trayner and Wenger-Trayner say, “Boundaries are places of potential misunderstanding and confusion arising from different regimes of competence, commitments, values, repertoires, and perspectives . . . even common words and objects are not guaranteed to have continuity of meaning across a boundary.” Note, though, that this research investigated mapping more broadly, rather than studying Ketso as a specific manifestation of this process.

Ketso physically consists of a felt mat on which can be placed leaf-shaped markers of different colors. These leaves have concepts written on them and can be placed in proximity to related concepts. The group can move the leaves around, rewrite them, or remove them. Ketso is intended to be used by a group; although individuals write the leaves, the entire group can move, scrutinize, and revise them. Thus, in the terms used by Wenger, White, and Smith to classify tools that could help communities of practice with stewarding, Ketso is group-oriented, participatory, and synchronous. It is designed to be used by groups (rather than individuals working alone), and the group gathers in a particular space at a particular time to use it (rather than using it asynchronously). It is participatory because it is designed to elicit insights from all group members; no single person (including the facilitators) “controls” or produces the map, at least in principle. All members help talk the map into being.

Referring to Susan Leigh Star, Wenger also describes characteristics of artifacts that help Ketso serve as a boundary object. It displays standardization, in that features of the artifact are used in specific ways that require representatives of different communities to find a shared “language” in which to express their tacit knowledge, the information they have gained from personal experience, rather than from books or from being taught. At the same time, Ketso exhibits modularity, in that different perspectives can find different aspects of the artifact more relevant than others. Thus, shared insights developed around the boundary object can then be reapplied in one’s “home” context. In principle, then, this tool should help enhance knowledgeability.
Participants at each library split into two groups that remained constant through the project (subsequently referred to as A1, A2, B1, and B2). Therefore, there were four maps, worked on by five to seven people each. At each of the six sessions, participants used the Ketso “leaves” to represent elements of their information landscape, with physical proximity of the leaves on the map showing relationships between them. See Figure 1, which is a quadrant of one map developed in the project (note that the leaves are written in a mixture of Norwegian and English). On the actual Ketso sheet, the leaves are different colors, but the monochrome image in Figure 1 does not reproduce the colors. The leaves represent the answers to the following questions:

- What tasks are being worked on? These were clustered together under topics, written on oval markers.
  - What information is needed as part of these tasks?
  - What sources can be used to acquire the necessary information?
  - What obstacles or barriers block access to information, hinder work on key tasks, or both?

After the group addressed these questions and constructed the map, each group marked three priority areas of concern on each map, and then, after a final examination of the map as a whole, specified actions that should be taken after the session. Thus, the
maps depict group perceptions of each community’s tasks, information needs, sources, obstacles, priorities, and actions at each of six points in time throughout the study period.

Each mapmaking session was audio recorded to capture the conversations of both participants and facilitators as the map was talked into being. All members of the project team coded and reviewed these recordings and the interviews.

The data are rich, though much of what can be learned from an analysis of the maps’ detail—what leaves are placed, and in what relationships—cannot be generalized to other settings. Like the information landscapes they depict, these maps are unique, and it would be an epistemological mistake to draw conclusions from them about the landscapes of other academic libraries. Rather, our interest here lies in how effectively mapping can create a space in which members of communities of practice learn together. What is revealed about how members of these communities of practice collaborate to steward their landscapes? How does mapping enhance the knowledgeability of participants and their understanding of the practices emerging from other subunits in the library, where operational proximity may be lacking?

**Results**

This section reports on how effectively mapping built and distributed stewarding capacity among members of staff at each library and how it enhanced the knowledgeability of practices across the library landscapes. Data to support this conclusion come from the recordings of the 12 Ketso mapping sessions, six at each library (each lasting 60 to 90 minutes), and the final interviews. In what follows, all participant names in quotation marks have been anonymized, and the pseudonyms are randomly distributed by gender. (A) or (B) after an interviewee’s name indicates the person’s library.

This passage, from the recording of the conversation held by group A2 in session 5, shows a relatively simple example of how an action is “talked into being” on the map. The process involves a dialogue between the facilitator and a participant, “Mary,” who had operational responsibilities for an event that would mark the opening of the new library:

**Facilitator.** What about the opening event for the new library, how are things going with that?

“Mary.” The programme is done. We have a plan. We have a programme already. So everything is prepared. It’s just we need to send out the invitations. The people have to say yes.

**Facilitator.** So you need to do that, send out the invitations?

“Mary.” Yes, we have to send out the invitations.

**Facilitator.** Can we put that down as an action?

“Mary.” Yes, it’s an action, “send out invitations.”

Note that the facilitator helped this action be plotted on the map but did not dictate that it be plotted, even if the facilitator actually wrote the leaf that appears on the map. The facilitator became an active agent of the mapping process, though the extent to which this happened varied from group to group. Two of the groups, A2 and B2, saw a higher proportion of leaves written by the facilitator than the other two groups. In the last two sessions, the facilitator actually wrote all the new leaves that appeared on group B2’s map.
The second transcript, from the same group (though a different session, session 4) reflects a more involved discussion between staff members who represent different areas of the library’s landscape of practice. As well as “Mary” and the facilitator, participants include “Carol,” who is a teaching librarian, and “Gillian,” who works with digital and Web-based resources.

**Facilitator** [referring to a “task” leaf]. So we’ve got, “implementing the new organisation”?

“MARY”: Yes, that’s what I’m doing with my new unit.

**Facilitator.** But it’s still ongoing?

“Mary.” Yes, it’s still ongoing.

**Facilitator.** And there’s an information need here—“working with different research areas”? You need information about these research areas in order to implement the new organisation? And where are you getting this new information from?

“MARY.” That’s not me though. That’s “Kirsty.”

**Facilitator.** OK. It doesn’t have to be you personally.

“CAROL.” We need information from the staff, research support.

“GILLIAN.” Should it be linked to reorganisation?

“CAROL.” I don’t think we’ve really talked about this one [this leaf] yet. “Kirsty” said it’s almost done, though this hasn’t been communicated to the people yet. They were going to finalise it later today.

**Facilitator.** But it’s linked to the reorganisation project?

“CAROL.” Yes.

The group is here establishing not just what should be plotted on the map, in this case an information source (staff), but also where it should go—that is, to what need, task, and topic it should be connected. “Mary” suggests at one point that this work is the responsibility of a colleague who was not a member of the group, but the facilitator notes that this should not prevent them adapting the map anyway (this is linked to the idea of “territorialization,” returned to later). Ultimately, the group agrees that the need for information remains and that it should be linked to the reorganization project.

The mapping sessions became a space that helped the different communities in the library reach a collective agreement about how to organize their work and set priorities. As “Bill” (A) said in his interview, the mapping encouraged benchmarking through specifying actions to be undertaken, then following them up in the next session:

You get to keep track of things over time. You say that you are going to do certain things and then you get followed up on them in the next session, and you can see whether they remained important. You can talk things over with your colleagues and get to see who should take part in it or not.

Data generated by the mapping process could be applied back in the workplace. For example, “Carol” (A) said:

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.
The sessions helped distribute information across the library and allowed members of different subunits to acquire knowledge about aspects of the information landscape. The mapping process revealed what other communities across the landscape of practice were working on and what their priorities were. “Matthew” (B) said that the sessions helped him “find out what colleagues were doing. Maybe I knew that certain colleagues did certain things, but it was a good way of finding out what ‘big things’ they were working on and what was particularly important to them. This was particularly relevant to me because I work on a separate campus.”

The physical configuration of both libraries, with each split across different campuses, might potentially block knowledgeability of the practices that have emerged in these separate settings, for all that these libraries are, in principle, both managed as single entities. This problem was illustrated, in a somewhat dramatic way, when the discussion in session 6 (post-merger) at library A included an argument between two colleagues who had previously worked at different campuses. The dispute arose over a divergence in practice, specifically, the question of whether librarians should deliver books to academics who had ordered them or whether the instructors should collect the books from the library themselves. At one campus, the first practice had developed over time; at the other, the second had become customary. In neither case had the director, the management team, or any other central source dictated the procedure. But this practice became representative of wider values related to user service. The mapping process revealed this divergence and promoted discussion and reflection on the whole process of change and how it impacted the core values of the libraries. Ultimately, the process helped resolve the dispute and enabled the participants to agree on what the practice would be in the new, merged library.

Unlike regular team meetings, the mapping sessions allowed senior managerial members of library staff unmediated insight into practices “on the ground.” “Joanna” (A), who had senior managerial responsibilities in her library, 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.

This quotation suggests that the sessions helped create operational proximity and transcended the specific communicative and informational relationships that were formally specified in this library (by administrative subdivisions and chains of command). The sessions acted as a liminal space in which operational proximity could develop and where its benefits for information sharing and the opening of dialogue could be exploited.
In certain respects, then, the mapping sessions served a function similar to that of strategic “away days”—spaces to explore “bigger picture” questions such as underlying values, goals, and themes. However, they were logistically easier to arrange. They also offered a more free-form arena for planning and discussion than regular team meetings, being less constrained by preexisting agendas. But the sessions still focused on such questions as what to emphasize over the next few weeks, where to seek needed information, and the like. “Frank” (B) offered the specific example of where the sessions had helped him plan the introduction of radio-frequency identification (RFID) technology into the library: “[The project] was useful for the new Oria system [a search tool for locating digital articles and e-books], which it was particularly important to find out about and learn. People were sitting together and complaining about it. It was helpful to spend time sharing information about this.”

Participants could envisage how their work fitted into the “bigger picture”—the wider information landscape—and recognize when and how certain perspectives on the work of the library might not wholly align with those of colleagues. This is knowledgeability, in Wenger-Trayner and Wenger-Trayner’s terms.74 This process was particularly significant at library A, which, as noted earlier, had to bring together practices that had developed at different campuses in divergent ways but then had to be reconciled at the point of merger. The mapping sessions opened up a space for discussion about values and the direction of change, elements of a discussion not necessarily reflected on the Ketso maps, showing that the map was not the only “product” of the practice. Ingrid (B): “The best session was the one in February just after the new director had started. It gave us the possibility to talk together about what had been going on since her arrival . . . But that doesn’t mean it necessarily got reflected in the Ketso.”

Criticisms raised of the mapping process should be acknowledged. Some interviewees suggested there had been too many mapping sessions, that they became repetitive by the end, or both. With hindsight, we suggest that five sessions over a 12-month period (one every three months) would have been enough. Other participants said that the sessions did not provide new information about their own work, though they were still useful for finding out what colleagues were working on, but that this discovery involved engaging with much “extraneous detail on aspects of work we weren’t involved with, like teaching” (“Ingrid” [B])—a point returned to later. Some participants believed the sessions were undesirable because they revealed conflict and tensions within the team. Others (particularly managers) thought the sessions useful for exactly the same reason.

The visual and kinetic aspects of Ketso were considered valuable. The map not only recorded a conversation but also showed relationships between issues and gaps in knowledge more effectively than written minutes. In terms used earlier, the maps became formative visualizations of the information landscape of the libraries.75 The ability to
move leaves around, rewrite them if necessary, and remove them was also important. “Ellie” (B) said: “The visual methods helped give a different perspective . . . Moving things around . . . makes you more conscious of things like priorities, the completion of actions. You can see the consequences of what has been done, more than things like flip charts, PowerPoints, word-based summaries of things.” Several other interviewees reported the sense of satisfaction that emerged when actions or (in the case of library A’s reorganization) entire topics could be removed from the map after completion.

Did the mapping process help dissolve boundaries between different subdivisions of the library and the communities of practice within them? How was mapping used to scrutinize the practices that emerged from different communities across the libraries’ landscapes of practice? These questions can be addressed by examining the extent to which “territories” did or did not develop on the maps. There is evidence, drawn from the session recordings, analysis of the handwriting on leaves in a given region, and feedback from the final interviews, that, at times, particular individuals appeared to take on the majority of the responsibility for managing particular areas of the map. Although we must be mindful of the possibility that these data might indicate only that a particular person was acting as a “scribe” for a group process, interview data and session recordings discount this. Instead, the groups apparently considered certain areas of the map the “province” of particular staff members with specific expertise.
For example, Figure 2 shows one quadrant of group A2’s map, clustered around the topics of research support and digital resources. The three ringed leaves (a source, a need, and an action) are the only ones that were not written by a single individual, “Dawn.” These areas of work were those she was employed to handle. In the final interviews, all interviewees were asked to what degree they thought the map had been managed collectively or individually. “Dawn” emphatically stated that she and others looked after specific areas of the map:

They would be lying if they said they didn’t. Yes, you are part of a team, but we have certain areas in which we are supposed to be professionals. You need to have this kind of specialist knowledge. We were hired to do a particular job and if I was supposed to care about things like the reference desk then I couldn’t do my job properly.

Others were less emphatic but still recognized that this “territorialization” had occurred, particularly in library A. “Joanna” (A) said, “People defended their territory, which may have been a consequence of the reorganization process, as this has involved the explicit definition of roles and responsibilities.” There was also recognition that the territorialization happened at times by default, because when certain colleagues missed particular sessions, the group was reluctant to make any adjustments to “their” region of the map. This exchange occurred in one session of group B2:

Facilitator. These [leaves] seem to have become detached . . . to do with the Archaeological Museum?
Angela. Yes, but we have to leave these, because Matthew is not here.

There was reluctance to scrutinize the practices of other individuals in absentia. This particular map covered a territory that had been managed by “Matthew” in earlier sessions, but because he was absent, the rest of the group informally agreed that, on this occasion, they would leave that area of the map unreviewed.

Territorialization helps the map say not just “This is here” but also “This is mine” or “These practices are particular to certain staff or groups.” It seems to cast doubt on the idea that the maps are group-oriented, participatory tools that enhance knowledgability of practices across different communities. Yet it may seem self-evident: we would expect those with expertise in particular jobs or roles to drive the management of the informational resources relevant in that area. Nevertheless, there are important nuances here that shed light on how mapping enhances knowledgability. First, the belief that territorialization occurred was by no means unanimous. Some respondents said they took care to avoid it and to ensure that the map reflected a group opinion. Even when regions (such as “Dawn’s”) were largely made up of leaves written and placed by a single person, that does not mean they were exclusively so. The three ringed leaves in Figure 2 indicate not exceptions to a rule but evidence that the map enhanced knowledgability, being a means by which staff members not involved day-to-day with certain areas of library work nevertheless acquired knowledge about these tasks, helped set priorities, suggested information sources, and so on. “Frank” (B) said, “If there were areas which were my [formal] responsibility, then colleagues would ask me for my input, sure. But it’s not like I only contributed to those areas that I personally work on.”
The map becomes a way for the expertise of individuals to be displayed: a representation of their tacit knowledge and of their understanding of the elements and relationships that make up this region of the information landscape. By exposing these representations, it also allows others, who occupy different communities across the landscape of practice, to scrutinize these understandings. Even the revealing of the map to the territorial “manager” (Dawn’s role, in the case of research support and digital resources in library A) is valuable, particularly bearing in mind the presence of a facilitator who could here take on a “counselor” role and the structure of the sessions themselves, with each involving explicit procedures of scrutiny and review. Thus, the map acts as a boundary object, and the mapping process serves as a liminal space in which the knowledgeability of practices is enhanced across the landscape of practice.

Mapping as a Learning Tool

Group concept mapping brings information practices into the collective conscious; it potentially opens up practices, and critical judgments about information, to scrutiny by members of the group. Thus, stewarding capacity is distributed throughout the group. In the sessions, at least, planning, setting actions and priorities, and checking progress began to be done by consensus rather than executive decree.

The mapping space is a community of practice in its own right. It pulls in stakeholders from around the library, who, despite the small size of these organizations, have negotiated competence differently and developed divergent practices (as shown by the dispute that arose in library A over book deliveries, mentioned earlier). Was the knowledge developed through mapping practice recognized as valid in the source communities? This is a key aspect of knowledgeability. Certainly some of our participants, such as “Carol” (A) and “Frank” (B), both quoted earlier, described clearly how their participation in this practice influenced work back in their home community. On the other hand, some participants claimed that they developed no new insights from the maps or that the practice had merely generated information replicating what they learned from forums such as staff meetings. Even for these individuals, however, participation in the meetings kept them part of the practice, co-constructing and thus keeping the learning environment potentially useful, to themselves and their colleagues. (Only one participant, at library A, withdrew altogether from the community, stating after the third session that she did not see the relevance of her continued participation.)

The active involvement of facilitators in map production suggests how the whole community of practice—which, remember, includes the researchers and their own practices—became literate with this information medium, the maps. The community of practice learned to map and learned to use the map. The role that the facilitators played was itself a practice that was negotiated within the mapping sessions and then
reflected on the map itself. Group A1 required little input from the facilitators, but A2 and B2, particularly, saw a significant increase in the amount of plotting (the laying of leaves) by the facilitator. In fact, in sessions 5 and 6 for group B2, the facilitator laid all new leaves. Yet, as shown by the transcript earlier, this remained a collective agreement; the facilitator was not imposing his perception of practice onto the group but helping the group find an agreed, effective way to record their collective perception on the map. The other people in the community regarded both the facilitators and the library staff as competent to act in this setting—that is, they were recognized as coagents in the collective practice of talking the map into being.

Mapping in BiE is clearly a tool: “an identifiable piece of technology that supports a discrete activity in a community.” It is a tool that, in the locations studied, became a boundary object and a locus of operational proximity, permitting a more inclusive approach to change management. Mapping is group-oriented and participatory. It is also synchronous for participants, but as a research tool, it has asynchronous elements, as does any recording of a conversation.

The mapping sessions became part of the habitat of these communities in a way that the maps themselves did not. The map was not the primary product of the sessions from the perspective of participants. The map “anchored” the sessions and provided continuity between them, and the process of producing and modifying the map generated discussion and reflection. But participants did not take away copies of the map and refer explicitly to them between sessions (though interviews indicated there was some implicit use of them in subsequent practice). The map per se was therefore mainly an artifact generated for the benefit of the researchers.

Nevertheless, the map and the process of its production can be seen as complementary, and the mapping sessions can be viewed as a space that became, for participants, part of their landscape of practice. The sessions served as a liminal space in which diverse viewpoints could come together and negotiate the “intersubjective agreement” that constitutes the connection between resources across the landscape of practice. The maps are representations of the intersection between the practice of the mapping community and the resources in the wider landscape of practice that both shape and are shaped by that practice. These representations are collectively created and constitute a record of the shared intersubjective agreement facilitated within the community, around the map. Thus, the map is a way of recording group judgments of relevance.

Conclusion

Mapping enables observation of, review of, and intervention in the ways communities of practice operationalize their collective management of information landscapes. These processes were brought into focus—both in our research project and in the everyday work of these communities—by the significant changes each library faced. However, there is no reason to expect that they are not constantly taking place, mostly unconsciously and as part of staff members’ everyday work practice, at any academic library, and indeed in any community of practice. Brokers and boundary objects, operational and social proximity, are all clearly visible in these landscapes. Our results confirm their importance.
in any understanding of how information flows around an institution of the size and complexity of an academic library.

Mapping constitutes an effective addition to the repertoire of techniques for learning stewarding and enhancing knowledgeability within communities of practice, and this technique can be successfully integrated with others. The mapping in these communities generated forms of knowledge that had value across the broader landscape of practice of these workplaces. Mapping enhanced the knowledgeability of practices developed elsewhere in the libraries and became a liminal space through which these practices could be shared, collectively scrutinized, and, where necessary, reviewed and transformed by communications across organizational boundaries. Thus, a more inclusive approach to change management could be pursued, one that involved all the communities of practice across these libraries, and not just a limited subset of them.

Acknowledgements

We acknowledge the financial support of Nasjonalbiblioteket (the Norwegian National Library). We also thank all our participants at both case-study libraries. Thanks also to Etienne Wenger-Trayner, Julian Williams, Maria Pampaka, Diane Harris, and portal’s two anonymous referees for comments on an earlier version of this article.

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Notes


8. For example, Irene Doskatsch, “From Flying Solo to Playing as a Team: Evolution of Academic Library Services Teams at the University of South Australia,” Library Management 28, 8–9 (2007): 460–73.


12. Ibid.


14. Wenger, Communities of Practice, 46.

15. Ibid.


17. Wenger, Communities of Practice, 75.


22. Lloyd, Information Literacy Landscapes, 2.
24. Ibid., 26–27.
31. Tagliaventi and Mattarelli, “The Role of Networks of Practice, Value Sharing, and Operational Proximity.”
33. Wenger-Trayner and Wenger-Trayner, “Learning in Landscapes of Practice.”
34. Waring and Bishop, “‘Water Cooler’ Learning.”
37. Ibid.
38. Tagliaventi and Mattarelli, “The Role of Networks of Practice, Value Sharing, and Operational Proximity.”
42. Wenger, *Communities of Practice*, 234.
45. Ibid., 108.
49. Ibid., 452.
52. Dodge, Kitchin, and Perkins, Rethinking Maps, 1.
57. Ibid., 216.
61. Lloyd, Information Literacy Landscapes, 9–10.
64. Lloyd, Information Literacy Landscapes.
66. Ibid., 4.
69. Wenger-Trayner and Wenger-Trayner, “Learning in Landscapes of Practice.”
71. Wenger, White, and Smith, Digital Habitats, 60.
73. Wenger-Trayner and Wenger-Trayner, “Learning in Landscapes of Practice.”
74. Ibid.
75. Masud, Valsecchi, Ciuccarelli, Ricci, and Caviglia, “From Data to Knowledge.”
76. Wood and Fels, The Natures of Maps.
77. Kirsh, “Thinking with External Representations.”
79. Wenger-Trayner and Wenger-Trayner, “Learning in Landscapes of Practice.”
81. See the classification schema in Wenger, White, and Smith, Digital Habitats, 60.
83. Saracevic, “Relevance,” 2134.