

'Fuzzy' boundaries: communities of practice and exhibition teams in European natural history museums

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Introduction

This paper examines learning among museum staff involved in exhibition development in four European natural history museums. It draws upon a larger body of research¹ undertaken for the *Mirror* project,² a European Commission Framework Programme 5 Information Society Technologies (FT5 IST) project aimed at enhancing and improving co-operative practices through the use of new technologies. The aim of this paper is to characterize learning and co-operative practices derived from the interactions of highly heterogeneous teams involved in constructing museum exhibitions, and particularly to distinguish and examine the relationships between actions aimed at fulfilling team-focused exhibition outcomes and those which draw upon the knowledgebase of external peer groups. The concepts of *communities of practice* (Wenger, 2000, Wenger, Snyder and McDermott, 2002), *situated learning* (Lave and Wenger, 1991) and *vertical* team-work and *horizontal* peer-group exchange are used to describe the learning interactions and co-operative practices. However, whilst the relationship between situated learning and Communities of Practice has determined our preliminary theoretical perspective, this has, as we explain below, been heuristically revised in the light of the practical reality that we encountered.

Before presenting our concepts and our field work in more detail it is important to characterize the wider context for the making of temporary exhibitions in museums in contemporary society. The demand for new forms of collaboration around temporary exhibitions, implying particular forms of learning, is in our view one of the major challenges facing museums today. The development of temporary exhibitions requires that existing staff collaborate in particular ways, so that each contributes their own expertise to the project. A natural scientist, for example working in a small museum (such as our case study of a university museum or a small provincial museum) with perhaps eight professional staff, might expect to lead a temporary exhibition every five to ten years, and perhaps a large 'permanent' gallery development every decade or two. He or she may also find themselves enrolled in other exhibition activities as an experienced pair of hands. In contrast, a museum designer's life is build around the exhibition, and a museum educator might be required to participate in all exhibition projects. Moreover, the significance of the institution of *the exhibition* has changed fundamentally over the last fifty years. With increasing pressure to deliver services which repay the huge public investment in museums, to meet contemporary educational needs and to satisfy public expectations of communication media, the task of the exhibition developer has become ever more demanding.

The temporary exhibition satisfies this desire for change and it also enables museums to deal with the rapid changes in the subject matter itself. The temporary exhibition can be a well-timed relevant snapshot of knowledge or understanding that encourages repeat visits (as was the case for several small museums in the *Mirror* project such as the provincial museum in West Denmark discussed below). But short-term projects, such as temporary and travelling exhibitions, place new pressures on an institution, whether it be a small provincial museum or a larger metropolitan and international one. Whilst they permit smaller, more flexible, projects which can act as a focus for income generation and audience development, and tend to put less pressure on staff in terms of the public statements they make³, they also demand a large resource commitment from the museum and perhaps a change of mission. Our case studies show how exhibition development, which is a major task for museums, can be quite varied in terms of degrees of formalization and that we need to

contrast formal working practices with situated family-like informal practices. Examples are provided below but what they all have in common is that the exhibition development processes unleashed creative forces at museums, permitting staff to engage in a degree of unpredictable experimental play involving concepts arising from the subject matter, educational opportunities, aesthetics, display techniques and language.

The purpose of this paper is to use a part of the qualitative research data derived from the *Mirror* project to discuss and to conceptualize the various forms of team learning that are emerging around contemporary exhibition development.

Field research for the *Mirror* project

Field research was undertaken in the summer of 2002 by six researchers⁴ working on the *Mirror* project, a collaboration of diverse disciplinary fields: museums, universities and software companies in various European countries. The focus of this study has been the production of exhibitions within European natural history museums – an area for which there is no clearly defined community of practice. Four of the nine museums participating in the qualitative research for *Mirror* have been used here as case studies to exemplify different work practices, domain values and forms of *community of practice* in today's museums. These are located in Sweden, in West Denmark (a provincial museum), in East Denmark (a university museum), and in the UK.

One of the aims of the research reported here was to develop a methodology for studying learning, co-operation and co-participation among natural scientists and exhibition developers, using the concept of communities of practice to structure the investigation (Lave and Wenger 1991, Wenger, 2000, Wenger, Snyder and McDermott, 2002).⁵ A more general goal was to develop a methodology which might find application in other areas where technologists seek to serve the needs of these informal working groups. The research was based on semi-structured in-depth interviews with the various kinds of staff involved in exhibition development, as well as visits to offices, laboratories, exhibitions and other workplace sites. Documents and other materials, such as plans for exhibitions, schedules of work, roles and deadlines, were also gathered and photos of work spaces and exhibitions were taken by several researchers. The interviews were, primarily, structured around Wenger's three core concepts: *community*, *practice* and *domain*. These enabled the categorization of formal and informal interactions, and the detection of the values, cultures and histories which sustain that work. Using the core concepts, transcripts were marked up for a manual key theme analysis. We also used QSR NUDIST data sort software for a selection of scripts. For details on method see Knell, Moussouri and Høg Hansen, 2002⁶.

Teams and *communities of practice* – fuzzy boundaries

A *community of practice* is an informal grouping that may cross institutional boundaries and which contains individuals who share practices, language and tacit knowledge. It is sustained from within, bound together via shared interests, perhaps as a geographical unit, in one museum for example, or distributed and bound together virtually through email correspondence, meetings and other forms of communication (Wenger, 1998 and 2000). As in many other social groupings and work spaces, communities of practice has been a cornerstone practice since their modern inception (despite barely being theorized and articulated in this sector), and two of the clearest manifestations in Britain are the Geological Curators Group and the Biology Curator Group in the mid 1970s.

Wenger's work, and in particular his concept of *communities of practices*, parallels and gives a practical edge to studies in the field of sociology and social theory, which have been concerned with the formation of a *field* and sharing of *capital* (Bourdieu, 1997)⁷, negotiation in organizations, and learning practices and actions in workspaces. During the course of our field research and data analysis the initial concepts were supplemented with those of *capital* and *field* from Bourdieu (1990, 1997), *tactics* and *strategies* from de Certeau (1984), and *situated learning* from Lave and Wenger (1991).⁸ As the research progressed, we realized that what was at stake was the moulding together of a heterogeneous exhibition team which

occupied a pragmatic border country between, for example, *horizontal* communities of scientific peers and a *vertical* framework of differently skilled individuals set up to produce temporary exhibitions. This, we discovered, could be explored via the concept of *communities of practice*, importantly and initially theorized by Jean Lave as a form of *situated learning* (Lave, 1991). However, in thinking about emergent tendencies (and associated collaborative forms) in museums, we have also drawn upon Bourdieu's concept of the formation of a *field* and the sharing and struggle for different forms of capital. The concept of field allows us to theorize the museum as a social space within which different agents, such as curators and exhibition-makers, are locked into relations of conflict and cooperation over the recognition of each other's assets or capital. In addition to this, de Certeau's notion of *tactics* versus *strategies* has enabled us to provide a more fine-grained analysis of the internal, negotiated, power relations within museums where staff are compelled to perform new tasks and to collaborate in order to establish exhibitions under an increasing time pressure (see Høg Hansen, 2004, and Knell, Moussouri and Høg Hansen, 2002).

The concept of communities of practice enables us to distinguish between the efforts of institutional teams or task groups, such as those which produce exhibitions, and which we have termed *vertical* interactions, from those *horizontal*⁹ exchanges which take place between peers, distributed amongst a number of institutions. In natural history museums, for example, natural scientists mix with designers, museum educators and others to develop exhibitions as a *team*, but natural scientists also share a craft and a repertoire with colleagues in other institutions. Through processes of co-operation and co-participation a museum natural scientist is part of various, broadly and narrowly conceived, *communities of practice* centred on curatorial practices, specialist scientific knowledge, and even the politics of the museum. Each community relies upon a *domain* of shared orientations and identities which are built up through the particular experiences, though not necessarily through any formalization of the group.¹⁰ Wenger and his co-workers stress that a community of practice is not a task group (or as we would put it, at team). Rather, good team characteristics are produced as the shared outcome of good work (Wenger, McDermott and Snyder, 2002: 41-43).¹¹

Our research revealed that the distinction between *team* and *community of practice* is far from clear-cut. Formalized communities of practice, such as professional associations and societies, certainly produce outcomes like those of teams and in so doing form teams within the community. Similarly a team working in a museum will share tacit knowledge which over time, and through continuous social interaction and practice, becomes part of a domain. This sort of 'common ground' is conceptualized by Bourdieu as a *habitus*: that is as 'a spontaneity without consciousness or will' or 'embodied history' (Bourdieu, 1990: 52-66) in social groupings that over time have come to share similar points of references and a set of incorporated practices. This suggests that a team in a museum may, in some respects, become what we could call a community of practice, something to which we return with the case studies presented below. The hypothesis is that as a team continues to work on a project so it may develop other areas of tacit knowledge and linguistic shortcuts which enhance its community of practice aspect. Clearly, many museum people belong both to teams and to communities of practice. We can detect parallel and overlapping relationships; in many circumstances the team and the community are one and the same thing. Nevertheless, it may still be possible to distinguish between these two forms of relationship, whilst it is also implicit within these social interactions that the role of the two elements will change over time. For example, at the provincial museum in Denmark, as we will show, the exhibition team over time *also* became a sort of community of practice. To develop the point further, a workforce in a museum will form a community of practice in respect of institutional outcomes and histories even when perceiving their tasks as not woven into the same particular outcome. That is why they each pursue individual goals whilst they also share a culture with its own knowledge, history and values; in that way the museum becomes a domain. But on occasion they are called on to pull together towards some institutional goal or against some external threat – in doing so they exploit the characteristics of the institutional community of practice while performing the task as a team. These kinds of overlaps can also be observed in any contemporary academic department at a university. Clearly, Wenger's approach is a bit different. His goal was to isolate the characteristics of these two complementary modes of

interaction and to distinguish the characteristics of the *community of practice* so that its learning and business potential could be unleashed. In the case of the *Mirror* group research we have maintained these distinctions in the design of the *Mirror* software application, referring particularly to horizontal (community of practice) and vertical (team) interactions. However, we have also taken into account the 'fuzziness' of the distinction between the two, and not permitted these rather artificial categories to constrain this mirroring of complex and overlapping social interactions. The success of exploiting these categories relies upon recognizing that both have particular social qualities and rules which shape the interactions, and that these need to be integrated into any application.

This complexity of social interaction is very apparent in museum exhibition development activities. When an exhibition is finished and is opened, its interconnected, ordered, series of displays, objects, texts and multimedia, presents an image which belies its often complex and chaotic production. An exhibition is an order of things, a taxonomic arrangement true to own internalized epistemology and pedagogy. 'Things' are brought in, perhaps as a result of a chain of contacts, and logically placed within the narrative, aesthetic, physical and ideological constraints that bound the space. Text has been written and rewritten, each person contributing with their own expertise. Designers turn ideas into spatial arrangements, often battling with the conceptual and aesthetic desires of other members of the team. In one of our case studies some exhibits were constructed and then demolished, never to be seen by the public. Budgets often remain constrained, if not uncertain or fully known. The simplicity and clean lines of the exhibition are supported by an effort which feeds on tension, and which can push the human resources of the museum to breaking point. What can seem so small and simple is in the political complexity and limited resource capabilities of the museum a potential minefield. That many museums carry it off successfully relies in large degree on the *social* accomplishments of the production team and on the external resources upon which they can call (peer groups, colleagues, experiences elsewhere, research, and so on).

The negotiating and adaptive team

In constructing the order of the exhibition each team member is constantly straining against forces - e.g. other team members, budgets, materials, collections, media, other teams in the same museum - which attempt to repel the action or lead to an imperfect solution. In the case of the Swedish museum, for example, we argue that competition became another stress factor in exhibition production, while this aspect was absent in smaller museums. All our cases confirmed that an exhibition team is a heterogeneous group of individuals, brought together for a project, each of whom may have varying levels of commitment to it. The natural scientist might prefer to be doing something more scientific. The designer may see the project as a *curriculum vitae* building opportunity or simply as another task on the design production line; the museum educator may see the exhibition as a new opportunity to break down jargonistic boundaries or to introduce new interpretive media. Tasks are assigned according to one's area of expertise; they are thus related to one's identity, and therefore are political. The exhibition team has explosive potential, but the circumstantial and situated aspect of its operation can, however, work to engender camaraderie within the team. The vertical formation of a team may incorporate adaptive, sharing and horizontal aspects, as we saw in the small provincial museum in Denmark and a private museum in Greece¹² for example. Aware of the tensions and the potential for conflict, team members must attempt to be diplomatic and accommodating to each other. As an example of team working, exhibition development often demands quick compromises and adaptation to a moving reality, what we could call *tactics* using a term from Michel de Certeau (1984). The exhibition plan is constantly being reshaped as a result of team interactions and external influences. The theoretical view of a team sharing their own knowledge avoids the realities of power struggles and conflicts, and the disruption of unpredicted problems, which are so prevalent in the museum setting and particularly during exhibition production. Consequently team members may find themselves fire-fighting and applying *tactics* or fire-fighting in order to adapt to the new reality. This pattern seemed to be particularly prevalent in the *tactics* of the provincial museum in Denmark and the museum in Sweden, while the UK museum had formalized exhibition production to a greater extent. A

tactic is an action which seeks to manoeuvre the team or individual out of difficult situations, and towards a tolerable alternative. It is a 'creative coping' or back-against-the-wall practice, which copes with difficulties of achieving the ideal world through situated action. Whether fire fighting or working *tactically*, the knowledge base of communities of practice may offer one means by which to locate a tactic that will save the day. The concept of *tactic* gives emphasis to the urgency implied by limited time and a moving context. In other words it addresses the *situatedness* of action, a theme to which we will return. Agents pursue 'offerings of the moment' (de Certeau, 1984: 34), accommodating to non-ideal situations where budgets are small, schedules are tight and managers are demanding. In other, perhaps calmer, situations there may be rational calculations and choices. These *appear* to happen 'outside time', as a *strategic practice* (de Certeau, 1984: 34-39). *Strategies* (as opposed to *tactics*) are navigations from situations of control, power, and often also contemplation - that is to say, things I can do with 'time on my side'. *Strategies* can thereby be seen as planned calculations from a plateau which is outside the *modus operandi* (Bourdieu, 1990) of the everyday.

The exhibition teams were not simply adaptive and forced to do fire fighting, as we will show, but they were also an arena where different knowledge, visions, or even ideologies relating to exhibition development, were continuously presented and negotiated. As shown in the following case-studies, the process of exhibition production implies interaction around a common project, an exhibition, however 'fought over' or negotiated through the coming together of overlapping disciplinary *domains*, which again create a condition for *negotiation*. Negotiation is understood as the explicit cooperation around overlapping interests where means of cooperation are clarified (Johansson, 1997),¹³ and where different discourses and values are tested in the process. This means that the co-operation in the team has a tacit, incorporated side derived from the common domain, as well as a more explicit negotiating side. We now turn to the case studies themselves.

The sharing of differences: introducing the case studies

Exhibition development in any museum evolves from the different concepts, values and imaginations that are to be found within a team. Just as lovers of literature or literary critics will passionately argue about texts and, whilst not necessarily agreeing, at least negotiate around a shared domain and exploit the same cultural capital, so too with an exhibition team, members identify with different domains and are brought together because of this. For them, negotiation is built around the sharing of differences. The biology curator contributing to the team will share a portion of her knowledge or disciplinary capital. Others (designers, interpreters, conservators, museum educators, project managers and exhibit fabricators) will do the same, though necessarily keeping a tight grip on anything that distinguishes them as expert in their field within that group.

Natural history museums in Europe offer diverse working environments. They range from large national institutions with large numbers of research scientists (such as PhD qualified curators or keepers) to provincial museums which have a strong focus on the environment and on communication of natural history where curators might be managers, or local subject specialists. This range is represented in the sample of four museums that are discussed below. The museum in Sweden was a big natural history museum and the largest in the sample. The UK museum is a large national museum in a country locked into political union with others which also have their own national museums. The Natural History is represented, along with the other natural sciences, archaeology and art in a single building, which is itself one of a network of museum buildings spanning the country. The case study from Eastern Denmark is a university museum, while the other Danish natural history museum is a provincial museum with a visitor appeal comparable to the more academic national institutions. The city where the university museum is located has a population six times that of the city where the provincial museum is based. In the sector as a whole, the terms 'natural history museum' and 'curator' are poorly defined categories and the ubiquity of their use conceals a wealth of diverse practices.

The family culture

In the Danish provincial museum a subject matter specialist is the coordinator and the 'generator of ideas' in an exhibition team of seven people. Temporary exhibitions last about one year and their development evolves (from scratch) through the individual contributions of team members and collective debates. The provincial museum, in common with several other museums participating in *Mirror*, was producing an increasing number of temporary exhibitions. The reasons for the provincial museum doing this were particularly to assure repeat visits. The city where it is located is not a major tourist destination and relies heavily on a local audience. Its focus is on education rather than research – despite its close proximity to the local university's natural science departments. This is apparent from its exhibition teamwork, and the values of the members in the team. The museum has a school service whose is a natural member of the team participating in the exhibition production. Educational activities are planned in the course of the exhibition development process and not afterwards.

At the provincial museum the exhibition team consists of a core membership (a biologist, two designers and a conservator) and a few more peripheral members who participate less regularly (an educator, a cabinetmaker and a technician, and the museum director). The core members meet on a weekly basis, also when there are no urgent tasks. This consolidates the team spirit and ensures that the teamwork is always in place ready to perform and collaborate in periods when the workload is stronger and deadlines are approaching. Interaction is one of shared discourse and understanding, arising from working together for extended periods, rather than common viewpoints and shared disciplinary tracks. The sharing of differences is seen as the group's 'strength and weakness', one interviewee said.

This is a small museum with only approximately thirty employees. Its domain value is, as seen in several other museums with a less formalized approach to exhibition development (as, for example, with the case study in Greece; see Knell, Moussouri, and Høg Hansen, 2002), the one of the 'family spirit' which facilitates quick problem solving. The fact that there is only one exhibition team and one temporary exhibition being developed at any one time further enables the whole museum to get a sense of the current institutional goals. This is rather different from the museum in Sweden where a number of exhibitions are in development simultaneously. While the staff in the museum can come to share a vision they are aware that external clients may visualize something different. A recent project revealed this very problem as the exhibition team produced something different from a client's expectation. The client had expected a version of a landscape 'as it is' and 'looks like', while the team had reproduced significant aspects of the particular landscape thinking more of what aspects they found it important to highlight. One staff member described this as 'a clash between two different imaginative cultures'. Members of the team have clearly developed a tacit understanding which means that one member knows reasonably clearly what another expects without the need for extensive consultation.

The exhibition team in the Danish provincial museum had developed a form of collaborative learning similar to the close knit learning exchange found amongst peers in a *community of practice*. Although the team was made up of individuals with different backgrounds (designers, a fabricator, a conservator, a curator scientist, and an educator with an IT and biology background) their frequent interaction and repeated co-operation through several exhibition projects secured a continuous sharing of knowledge as well as a common cultural understanding and mutual awareness within the team. During the course of executing the particular tasks of exhibition production, as for example when preparing the texts for displays, one member would depart from his original field of expertise and take on the dual role of apprentice *and* of one who would be able to look at things more from an 'external' point of view. The designer, for example, who did not have a natural history background, was frequently involved in checking the comprehensibility of written texts. Each member could step in and fill slots in the team, while at the same time their sideline availability (where they could sit in and listen and learn) sustained the creation of a common domain and shared knowledge in the group.

The competitive culture

At the Swedish museum several teams work in parallel or on overlapping projects. A member of one of the exhibition teams indicated that several exhibitions under production rely on a shared pool of money and are therefore often competing for funding. Despite the larger number of exhibitions and more resources put into each exhibition, staff members described a process which is quite hectic and unpredictable. Each project and team tends to form its own temporary *hot collaborative environment* (Hildreth, Kimble and Wright, 2000) where common aims are pursued in an experimental manner.

Swedish Nature, is a permanent exhibition that comes in two parts, the first half of which was opened in 2001. During the production of the first part of the exhibition, the project manager worked with a *factual expert* (in Swedish a *fakta ansvarlig*, responsible for the factual accuracy of the exhibit), a museum education officer (or *museum pedagogue*, as they say in Swedish) and an external designer. They formed the core group. The project involved endless external contacts with individuals and companies contributing with particular dioramas and animals. The project was completed on time, something which is highly unusual, we are told. Compared with the neon-lit science-centre-like *Senses of Man* exhibition, *Swedish Nature* is very traditional. The project manager's first exhibition, *4.5 Billion Years*, was less straightforward. A respondent informed us that he had taken over the project following the first project manager's departure. At that stage it was half-finished and the new manager decided that many already completed exhibits would have to be redone. The exhibition was nevertheless completed within the tight timeframe. The new manager is open about its deficiencies: the exhibition appears fragmented, with empty corners; it lacks finesse, atmosphere and strong narrative. A compromise between internal visions in the team had to be devised. Talking about an older section of the museum, a staff member commented on several displays of similar bones, which are lined up under glass, with no text or other media to accompany them. There is nothing to be learnt from this he observed, and counted, mockingly: 'One, two three...'. We shouldn't make such old-fashioned exhibitions any more, he said, but instead connect collections with *folkverksamhet* (a Swedish term meaning activities for, and interaction with, the people). This is very much the ethos of the provincial museum) as well. *Folkverksamhet* is a key word, expressing how museums aim to not just to record a past, but to play a role in contemporary society, continuously offering new exhibitions and activities for old and new segments of its audiences.

The Swedish case is very different from the provincial museum in Denmark, despite a shared emphasis on the educational role. With a framework of departments and exhibition teams working in parallel the Swedish museum had developed a more vertical and task-oriented approach to exhibition production. Members are placed together to perform tasks on a single project, although some members might find themselves in the same group again on another project. However, the fuzzy boundaries are still apparent here, due to the collaborative character of exhibition production, where different members had to argue and negotiate continuously and share knowledge. A staff member explained how writers and curators had argued and exchanged views for a long time before text panels appeared in their final versions ready for the exhibition. In order to succeed in creating an exhibition the group had to achieve a sense of being a *community of practice* that was dedicated to the exhibition development process. At the Swedish museum the competitive culture of exhibition teams, so unlike the situation in the provincial museum, has produced a sense of identification with a particular project and an approach that is different from educational methods and projects elsewhere in the museum.

The old 'keeperdom' and the new voices

The third museum is very different from the provincial museum (West Denmark) and the one in Sweden. The university museum (East Denmark) is a more traditional museum in which the collection communicates with its public by means of a taxonomic and thoroughly academic display. A staff member noted that the museum valued *andægtigt* mode of display: which might be translated as literally meaning 'religiously devout'. The atmosphere is

'cathedral-like' and several exhibitions privilege the object, permitting careful inspection and research. In the mineral collection thousands of objects are lined up in mahogany displays. In general, the exhibits have much by the way of text and captions, so that they have the something of the quality of a 'Phd thesis pasted onto panels'. This is a place for research collections. Every curator has a responsibility for certain sections and has, until recently, ruled as *enevældig*, or absolute monarch (as the meteorite curator put it) in their respective areas.

The museum, like other university museums across Europe, is introducing changes. The old 'keeperdoms', which are like little kingdoms, as a staff member at a UK university museum, expressed it, are gradually being replaced by *teams*, by collaboration and by more interdisciplinary and public-oriented work. These 'traditional' museums are adapting to a modern world of change. Interestingly, one academic staff member at the Danish university museum wanted the museum to appoint an exhibition manager from outside who was not attached to a particular subject area, and who could communicate the subject matter to a non-academic audience. The museum remains, however, very much a university museum with a particular disciplinary focus. One curator could see the contradiction, appreciating that they were indulging the love of objects and yet failing to promote a new voice of education in the museum, which might introduce others to what they so appreciated. However, this academic member thought it was possible both to maintain the old mahogany displays and the 'religiously devout' form of exhibition, and to allow new forms of learning and communication. In the past there had been a closer craft intimacy around exhibition development, between different research-orientated curators, but then again, such communities of practice can limit innovation if boundaries are not crossed. In many larger museums, as for example at the UK museum, the crossing of boundaries is more formalized to assure specific forms of interdisciplinary learning. At the provincial museum one subject specialist said that he had not known about exhibition work when he began his appointment. This is typical of staff at this museum, who are not trained in museums and museum work, but rather perform scientific work within a museum setting. This is a pattern that is to be found in many similar museums around the world. Our informant argued that new exhibitions could be managed by a person with a pedagogic background, one who can focus on communication and interpretation, and supplement the scientists. In this way the critical aspects of the *status quo*, the research and 'knowledge generation', would be preserved.

In the university museum there was a desire to enhance and extend existing roles, to pursue new dialogues in the areas of education, IT and communication, but not to engage in fundamental institutional review. Although one staff member had reservations towards technology, he later expressed a need for, and interest in the potential of, technology as a management tool getting a better administrative grip on the exhibition development process, as well as an educational tool in exhibition display. The museum staff we spoke to aimed to couple different disciplinary knowledge in the museum with efficient management methods and communication expertise. This museum did not aspire to new *communities of practices* in the form of strong, informal peer groups. However, they were searching for new forms of managing and stimulating processes of exhibition production and learning across different interests and means of more multi-disciplinary groups.

Formalizing exhibition development

There is a core group of exhibition developers at the case-study museum in the UK that operates in diverse domains within a cross-disciplinary exhibitions department involved in developing and managing a wide range of exhibitions from natural sciences to archaeology and art. The core group is made up of a project co-ordinator, a project manager (with scientific background relevant to the subject matter of the exhibition) and a designer. Subject matter specialists are brought in only when the subject of the exhibition is relevant. Education or interpretation staff are usually brought in later in the process. When these individuals come together to form an exhibition team, they bring with them their own specialist areas of knowledge but because of their shared understanding of the museum and their changing role within it they may also act in a community of practice-like fashion.

The exhibition development process is facilitated through different forms of interaction the most common of which is team meetings. This is how they share knowledge and expertise, create a common understanding, keep track of all developments and generally ensure that they are all 'on the same page'. Examples of best practice are provided during the internal training sessions and also are identified in the form of stories and anecdotes (through conversations) when they meet for lunch or coffee. During these exchanges, a shared 'way of doing things' is developed. This cumulative know-how has been documented in the Exhibition Manual, which states how exhibitions are developed within the museum. This is one of the few museums studied within the Mirror project that has adopted a formal approach to exhibition development. This has affected not only the development and delivery of exhibitions. It has also created a 'common approach' to what makes for a successful exhibition, and how that can be assessed by and among the museum's exhibition developers.

Hence, drawing on their experiences of using a more structured approach to exhibition development respondents offered their views on what makes a successful exhibition development project in terms of the process. These included: having enough time (approximately two years from the time the team is brought together) and adequate resources; recognizing the kinds of skill and expertise that are needed to deliver the exhibition and putting together groups of people that have the knowledge and skills as well as the right personality and a sense of commitment to the project; ensuring the person in charge has project management skills, can make decisions at the right time and can inspire people and take them with him/her; effective communication between team members; communicating effectively with outside firms or partners; holding weekly meetings and keeping everybody on track; sticking to deadlines; and wanting to do it again. Respondents mentioned that one of the criteria of success for an exhibition is its popularity with visitors. Popular exhibitions tend to be those with a broad topic (such as *Flight* exhibition) which naturally have the potential to appeal to a wide audience. On the other hand, in terms of exhibition development this all means having a bigger and more diverse exhibition development team which makes the whole process more difficult to manage.

Sharing a common domain, developing a natural science exhibition, is what brings the community of exhibition developers together. The members of this community value their domain for different reasons depending on their role within the museum as well as their background. For the subject matter specialists, doing field research and collections research is what they value most. This research is then used to produce scientific publications as well as exhibitions for visitors. The people who work on the exhibitions side have a different perspective. They are committed to delivering an educational service that has a long lasting impact on people's lives. This includes both internal (personal and professional development of museum staff) and external users (visitor learning, and working in partnership with other like-minded institutions to promote research and learning). These different perspectives seem to run in parallel with the two main functions the museum is perceived to have: academic research and the educational function. Finding new ways of using and presenting the results of collections research (including new technologies) is what keeps museums alive both internally and in relation with its public, according to a respondent.

The provincial museum in Denmark, as well as the UK and the Swedish case studies, have a strong public profile. At the same time they stress that they want to strengthen their research. The large natural history museum in Sweden has clearly taken a science centre and fun approach in some of its sections; but they also want to re-emphasize a more traditional and academic focus on the collection. As a staff member put it, 'they seem to want it all'. It is, ironically, not the science centre sections but the traditional narrative galleries that have recorded improving visitor numbers. The small provincial museum in Denmark does not have the same resources, and finds its success depending on events and education programmes and orientations. They are widely known as the museum where you go to ask for help whether you are a teacher, an institution that needs to know something air pollution or a pensioner with an interest in birds. The Danish *nature guidance* system, to which the museum is affiliated (an institutionalized *community of practice* of nature facilitators linked to the natural history museum sector and other aspects of nature education), with external guides paid for by the government, is used as a link between exhibition and outside events, tours, seminars.

The museum in the UK has recently developed a hands-on exhibition which is mainly devoted to making the natural history collection available to family and school audiences. The education department runs a wide-ranging programme of events for schools, families and learners of all ages - from toddlers to adults. There are courses for teachers, hands-on and role-play sessions for school students, video conference links and a range of education packs. The museum's outreach collection has more than 55,000 objects which can be borrowed by schools and community organizations. They also offer family programmes that give parents and children the chance to have fun and learn about the museum's collections at the same time. Combining education and entertainment opportunities is high on the museum's agenda – and indeed on the agenda of a large part of museums in the UK in general. Yet, scientific research is very strong within the museum in the UK too. All scientific departments produce high quality research and a number of the museum's researchers are well known in their field. Bridging the gap between the research and interpretation orientations of the museum is one of the hardest challenges the museum faces, according to all respondents. A value struggle between, on the one hand, curator scientists in charge of their 'own' collections and exhibition development, and – on the other hand – more collaborative and team based museum exhibition development and collection management is prevalent in several of the museums researched. The latter produces rather different learning practices and interactions in everyday work (to be explored in the conclusion).

Conclusion: situated learning in a tactical museum field

We have tried to show how all four museums constitute very different cases in terms of locating a model of exhibition development. With respect to learning, these different groups form teams and communities of practice in complex and overlapping ways. While one might idealize their interactions and certainly exploit these categories practice to improve what these museums do, one also has to recognize the dominance of the social, political and economic factors in shaping the actuality of practice. And it is this that we must work with if we are to generate technologies which exploit the facets of learning embedded in the concepts of *team* and *community of practice*.

Other museums studied in the *Mirror* project, in the UK, Belgium, France, Italy and Greece, show similar diversity and complexity of practice and exchange. Larger museums, such as the ones in France and Belgium, for example, have a more well-established structure and procedures for exhibition development while smaller museums, such as the one sampled in Greece, have developed a family spirit with more flexible manoeuvres and roles. The learning patterns of interaction to be found in the four cases presented in this paper, and which exists across the group of museums studied, can be characterized by elaborating on a particular format of working and learning, Lave and Wenger's concept of *situated learning*, a concept that appeared in their more pedagogy-based writing in 1991, when the related concept of *communities of practice* was still underdeveloped.

Fuzzy boundaries between the informal exchange among peers and the target-focused and planned cooperation of a heterogeneous team express a strong two-fold structural struggle which is characteristic of many museums today, a struggle that is encouraged by both academia and society's shifting disciplinary/professional lines of occupation/tasks, and the restless need to stay relevant and not to slow down on the work of (lifelong) learning. In recent decades this has been reflected in new styles of pedagogy which stress individual's responsibility for their life-long learning. There is strong hint here of Grundtvigian ideas (those of the Danish eighteenth-century thinker) which, originating in Scandinavian folk high schools, are now used as shibboleths for encouraging adults constantly to gain new professional skills. This struggle appears, however, to be healthy and necessary if museums of different sizes are to assure the informal and formal sharing of knowledge in the constituencies they aim to nurture.

The concept of cultural capital allows us to theorize museums as a social space or field with which different agents or producers, such as curators and exhibition makers, lay claim to different kinds of assets or capital, and are locked into relations of conflict and cooperation. Whilst the struggle between forms of capital consumes resources, it also

productively stimulates frequent and audience-pulling temporary exhibitions, which through interdisciplinary thematic approaches appeal to both new and established audiences. The museums which we have presented all attempt to transform 'fire fighting' (although this happens to a varied extent, the larger museums being more professionalized) into structured situated learning where aspects of communal peer exchange as well as effective and structured task-collaboration are linked together. The four museums presented here all either contain or aspire to community-of-practice forms. While the provincial museum needs to engage communities with new knowledge and a stronger structure, the remaining cases suggest that no-one has an interest in building efficient teams around exhibitions that go beyond their 'natural' communities. Furthermore, the research has shown that exhibitions, in a range of European natural history museums, are accomplished through modes of co-participation depending on the team's ability to create adaptive working practices with *legitimate peripheral participation* (Lave, 1991).¹⁴ A form of learning membership, which may apply particularly to non-core team members in the exhibition development phase, like, for example, people who step in and out or who is an expert in another, or bordering, discipline, but who learns a new craft by engaging in the team.

The concept of *legitimate peripheral participation*, to rephrase Lave and Wenger, emphasizes shifting roles and explorative learning processes that are bound up with, or produced, in interaction with people, which again is circumscribed by a particular context for learning. A participant can take up a role that gradually develops from being one who oversees and imitates, to a fuller, individual, contribution. The concept suggests that members take on varied work tasks, from the creative birth of ideas to the 'hard slog' and 'snagging' of exhibition development as a continuum of unexpected difficulties which arise during the production phase (Macdonald, 2002: 155; also see our earlier observations about *tactics* in this article). This means that there is a change in the nature of the work from what David Dean calls the *conceptual* to the *functional* phase: from ideas and desktop-planning, to the operational problems in the *modus operandi* of the every day when the exhibition is set up (Dean, 1994). The practice itself is learning. The term *peripheral* does not necessarily indicate an inferior position. Neither does it have to indicate that the peripheral learner is merely receiving factual instructions - as, for example, in didactic approaches where a teacher *transmits* messages to a pupil (see e.g. Hooper-Greenhill, 2002).¹⁵ It can indicate a form of learning at a distance, in a listening position, or as a newcomer or stranger entering a community of practice from a bordering discipline. The peripheral learner is here seen as a supplementary contributor to knowledge, rather than an 'inferior apprentice', and as one who is in dialogue with peers or other learners. This is typical of the knowledge production in exhibition teams, as for example, in the case of the provincial museum, with some members active at certain phases, and more passive, but listening at others. But it is also a common condition for learning and exchange in the *field* of Museum Studies in Britain, where researchers and practitioners gather from a variety of disciplines and work-experiences (curators, archaeologists, historians, educators, cultural studies academics, geologists and so forth) and inspire each other - as with the two authors of this article who have combined their own distinct theoretical knowledge and practical experience. Peripheral and situated learning offers the learner opportunities to join and vacate socially unfolded trains of thought. It, therefore, inevitably involves oscillation between positions of active contribution derived from the particular possession of capital or knowledge recognized in the field, as well as a dwelling/listening position on the 'edge' of the community's boundaries, that is to say a position where certain 'rules', competencies and forms of capital are developed and exchanged. A community of practice is not only sustained from within, but also by the very flexibility and fuzziness of its borders.

All situated learning involves some testing of new ground. Processes may be similar or repetitive, but they are only truly situated, if the *situations* are new. In this sense the learner, in some respects, never becomes fully experienced or fully educated. In Lave and Wenger the concept adapts the notion of *apprenticeship* (Lave, 1991) and uses it in a specific sense: as inclusion and legitimate access which opens up opportunities for engagement and construction of identity (Lave, 1991). The apprentice is thereby not necessarily a novice. It is, thus, the practice of the community, the team, and the overall orientation of the museum, that is the overlapping circles of context, that create the curriculum. Mastery relies on the

organization of the community in its situatedness, in facilitation and guidance, rather than spoon feeding. Learning, while building exhibitions in natural history museums, is a process of maturation, a dynamic developmental process, rather than an instrumental implementation of a plan, or execution of already established knowledge. In this sense the process itself, produces a leap – similar to Vygotsky's *Zone of Proximal Development* (Vygotsky, 1978: 79-91) – where the learning is the acquisition, or experience, of capacities that are in advance of what is already incorporated. Each exhibition challenges previous practices and concepts. Our research shows that exhibition development in most of the participating museums is tactical, situated and episodic, where distinctions between community of practice and task-oriented team become unclear, and where a less differentiated picture of situated learning seems prevalent. Nevertheless these distinctions, when included with other aspects of theory pertaining to social practice, provide a useful framework for the analysis of workplace learning.

Notes

¹ Dr Theano Moussouri led the conceptual design and the theoretical structuring of the Leicester contribution to this project. Theano Moussouri played a key role in designing the *Mirror* project as it was originally submitted to the European Commission. She has further developed the concepts, research methodology and the tools - a process to which Dr Anders Høg Hansen contributed. Anders Høg Hansen worked on the analysis and writing-up of case studies for the *Mirror* project, together with the team of field researchers, as reported in *Learning Strategies*. For this paper he wrote the bulk of the material on the three Scandinavian museums while Theano Moussouri as the main contributor of the UK museums

² The idea behind the project name *Mirror* was that it would 'mirror' the actual practices of the communities of practice of exhibition developers.

The museums which participated in the qualitative research for the *Mirror* project were in Sweden, Denmark, Belgium, France, Italy, France, Greece, and the UK. Four museums will be discussed in this paper. We are grateful to other museums around Europe for having offered information for the *Mirror* project.

³ A large 'permanent' gallery has the potential to be a lasting statement highlighting a museum's mistakes; few galleries are beyond criticism and most result in some apportionment of blame.

⁴ Carole Paleco and Olivier Retout from Royal Belgian Institute of Natural Science, Eugenia Flogaitis and Georgia Liarakou from the University of Athens and Theano Moussouri and Anders Høg Hansen from the University of Leicester.

⁵ The concept of communities of practices was introduced by Etienne Wenger and Jean Lave (1991) *Situated Learning: Legitimate Peripheral Participation*, Cambridge University Press, and was developed theoretically by Etienne Wenger (2000) *Communities of Practice: Learning, Meaning and Identity* and more practically in Etienne Wenger, Richard McDermott and William M. Snyder (2002) *Cultivating Communities of Practice*.

⁶ See Simon Knell, Theano Moussouri and Anders Høg Hansen (2002). *D5.1 Learning Strategies for Mirror Community of Practice*, pp. 22-23. The report is available online at www.mirror-project.net For more information on QSR NUDIST see also www.qsr.com.au or www.solari.co.uk

⁷ See, e.g. Bourdieu (1997: 46-58) on the forms of capital. This article is concerned with the different forms, such as cultural and social capital and their possible conversions. *Capital* is defined as accumulated labour in its materialized or embodied form which then is appropriated by the agent or groups of agents (Bourdieu 1997: 46).

⁸ See, for example, Bourdieu (1990) *The Logic of Practice*, Oxford: Polity Press, in particular

66-68 and 112-121, or Pierre Bourdieu (1977) *Outline of a Theory of Practice*, Cambridge: Cambridge University Press, pp. 171-182. See also Elizabeth Lane Lawley (1994) 'The Sociology of Culture in Computer Mediated Communication' at <http://www.itcs.com/elawley/bourdieu.html> Michel de Certeau (1984) *The Practice of Everyday Life*, Berkeley: University of California Press, 34-39, and Jean Lave and Etienne Wenger (1991)

⁹ The concepts *horizontal* and *vertical* are appropriated in a specific way by the Mirror consortium, where Simon Knell (Department of Museum Studies, University of Leicester) and Daniel Dögl (uma Information Technology) played a key role in developing the understanding of the concepts. The use of the terms *vertical* and *horizontal* in this article should therefore not be confused with conceptualizations within organizational theory, as for example *vertical* and *horizontal decentralization*, which refer to the extent to which authority or power is dispersed formally top-down, i.e. vertically, or if non-managers have more influence and control in decision-processes through a flat, horizontal dispersal of power, as in e.g. Henry Mintzberg, 1983, 99-115.

¹⁰ One domain for a museum natural scientist may be a taxonomic interest in Coleoptera, and the associated community of practice could be institutionalised as an entomological society or a specialist research group.

¹¹ See Wenger, McDermott and Snyder (2002: 41-43) on a *community of practice* in relation to other structures and units.

¹² The case study from Greece is not presented in this paper but more information can be found in Knell, Moussouri and Høg Hansen (2002).

¹³ See especially (Johansson, 1997:19-20 and 48-60).

¹⁴ See in particular chapters 1 and 4 (Lave, 1991).

¹⁵ Also explained by George Hein (1998) in *Learning in Museums: A Continuing Conversation* [unpublished paper given at Department of Museum Studies, University of Leicester], 18 November 2002.

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