

Designing for an Open Museum

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An Exploration of Content Creation
and Sharing through Interactive Pieces

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Abstract

This thesis describes how an interaction design approach is used to encourage museum community involvement in exhibitions. My hypothesis is that by making the community a part of exhibitions it is possible to broaden and update the perspectives and the discussion on what is exhibited, making content more accessible to a range of visitors and providing more opportunities for learning and engagement. The personal and creative way that people relate to exhibited material makes the contribution of the museum community valuable. Interaction designers have the possibility to plan from the beginning the way that the museum community could create content.

In order to work on these hypotheses, the main topics for my research are how to create design that encourages community participation in the museum and what to expect from such participation. To tackle this issue, I created and participated in projects that attempted to encourage people to comment on an exhibition, whether in online or onsite formats through interactive pieces. Most of the material that this thesis deals with is firsthand, collected during exhibitions in different museums in Helsinki, Finland. The cases are Sound Trace (Äänijälki) in the Ateneum Museum in 2005, Conversational Map (Keskustelukartta) in Kunsthalle in 2006, and The Secret Life of Objects (Esineiden salatut elämät) in the Design Museum in 2008. The three cases are tightly bonded to my research; each case pointed me in new directions and posed questions that affected the design of the next case.

In parallel to the development of the projects I looked into the Museum Informatics field and Museum studies, participating in forums around these issues. Both Museum studies and Museum informatics have provided me with an understanding of the problematic from the museum point of view, which I link in this thesis with questions relevant to interaction designers.

My personal work as a design-researcher allowed me to examine the opportunities and constraints faced by interaction designers working as external collaborators at mu-

seums. Part of this study delves deeply into how this content becomes valuable to staff and visitors and how it reflects people's experience of the exhibition.

In these case studies, I have designed interactive pieces and mechanisms geared towards involving the visitors, the staff and the designers or artists in the museum so that they create content that is later displayed in the museums. Participatory design approaches influenced the design of these pieces and facilitated the recognition of informal museum practices (sharing thoughts, feelings, jokes and questions) as well as more institutional practices (workshops, guided tours, and publications).

When examining the data, I adopted the concept of "ecology of participation" which allowed me to map the complexity of the design arena, thus making visible possibilities for intervention to interaction designers. The ecology-of-participation concept binds the interactive piece, the people, and the practices with the places. My hypothesis is that by examining the ecology of participation it is possible to support and make use of existing practices, places and different actors in the museum. This thesis emphasises that the quality of the contributions depends on the inclusion and connections within the different components of the ecology.

Finally, I offer recommendations on engaging the community in technically mediated exhibitions. These recommendations are intended to support the museum community as well as interaction designers by offering insight into involvement as a part of the whole museum experience. The recommendations for the museum are to listen to and trust the community by promoting community-created content, forming alliances with external partners, such as universities, for long-term collaborations, and taking risks. Designers involved in digital design projects in museums can work towards integrating the groups in the ecology and nurturing content material. By doing so, designers perform different roles, including that of a facilitator or a gardener that is a key actor in the design of an open museum.

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Introduction

Museums must communicate or die. For communication to occur both the sender and the receiver of the message must share the same concepts, even the same passions. The task for museums and galleries is to find ways of arousing and instilling passions and ways of exploring ideas that people will find illuminating, using the collections of the museum, and the curiosity and experience of actual and potential visitors (Hooper-Greenhill, 1994, p. 34).

1.1. Framing the Research Contribution

This thesis intends to investigate how new technology can support people's engagement in exhibitions. It does so by presenting and analysing three case studies that I created and in which I participated as interaction designer.

I acknowledge that Interaction Design is the principal field of this study because I designed interactive pieces that were set in exhibition venues, and through them I propose and analyse participation within the museum-community. Furthermore, my personal background as industrial designer and my working experience in interior design have profoundly influenced my viewpoints. As I was not familiar with the discussions in the museum field at the beginning of this endeavour, I looked into the Museum Informatics, participating in forums and conferences around these issues (International Cultural Heritage Informatics Meeting (ICHIM), 2007; Archive & Museums Informatics, 2009; Museum Computer Network, 2009; Museum 3.0 Network, 2009¹). To complete this enquiry I have reviewed a bibliography related to Museum Studies. Both Museum Informatics and Museum Studies and have provided me with an understanding of the problematic from the museum point of view, which I intend to link in this thesis with questions relevant to interaction designers.

¹ Note that these networks did not start in 2009 but their sites are constantly being updated, and their copyright is from this year.

The main researchers in Interaction Design cover many different points of view such as embodied interaction (Dourish, 2004); digital design (Löwgren & Stolterman, 2007); user experience design (Buxton, 2007; Goodwin & Cooper, 2009); user centred (Preece, Rogers & Sharp, 2007) and user interface design (Cooper, Reimann & Cronin, 2007). From this group of researchers the most important authors are Löwgren and Stolterman, because they examine the roles of the interaction designers and the design processes and thus serve as fruitful material to my analysis. However, they have not focused specifically on the possibilities that museums and exhibition venues bring nor use them to make field studies.

Only a few interaction design studies concentrate on museums, but they deal with different issues such as ubiquitous computing (Ciolfi, Bannon & Fernström, 2007; Bowers, et al., 2007), tangible user interaction (Wakkary & Hatala, 2006; Wakkary & Hatala, 2007), social media (Russo, Watkins, Kelly & Chan, 2006; Watkins & Russo, 2005; Watkins, 2007); three-dimensional graphics (MacColl, Millard, Randell & Steed, 2002; Chalmers, 2004; Díaz, Reunanen & Salmi, 2009), game design (Cabrera, et al., 2005; Klopfer, Perry, Squire, Jan & Steinkuehler, 2005; Dini, Paterno & Santoro, 2007; Edwards & Schaller, 2007; Goodlander, 2009; Botturi, Inversini & Di Maria, 2009) and social interaction (Aoki & Grinter, 2002; Vom Lehn, Heath & Hindmarsh,

2001; Galani & Chalmers, 2002; Chalmers & Galani, 2004). My contribution concerns understanding the possibilities of designing for participation using new media tools in museums and exhibition venues². Therefore, for the purpose of this research social media and social interaction issues were the most relevant.

Many people actively participate in creating information using new media tools. In an array of fields, changes are taking place, and content is being produced and published by new creators. Research and development of digital media tools support collaborative endeavours in both closed and open groups. All these developments demonstrate that technology is currently ready to enable opportunities for participation in co-creating or co-authoring information.

Hence, it is relevant to ask what is going on in the museum milieu: how are museums giving voice to the members of their community and how are people reacting to the possibility of creating and sharing content in museums and exhibition venues? There are many strategies for answering these questions, as an exhibition entails distinct moments to include people.

Visitors can be part of the design process by collaborating from the very beginning of the exhibition and its concept (Taxen, 2004; Friess, 2008) or by providing the objects that make up the exhibition. On many occasions, museums have invited communities to contribute before opening the exhibition to the general public. For example, the Victoria & Albert Museum in England held an exhibition named *People's Show* (Bath & North East Somerset, 2003) in which a group of visually impaired individuals chose objects from within the museum's collection to be exhibited and brought some of their own. Recently, in Finland, the Helinä Rautavaara Museum invited teenagers to contribute their own objects, music, and ideas to the exhibition *Live Your Life* (Helinä Rautavaara Museo, 2008). At the London Science Museum, visitors have been invited to bring their own toys (Simon, 2007).

Another way for visitors to participate is by making content that is later used to make the exhibition. An example of this type of participation was the case in which The Portrait Gallery of Canada invited people to make a portrait and made a collection out of the visitors' contributions (Libraries and Archives Canada, 2008). In the same line Void Gallery has organised the event "today you are an artist" in which an artist and the public made the content material for an exhibition (Derry Journal, 2009). In the specific cases analysed in this thesis, museum staff, visitors and external collaborators commented on an exhibition's content both online and at the museum during the time that the exhibition was on show. The museum community-created content has the role of being the interpretative material that helps to connect the visitors with the exhibition content.

² In Chapter 3, Section 3.4.1, I define the specific participation to which I am referring.

1.2 Establishing the Research Questions

Departing from a set of hypotheses about the advantages that community-created content could have in exhibitions I pose my research questions.

The hypotheses are explored by analysing the content gathered during the case studies in Chapter 4. The following is the list of hypotheses:

- Community-created content (CCC) could serve to make content more accessible to new audiences. People's vocabulary and their personal narrative could bring different voices in comparison with the well-established informative tone of the interpretative material in museums and exhibition venues. Therefore, if people could leave their own comment related to the pieces in the exhibition, these comments gathered and shared through interactive pieces could serve to make content more accessible to new audiences.
- CCC could extend people's engagement with the exhibition material over a period of time. These comments created by people during the time of the exhibition could extend their engagement with the exhibition material over a period of time. People could go home and think about the exhibition. Thereafter, they could share these thoughts online with other future visitors, for example.
- CCC could support the learning that takes place in the exhibition by engaging people actively. The possibility to leave a mark, their comment on the exhibition material, gives people a responsibility as well as provides them with the challenge to articulate a meaningful message to others.
- CCC, once displayed, could validate multiple perspectives and generate discussion from the exhibited material. Visitors perceive their own personal thoughts as valid opinions, while they gain similar consideration from others in the exhibition. In parallel, opening one's opinions to the public brings an instance of self-exposure to others' considerations of private thoughts.
- CCC could open possibilities for dialogue and exchange within the museum community. For example, a visitor could leave a question that a person from the museum staff can answer later.
- CCC could help to identify and to integrate new members of the community and to understand their expectations related to museum and exhibition venues.

- CCC could bring complementary documentation and interpretative material on the artefacts in the exhibition.

My main research question is how to create interactive design that encourages museum community participation in exhibitions. By setting this question I expect to give answers to the set of hypotheses mentioned above and understand the design potentials and considerations that the special context of museum and exhibition venues offer to interaction designers.

I created and participated in projects that encouraged people to comment on exhibitions, whether online or onsite formats, through interactive pieces. These three projects are the case studies that I analyse in this thesis. In these cases, I observe my own design process while implementing these projects, the collaboration with the museum staff, and the digital content gathered during the installation of the interactive pieces in the museums and exhibition venue.

There were other cases in which visitors have had the opportunity to comment on exhibition material once the exhibition was on display and where those comments have been openly shared with other visitors (Fisher, Twiss-Garrity, & Sastre, et al., 2008; McLean, 2007; Parry, 2007; Samis, 2008b; Bernsley, 2008). I chose to concentrate on the ones in which I was involved as interaction design-researcher because in these cases, I was able to analyse both my own design process and the material collected. Additionally, I had access to all the documentation material and personal involvement with the real situation.

As part of this analysis I propose the concept of *ecology of participation*. This concept is intended as a tool for interaction designers planning for participation in museums and exhibition venues as they can affect and plan the digital content from the beginning. I will demonstrate in Chapter 4 how this is possible.

1.3 Telling the Story of this Research

In this section I narrate the influences that have helped me to frame the research carried out through these three case studies: *Sound Trace*, *Conversational Map* and *The Secret Life of Objects*. In Chapter 2 the design cases are presented more extensively. This section explains on a personal level what has made me become concerned with design for community participation in museums and exhibition venues. A historical review of the topic of visitor participation in museums can be found in “Surviving in Two-Way traffic” by McLean (2007).

However this is my personal path in the issues of participation and serves to sew together the three case studies in a chronological story.

In March of 2003 I conducted usability studies of the Digital Facsimile of the Map of Mexico 1550 (Díaz-Kommonen & Salgado, 2003) at the Museum of Cultures (The National Board of Antiquities, 2009) in Helsinki. As part of the testing sessions I interviewed visitors of the museum and special guests that worked in the cultural sector in Finland. The stories of these people about the map were rich in content and their perspectives varied. Through them, I started to contemplate the possibility of including these perspectives in a digital platform that would make it possible to share and document visitors’ comments during the course of the exhibition.

In 2005 I took part in the *Dynamic Visual Design Seminar Two* (Systems of Representations, 2005) in which, along with a group of students, I developed a concept for a participative audio guide for the visually impaired: *Sound Trace* (Äänijälki) (Article 1). Visually impaired visitors could touch certain works of art in the permanent exhibition of the Ateneum Art Museum and then record their comments. This museum houses the largest collections of art in Finland. The concept was that either online or onsite through a PDA (Personal Digital Assistant), any visitors to the museum could listen to the audio comments.

Later, in the International Workshop “*Re-Thinking Technology in Museums: Towards a New Understanding of the People’s Experience in Museums*” (Interaction Design Centre, 2005) I came across a project that I considered especially intriguing and inspiring. It was the case of the visitors’ board created in the exhibition *Iron Ladies: Women in Thatcher’s Britain* at the Women’s Library in London. In that exhibition, visitors answered the question, “What do the 1980’s mean to you?” Participants wrote ideas on small pieces of paper and placed their notes on a large board. The role of the board changed throughout the exhibition, and it eventually became one of the show’s central focuses (Byatt, 2005). The fact that the answers to such a question were exhibited might have positively influenced the content gathered on the board: these comments were more thoughtful and valuable than those usually collected on visitors’ boards because they serve to depict the period of time in a creative and personal way. I thought that gearing visitors’ boards to a digital format might offer certain advantages, and I was eager to explore them. At that time, I was not aware of how complex crafting museum community participation could be.

Soon thereafter, in November of 2005, I had the opportunity to install a short participative piece at a young biennale exhibition entitled *Small Heaven in Kunsthalle* (Taidehalli, 2009). The name of the installation was *Conversational Map* (Keskustelukartta), and it consisted of a piece in the exhibi-

tion venue that displayed a map of the exhibition materials. The map could be navigated and annotated with ImaNote (2007), a software then being developed by the Systems of Representation Research Group. In my interactive piece, this software was used for the first time in an exhibition venue to gather visitors' comments. For four days I was at the exhibition venue, trying to conceive along with the audience the possibilities for a digital board that could collect visitors' comments (Article 2). Though short, the experience of being at the exhibition venue itself was intense. I could pinpoint the missed potentials of the interactive piece.

In 2007, I was invited to participate in a project at the Design Museum Helsinki. I hoped that since this time it was the museum that had taken the initiative to contact Media Lab Helsinki³ instead of the other way around, there would be a good opportunity to collaborate with the staff and to enrich the concept of a digital visitors' board. Out of this collaboration the project *The Secret Life of Objects* (Esineiden Salatut Elämät) (Article 3) took shape. The educational experts from the staff of the museum, probably influenced by the current discussion on the advantages of social technology, were eager to experiment. Hence, I finally had the opportunity to design a digital board for comments before and during the planning of the exhibition itself. The exhibition was the result of this collaboration, and it took its name from our project: *The Secret Life of Objects, an Interactive Map of Finnish Design*. The digital comments were the central focus of the design and development of the exhibition concept.

There were other sources of inspiration, such as visiting museums, presenting and discussing the projects in conferences and workshops, teaching, talking with colleagues and visitors, reading the literature in the field, and participating in online discussions.

1.4 Presenting the Methods

The research process entailed implementing the “designerly way” proposed by Cross (2007b), and hence the three case studies reiterated and dialogued with my reading and writing. Therefore, this thesis is drawn from articles that have been written from 2005 to 2009. It shows the conversations and questions that the production of each project has helped to re-frame. In addition, each project has applied methods from the human-centred design framework.

Most of the material that this thesis deals with is firsthand: it is the material collected and experience lived during my personal association as an

³ Media Lab Helsinki is the school of digital design at the University of Art and Design Helsinki and soon, the new Aalto University. The Lab provides education and research frameworks for studying digital media products, contents and technologies, their design, development and the effect they have on society. In this school I pursued my doctoral studies and I worked as research assistant during the time this research took place.

interaction design researcher in the three cases in the museums and exhibition venue. As Nelson and Stolterman (2003) propose, there is a distinction between “finding meaning in things that happen” and “making meaning by causing things to happen” (p. 49). In these cases I designed interactive pieces and their mechanisms of integration in the context in order to encourage the visitors, staff and designers and artists to create content that could later be displayed.

In terms of bibliography, my process has been two-way. Literature has always inspired me and given me tools to understand the material I have gathered in the case studies and, at the same time, the material coming from the case studies has led me to a certain bibliography. In *New Strategies for Social Research*, Layder (1996) presents the distinction between research that looks for “theory that fits the data” versus “find data that fits theory” (p. 45).

1.4.1 Design Research Framework

Design researchers have tried to understand and forge the relations between design and research in a variety of ways. For instance, Maarit Mäkelä and Sara Routarinne (2006, p. 13) have employed the term *practice-led research* to refer to “research that evolves through the making of art and design”. Wolfgang Jonas (2007) has used the term *research through design* (RTD) for “research guided through design-process logic and design supported/driven by phases of scientific research and inquiry” (p. 203).

Nelson and Stolterman (2003) introduced the notion of *the designerly way* as a form of reflective, abstract and action-oriented inquiry into the real (p. 9). They defined *design* as the ability “to imagine *that-which-does-not-yet-exist*” (ibid., p. 10), identifying the need for designers to incorporate the dimensions of the true, the real and the ideal into their practices (ibid., p. 46). In this thesis, Nelson and Stolterman’s discussion serves as the basis for an open talk about the results, constraints and possibilities of my own case studies. In the tradition of interaction design, researchers have used a design-research framework to which Stolterman (2008) is one of the contributors.

Nigel Cross’s (2007a) definition of “designerly ways of knowing” posits the existence of a dialogue between the object of design and research, and this dialogue is what gradually improves solutions. Some other characteristics of the designer activities that Cross describes are helpful when it comes to understanding these projects that entailed interaction design in museums and exhibition venues.

Firstly, Cross (2007b) states that “the designer is constrained to produce a practicable result within a specific time limit” (p. 23). This was the case in

these projects whether the time constraints were imposed by the study programme as in the case of *Sound Trace*, or by the duration of the exhibition as in *Conversational Map* and *The Secret Life of Objects*.

Secondly, Cross (2007b) states that designers need to cope with “ill-defined problems and define, redefine and change the problem-as-given in the light of the solution that emerges from their minds” (p. 24). One clear example of how the design problem was defined and redefined is manifest in the question of who should be included in designing participation in the form of digital comments in the exhibition. In the first case study (*Sound Trace*), the hypothesis was that the active participation of one specific group, the visually impaired, could encourage other visitors to engage with the artwork. In the second case study (*Conversational Map*), the premise was that a pluralistic view by all visitors could improve engagement. In the third case study (*The Secret Life of Objects*), I tried to include the staff, designers and artists involved in the exhibition as meaning-makers.

Thirdly, Cross (2007b) maintains that designing is a process of pattern synthesis in which the solution has to be actively constructed by the designers’ own efforts (p. 24). I think that during the development of these three cases a “solution” was being sought, and I consider each case a way to solve and clarify the opportunities missed in the previous case.

In design, the solution and the problem develop together (Cross, 2007a, p. 52).

Cross (2007b) explains that “a major part of the designer’s work is therefore concerned with the evaluation of design proposals” (p. 34). This is exactly how this work has evolved: through testing and evaluation. I identified the strengths and weaknesses of each case study, and on the basis of that analysis I developed the next case. Although the museums and exhibition venue and, subsequently, the collaborations with the staff and the design proposals differed, there is a narrative that entails the search for a better solution to the problem. Designers feel the need to “generate a variety of solutions precisely as means of problem-analysis” (ibid., p. 35), and this is precisely what the three case studies proposed. The timeframe for implementation and collaboration and communication strategies involved are “alternative solutions as means of understanding the ‘real nature’ of the problem” (Cross, 2007b, p. 36).

1.4.2 Human-Centred Design

Designerly ways of knowing have guided all phases of this research, and human-centred design activities are a crucial component prominent in

each of the case studies analysed. According to Krippendorff (2007), human-centred design should acknowledge and support human conceptions and desires by “listening to how other people think (...) and by inviting the stakeholders of design to participate actively in the design process. So conceived, design is an essentially social activity, one that cannot be separated or abstracted from the context of people’s lives (...)” (p. 70-71). In the case studies there were several instances of listening to how other people think. Workshops, seminars, user studies and other time spent in the exhibitions talking with visitors and collaborating with staff allowed for understanding existing practices in these venues.

In the three case studies, design served to support already existing practices such as commenting, criticising, and recommending. In connection with *Conversational Map*, we, Salgado and Díaz-Kommonen (2006) (Article 2), refer to these activities as an “interactive installation” to support visitors’ practices. These case studies used participatory design approaches to identify practices related to the museum and exhibition venues.

The Scandinavian tradition of participatory design includes the user in a series of activities such as role-playing, games, mock-ups and simulations (Hofmeester, 1999). Pelle Ehn (1992) characterises participatory design as a learning process in which designers and users learn from one another.

Given that participatory design is about building trust and relationships leading to fruitful collaboration, there can be no set of procedures that will be followed to the letter. However, it is important to have a plan as a guiding point and to help keep the activities focused (Cederman-Haysom & Brereton, 2008, p. 11).

In the case studies discussed in this thesis, these activities involved encounters with staff, visitors, artists and designers. These encounters took the shape of workshops, observations, facilitations, casual conversation and interviews. Through these encounters I could motivate and facilitate people’s action of creating content.

1.4.3 Accountabilities

Though the same basic concerns were brought to bear in each, the collecting of community-created content during the course of exhibitions in three different contexts, with three different scopes and three different teams, produced a wealth of material for analysis and comparison.

On the basis of interviews with three experienced designers, Nigel Cross (2007a) has stated that the “problem framing arises from the requirements of the particular design situation, but is strongly influenced by personal motivations” (p. 94). Therefore, I want to take responsibility for my own

participation in this project and identify my personal motivations. During the preparation of this thesis, I was working as an interaction design researcher; I was involved in implementing already existing tools, designing a new instance for the software in use, fostering collaboration with the museum community, doing user studies, analysing the processes and results of gathering and sharing community-created content in the case studies and designing interactive pieces for the exhibitions.

Lucy Suchman (2000) identifies the need to recognise “the various forms of visible and invisible work that make up the production/use of technical systems, locating ourselves within that extended web of connections, and taking responsibility for our participation” (p. 10). In keeping with this logic, it is important to show an awareness of my participation in the project. I hoped that the content gathered through the participative pieces could address as big an audience as possible and that any obstacles in the implementation in the museum context could be overcome.

I argue that through digital comments, museum community participation can provide more open interpretative material and make exhibitions into a more democratic venue where inclusion is not an isolated act but an intrinsic part of the museum’s strategy to include community-created content. In terms of making museums more democratic, Lois H. Silverman (1993/2004) states that “(...) understanding the range of ways that people make meaning of objects and using that broadened spectrum as the basis for museum programs and exhibits can open the door to more democratic practices in museums” (p. 237).

It is also relevant that I was not a member of the museums’ staff but an external collaborator. Sometimes, this afforded me a useful distance and perspective. Other times, my limited understanding of the dynamics of the institutions gave rise to confusion and curtailed opportunities for collaboration.⁴ Furthermore, there were no interaction designers working in the museums or exhibition venue with which I collaborated, and the background of most of the staff differed from mine, mainly art historians or education experts. Understanding each other’s ways of thinking and operating was sometimes a challenge.

1.5 Introducing the Chapters

.....

In Chapter 2 of this thesis I will introduce the elements that are part of this piece of research: the case studies, the museums and exhibition venues, the technology implemented, the digital comments and the concepts.

In Chapter 3 I present my search for a concept that could help interaction designers working with exhibitions to understand their roles and take advantage of possibilities that museums or exhibition venues offer. I go through a series of related terms that allows me to argue for the need of a new concept while thinking of the participation in exhibitions from an interaction designer point of view. I propose the concept of ecology of participation and I implement it in the analysis of my case studies.

In Chapter 4 I present my reflections, as interaction designer, on the material gathered using the interactive design pieces. The data analysis done in this chapter has the particular characteristic of being from the point of view of an interaction designer in order to give answer to the set of hypotheses⁵. I have developed categories to classify the community-created content in order to make general interpretations that could serve to answer the questions posed.

In Chapter 5 I present the conclusions drawn from the analysis of the case studies, my own design process and the collaboration that took place during the time I spent in the museums and exhibition venue. Moreover, I introduce the compilation of articles that form part of this work.

In this chapter I presented the research contribution, the research questions, the story behind this research, and the methodology. Finally, I introduced briefly the rest of the chapters of this thesis. In the following chapter I will present the key elements of this research: my case studies, the museums and the exhibition venue, the technological arena and the museum community-created content.

⁵ See above, Section 1.2.

⁴ See Chapter 5, Section 5.3.2.

2

Key Research Elements

Museums, after all, are a medium – in their most common state a unique, three-dimensional, multi-sensory, social medium, in which knowledge is given in special form. However, they are also themselves full of media. (...). We might even go as far as to say that media define the museum (Parry, 2007, p. 11).

This is a descriptive chapter that clarifies the key notions and concerns of the work. It is an initial analysis that introduces the concrete elements and concepts with which the thesis deals.

The first part of the chapter is dedicated to the case studies. I have presented them briefly in the previous chapter, but in this chapter there is a detailed description of the goals, activities and opportunities related to each. The projects are first presented through a series of tables for quick comparison: museums, exhibition, time, focus, access point, resources used, collaborations and quantity of comments gathered.

Subsequently, each project is described in detail following a set of categories for all (Goals, Accomplishments, Activities and Materials, and Opportunity Knocks). The second part of the chapter focuses on the other elements of this research: the context (the museum), the technology (digital technology), the content (digital comments) and the concepts (community-created content, interactive pieces, participation and ecology of participation). With this initial overview I introduce the deeper analysis for understanding participation in museums that is at the heart of the next chapter.

2.1 Case Studies

The time spent doing the projects was fun, stimulating and inspiring. A personal and professional moment of joy occurred when substantial opportunities knocked to further develop ideas in collaboration with visitors, artists, designers and museum staff. Museum staff always welcomed and encouraged me to be in the museums and collaborate with people around.

The cases presented here follow a chronological order and also a hierarchical one, since the last project, *The Secret Life of Objects*, is the one that took the longest time and offered me more possibilities for exploration. Nonetheless, the other two, *Sound Trace* and *Conversational Map*, are important because during the projects my awareness of issues concerning museum community participation arose. I formed the idea that participation could have a meaningful role in the visit experience. At any rate, it is important to note that the last case, *The Secret Life of Objects*, has been the key project that gave shape to the questions with which this thesis deals.

The following table presents the three projects in chronological order from left to right. In all these projects people from the museum community were leaving digital comments related to the exhibition material in an interactive piece. Each project was done in a different museum and in conjunction with an exhibition. In some cases people could comment on all the art or design

works in the exhibition, as in the case of *Conversational Map*, and in others, only a few artworks could be commented upon.

CASE STUDIES	SOUND TRACE (2005)	CONVERSATIONAL MAP (2006)	THE SECRET LIFE OF OBJECTS (2008)
Museums	Ateneum Art Museum, The Finnish National Gallery	Kunsthalle	Design Museum Helsinki
Exhibition	Permanent Exhibition	Young Artist Biennale: Small Heaven	The Secret Life of Objects, An Interactive Map of Finnish Design
Art and design pieces	5 artworks	All the artworks in the exhibitions (installations, drawings, paintings and sculptures)	Comments were made on 40 of a total of 50 objects

Table I: This table presents the three projects in chronological order from left to right taking into consideration the museums, the exhibition and the art and design pieces on which the community created content.

The table below presents the points of access through which the museum community could reach the content and participate by leaving a comment. “Onsite” refers to the possibilities in the exhibition space and “online” to the Internet material available.

CASE STUDIES		SOUND TRACE	CONVERSATIONAL MAP	THE SECRET LIFE OF OBJECTS
Access Point	Onsite	Wearable device: PDA Handed out at the information desk	Stand located in the hall of the gallery, near the main entrance rather than the exhibition. The same software was used online and onsite.	Located in the exhibition, the stand as a fully-integrated part of the show. The same software was used online and onsite.
	Online	Prototype of website, never released online	Link from the exhibition page of the museum's website to the URL of the interactive map.	Links to the map from the project's weblog and the museum's website.

Table II: This table presents the three projects in chronological order from left to right taking into consideration the access point for creating content.

The time spent on each project varied, as did the level of the museum’s involvement and the scale of its contribution. In these three cases, the time the project was installed in the gallery (onsite) and the length of the planning phases are compared. The longer the participative pieces were in the exhibitions, the more data was gathered. A longer installation also meant more time for conversations and collaborations among the visitors, staff and artists/designers. The dates in the following table III represent my personal involvement with the project and not the life of the project. In the case of *The Secret Life of Objects*, the timeframe differs, since the project continued after the exhibition with the participation of other students at Media Lab.

CASE STUDIES		SOUND TRACE	CONVERSATIONAL MAP	THE SECRET LIFE OF OBJECTS
Time	Project	January 2005-July 2006	November 2006	October 2007-June 2008
	Onsite	The project was not exhibited. The prototype was tested with two persons but it was not available for general use.	4 days in November 2006	From 18 March, 2008 to 1 June, 2008
Quantity of comments		The number is imprecise because the moment a comment began and ended was not marked. The comments came from 2 interviews held during 2 visits to the museum with a tour guide and the visually impaired person	55 comments from visitors; 1 comment from a staff member	40 comments left by the exhibition educator and translated into 3 languages; 22 comments collected during workshops that contain audiovisual material or poems; 111 comments from visitors

Table III: This table presents the three projects in chronological order from left to right taking into consideration the time spent in each project and the time of each project in the museums and online. It also compares the quantity of comments collected in each project.

The following table shows the team with which I collaborated on each project. As these configurations have influenced each case study, a detailed presentation is offered. As a design-researcher involved in the design of the interactive pieces and their strategies for use, as well as in the impact of the design proposal on the museum context, it is essential to describe one's role in each endeavour. In *The Secret Life of Objects* there was a sound designer collaborating with us who was neither from Media Lab nor from the museum.

In parallel to the work related to the projects, I conducted interviews that related to the thesis's broader research questions. As I did not review these interviews in depth, they are not presented as part of the research material, but they did help me to understand the contribution that I could make to the museum field of studies. I interviewed Maria Koskijoki, director of the Helinä Rautavaara Museum, and Dr. Outi Turpeinen, who is an artist and researcher in museum issues.

CASE STUDIES		SOUND TRACE	CONVERSATIONAL MAP	THE SECRET LIFE OF OBJECTS
Collaborations	Mlab Team	3 students + me + Technical support + Expert advice	Technical support + me + Expert advice	One student + one researcher + me + Technical support + Expert advice
	My role	Coordination design research	Coordination design research + Facilitator in the exhibition	Coordination design research
	Museum Team	One lecturer	One lecturer and one marketing expert.	One lecturer and two workshop guides. We also collaborated with an architect, a curator, some guards, an archivist, a researcher and cleaning personnel.

Table IV: This table presents the three projects in chronological order from left to right taking into consideration the collaboration among the team involved in each project.

¹ Further information on this project can be found in Article 1.

2.2 Sound Trace (Äänijälki)¹

How can a person blind from birth imagine the idea of figures? I think that the movement of his or her body, the presence of his or her hands in different places, the ongoing sensation of a body passing through fingers, give a notion of direction (Diderot, 1749/2004).

2.2.1 Goals

In the context of the art museum, the aim of this project was to design a participative audio tour and a website for visually impaired people and their community. We wanted to gather and shared digital comments (sound traces) online and onsite related to the pieces in the permanent exhibition and to navigating the physical premises. Our aim was that the website would contain all existing information on Finnish museums' services for the visually impaired, as well as audio traces connected to the exhibition they had left in the museum.

Sound Trace attempted to enhance accessibility and the visit experience at Finnish museums. At the same time, it intended to provide a platform for collaborative sound gathering. Visitors and pieces in the exhibition were to open up a pre-existing dialogue by making it audible. The *Sound Trace* project



Fig. 1: Sound Trace: Visually impaired people could touch certain sculptures using gloves. Ateneum Art Museum.



Fig. 2: Sound Trace. Testing the prototype in the museum. Ateneum Art Museum. 2005.



Fig. 3: Sound Trace: Three participants in the workshop are building their ideal museum. Ateneum Art Museum. 2005.



Fig. 4: Sound Trace: Model made during the workshop in Ateneum Art Museum. 2005

clarified the challenges and benefits that audio content made by the museum community could bring to the museum, emphasising the possibilities for the visually impaired community.

2.2.2 Accomplishments

² Anna Salmi, Arto Kellokoski, Timo Londen and Mariana Salgado.

Before developing the concept we, the students participating in the project², made a field trip to IIRIS: the visually impaired service and activity centre in Helsinki. We visited the museum (Näkövammaisten Keskusliitto ry, 2009) and conducted interviews with various members of the staff. Furthermore, Anna Salmi and I invited a visually impaired person to come with us to visit the Post Museum Helsinki (Post Museum, 2009).

The group developed the concept behind the service. We also designed a prototype for a texture-touchable screen for a P.D.A. (Portable Digital Assistant), a logo, and the layout for the website. For making the prototype, we used Apache web server, MySQL® Database, PHP programming server side and a simple Flash application on the client side (Article 1).

We tested our initial ideas for the interface during the Interface prototyping workshop and in Demo Day³ 2005. Later, to continue the evaluation of the concept and to provide content for the service, we did two walkthroughs⁴ at the Ateneum Art Museum with a tour guide and a visually impaired person. As a result, several mistakes were found. To further develop the concept, we coordinated two workshops using participatory design approaches geared towards the visually impaired and their community. We reported on them in two articles and a poster presented in various forums (Salgado & Salmi, 2006; Salgado & Salmi, 2006 September 14; Salgado & Salmi, 2008).

These activities allowed the interaction designers involved in the project to collect research material and to enrich the dialogue about digital tools and the opportunities they present for enhancing the visit experience. Furthermore, though it was eventually deemed a mistake to mix audio tours with navigational guides, this proposal provided material for discussion. The collected data was audiovisual material, namely photos, videos, audio material, reports, scenarios and screenshots related to the activities the group had organised: workshops, interviews and visits to the cultural centre for the visually impaired, to museums and to relevant exhibitions.

³ Demo Day is a bi-annual event in Media Lab Helsinki in which students demo their projects. External guests come to the event and try out the demos.

⁴ A walkthrough is like a rehearsal of a user test, in which any problems of the prototype can be detected and corrections can be made.

2.2.3 Opportunity Knocks

The fact that the project never went beyond the development of the concept is a true missed opportunity. The lack of resources for developing the project prohibited further exploration. We applied for funding to continue working



Fig. 5: Sound Trace: Clay sculptures that describe the characteristics of an ideal guide for the visually impaired made in the workshops. Ateneum Art Museum. 2005.

but did not succeed. Even today, four years after the start of the project, I think it has interesting potential. Firstly, there is a growing interest in the use of audio material to deliver information in galleries; several researchers have used such material in museums as a way to explore different interfaces and devices: Tangible User Interfaces (TUI) (Wakkary & Hatala, 2007), audio installations embedded in the galleries (Kortbek & Gronbaek, 2008), podcasting (Samis, 2008a 2008b, 2007), mobile devices (Walker, 2008) and props (Gottlieb & Simonsson, 2005). However, none of them have explored the

Fig. 6:
Sound Trace:
A participant in
a walkthrough
of the museum,
touching the
sculpture.
Ateneum Art
Museum. 2005.



possibilities of including in their development a community of people with a disability. Other initiatives have contemplated the need to design audio systems for groups of visitors (Aoki & Grinter, 2002; Laurillau & Paternó, 2004; Kortbek & Gronbaek, 2008). Secondly, in recent years, research on museums has focused on visitor-created content using podcasting (Samis & Pau, 2009; Fisher et al., 2008) and audio files that could be recorded through a mobile phone and listened to on the website (Walker, 2008), which proved to be meaningful for visitors.

The *Sound Trace* project served to raise our team’s awareness about how not to be “intentionally blind” to the needs of the visually impaired community in designing audio information systems. Although an audio tour especially designed for them would require professional expertise for content, access to the same audio content as sighted visitors enjoy would be a starting point. This requires choosing an interface accessible to the visually impaired and inviting them to use it.

Furthermore, in the context of art museums where perception and interpretation of art is the main interest, the inclusion of the visually impaired community would be particularly significant. Thanks to their tactile perception, the visually impaired have another “point of view” on artwork, and sharing that view with sighted people would be a way to create a bridge to this marginalised community.

While in the following cases I did not consider the inclusion of visually impaired people, I realised that listening to other people’s personal comments could enrich the visit experience. On one hand, I understood that I wanted to focus my research on the possibilities for interaction designers to motivate and support an exchange of comments amongst people that do not know each other. On the other hand, the idea appeared that this exchange of personal comments could validate an emotional connection with art and design work.

2.3 Conversational Map (Keskustelukartta)⁵

Visitors are ready to make connections between the concepts and narratives they find at exhibitions and aspects of their own lives, memories and experiences (Sandell, 2007, p.109).

2.3.1 Goals

As Sandell (2007) has pointed out, visitors are eager to make connections. We wanted to use the digital board to expand the already existing dialogue between museum visitors and the exhibition.

Thus, the goal of Conversational Map was to test the concept of a participative digital board for comments on an art exhibition. Most of the comments gathered in a common guest book respond to the question, “Did you like the exhibition?” Most answers are variations on a simple “Yes, I did” and “No, I didn’t.” We therefore did not want to call this device “a feedback board” or “a guest book” because the comments we hoped to collect were the reflections, questions and memories that connect the visitors to the artwork.

⁵ Further information about the project can be found in Article 2.



Fig. 7: Conversational Map: Stand where people could leave their comments. Young Biennale: Small Heaven. Kunsthalle. 2005.

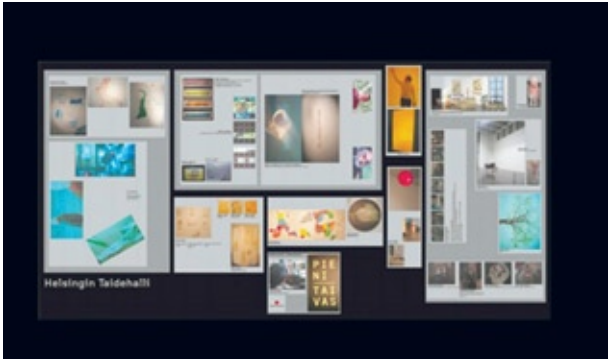


Fig. 8: Conversational Map: The map based on the artworks of the exhibition Young Biennale: Small Heaven. Kunsthalle. 2005.

We also aimed to open a dialogue between visitors who were not at the museum at the same time. We tried to collect digital comments about the works or the exhibition as a whole.

According to Terry Barret (2003), an expert in criticism and aesthetics, “when we interpret a work of art we engage meaningfully with the work of art, intellectually and emotionally. We perceive the work and very likely receive the work – our version of it – and make a response to it, privately or publicly” (p. 17). Visitors in the museum interpret works of art or design and in this way they enact a dialogue with the collection. Our proposal includes making this dialogue public by sharing these interpretations. Visitors and pieces could open up a pre-existing dialogue. Visitors enacted this dialogue by leaving text comments supported by any external link on the Internet. We imagined comments that could be linked to, for example, a piece of music.

2.3.2 Accomplishments

For Kunsthalle, a participative installation was set up in the main entrance hall, near the ticket office. It consisted of a keyboard and a mouse placed on the top of a white cube, a hidden computer, and a projector that cast images of the map on one wall (Fig. 7 & 8). There was also a stack of leaflets with a short description of the project and a link for accessing the digital board at home.

A two-dimensional compiled image of the exhibition was used to form a map of the exhibition⁶ (Fig. 8). Visitors could recognise the exhibition space and the art pieces in it, since their positions were analogous to where they were in the real exhibition space.

Conversational Map brought to the conversation the possibility of supporting comments with links to external resources in the Internet. Inspired by the possibilities of the software ImaNote (Image Map Annotation Notebook) (<http://taik.fi/imanote/>), digital comments took the shape of audiovisual material that related to the objects in the exhibition. Developed at the Media Lab, the software was used to navigate the map and to annotate the pieces in the exhibition. Due to the nature of this software, visitors' comments took the form of text and could be complemented with external links. Although the primary purpose was not to test the software, some initial ideas for a new version of ImaNote came from the observations of how *Conversation Map* operated at the museum (Article 6).

For most of the time the installation was in the museum, I was there, explaining the project, inviting visitors to participate and helping them to leave comments, as well as talking to visitors and artists about the possibilities of

⁶ Information on how this map was built can be found in Article 6.

⁷ A detailed description and analysis of the comments can be found in Chapter 4.

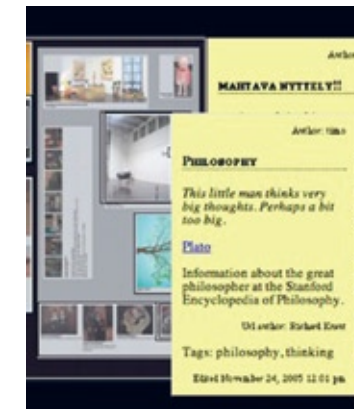


Fig. 9: Conversational Map: Comment written by a visitor to the Young Biennale: Small Heaven. Kunsthalle. 2005.

a digital board. The presence of a person performing these tasks at the stand seemed crucial to the number and variety of comments collected. Fifty-five comments were collected from visitors, and one comment from a museum staff member. Comments were varied in terms of content and length.⁷ Only four comments had an external link to the Internet, and the visitors that added them had to be specifically encouraged to do so.

The data collected consists of the audiovisual documentation such as notes, audio material, content material created by visitors, photographs, map of the exhibition, and screen shots, of the interactive piece in the museum and the conversations with visitors about it. The core material consisted of the visitor-created content collected on the map of the exhibition and the notes taken about the conversations in the exhibition venue.

2.3.3 Opportunity Knocks

The primary opportunity missed in this project was not having planned how to involve the young artists and the staff of the exhibition venue. The “Conversational Map” was simply placed in the exhibition with no explanation. During the days the stand was up, the artists, as well as the staff, were busy with workshops, and the exhibition venue was crowded. Therefore, they had neither the time nor inclination to post a comment on the map. A proper introduction to the staff and an invitation to leave comments could have improved the content gathered on the map. Comments from the staff and the artists could have been interesting points of departure and could have geared the discussion towards common concerns. Had I encouraged staff

and artists to participate in the piece beforehand, it could have been more fertile and effective at the exhibition itself.

My experiences as an interior designer draw me to reflect on the possibilities of the stand. The stand was perceived as cold and impersonal; it was only redeemed by the human presence beside it. A cosy corner where visitors feel welcome and can sit down and relax while making a comment would be a better design solution.

From my experience I recommend a set of strategies for triggering visitors' comments and focusing the comments by asking specific questions. The lack of focus did not seem to confuse visitors, but most of them looked for other visitors' comments before leaving their own.

Although we did not get comments connected to external music as we would have liked, we received some comments with links to other visual and informative material that complement the content of the exhibition by tracing resources in the web. Visitors might have to be explicitly encouraged to make connections to other art forms, such as music.

The short period at the exhibition venue, only four days, did not allow in-depth exploration of the possibilities offered by online contributions. However, these four days were days in which the institution organised special activities and were very productive: workshops, parties, talks, etc generated a good flow of people around the interactive piece and with it a good sample of comments.

In the context of a biennale of mostly young Finnish artists, the map could have been used as a tool for discussion between artist, visitors, art historians, critics and staff. This idea of encouraging various persons from the community to leave their own comment in a common interactive piece was re-defined in the next project, *The Secret Life of Objects*. In that project I could take more time to motivate and facilitate the inclusion of more people such as the designers and museum's guides.

2.4 The Secret Life of Objects (Esineiden Salatut Elämät)⁸

Can objects that were meaningful to some people (their previous owners, the curators who acquired them) evoke meaning for others, and so help them construct new ideas about the world, new knowledge? Objects do not in themselves carry meanings, but if a person has learnt about their context (or can be guided to interpret what they see) the object can provide a vivid impression, a new experience for them as well (Keene, 2005, p. 69).

⁸ Article 5 (Salgado et al., 2009a) describes this project in detail.

Fig. 10: The Secret Life of Objects: Link to audio material collected during the workshop Sound of Objects. Design Museum. 2008.



2.4.1 Goals

The aim of *The Secret Life of Objects* was to develop services for the permanent exhibition of the Design Museum Helsinki. My research goal was to further develop the concept of a participative digital board by co-designing practices and content material with the staff and the visitors. Digital content was re-defined to include material that came from workshops and events held in the museum in the form of images, videos, sounds and texts.

This material was included as links on the map of the exhibition; these links intended to encourage visitors to make comments on the exhibition. "Visitors could join conversations that had been started by participants in the workshops or events" (Article 3). We tried to demystify the role of the expert curator by presenting comments made by children and youngsters. In this project, there was a clear intention to elicit visitors' creativity by showing multimedia artistic comments such as poems, videos and pieces of music. Furthermore, this project tried to show how, through digital technologies, an intangible digital heritage such as recordings of poetry readings and children's workshops could enrich the tangible, the design and art pieces in the exhibition.

2.4.2 Accomplishments

The Secret Life of Objects explored creative uses for the Museum's collection through partnerships with artists, in this case, children and teenagers who play music and do creative writing. In line with Suzanne Keene (2005) who has supported creative uses of museum collections (p. 182), the participative digital board created as part of this project used the museum collection as a



Fig. 11: The Secret Life of Objects. Guitar students improvising based on the objects of the museum collection.



Fig. 12: The Secret Life of Objects. A guitar student, is exploring sounds with objects from the collection.

9 Article 6 offers a clear description of the modifications we made to the new version of the software implemented for this project.

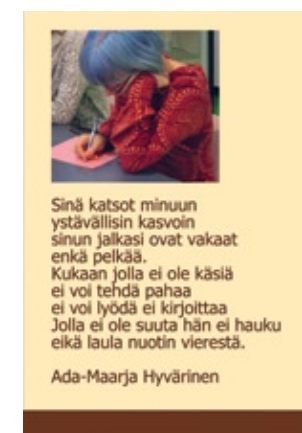
10 The direct participants in the project were: Svinhufvud, Leena; Botero, Andrea; Krafft, Mirjam; Kapanen, Hanna; DeSousa, Diana; Eerola, Elina; Louhelainen, Anne; Vakkari, Susanna and me. External experts that worked with us: Atte Timonen, Lily Díaz, Jukka Savolainen, Marianne Aav, Tommi Jauhiainen. Other collaborators were the teachers of the groups that participated in the workshops: Rody Van Gemert, Nana Smulovitz-Mulyana, Outi Maria Takkinen and Onnela Päiväkoti.

resource for inspiration and creation of personal comments coming from the museum community. As in the previous project, *Conversational Map*, we regarded as successful the idea of having a participative board that has an exhibition map as an interface (Article 6) that could be navigated with the same software, ImaNote⁹.

Much work was done to coordinate the participating parties and to reach a common understanding about the overall project and the activities to be organised. The team working on the project consisted of people from the Media Lab and the Design Museum,¹⁰ as well as an external sound designer. One of the primary achievements of the project, then, was creating bonds within the team involved in the project.

As part of *The Secret Life of Objects*, three workshops and two events were organised and documented, and the resulting material was edited and added as links to the interactive map. The first of these workshops, “Esa and the Objects,” consisted of five sessions with the same group of kindergarten children. Each session concentrated on exploring one design object that was part of the Museum’s permanent collection. The second workshop, “Sound of Objects,” was designed for eleven- to twelve-year-old students learning the guitar. The students improvised music based on six objects from the permanent collection. Later, they developed the improvisation, coming up with a song, and we organised a short concert by the students in the Museum’s hall.

The third workshop, “Odes for Objects,” was designed for teenagers involved in creative writing. There were two sessions in which they wrote short stories, advertising slogans, and odes inspired by six objects from the collection. Figure 13 presents a poem written in the workshop (translation by Mike Garner).



Ode to a Chair

You look into me
with a friendly face
your legs are steady
and I have no fear.
No one without hands
can do harm
neither strike nor write
No one without a mouth will shout
or sing off key.

Fig. 13: The Secret Life of Objects: Poem as it was seen in the interactive map and on the Museum’s wall. Design Museum Helsinki. 2008.

In addition to these workshops with teenagers and children, we also organised one workshop with museum experts where we compared two experiences, in the Design Museum and in the Museum of Contemporary Art Kiasma, of mapping content left by the museum visitors. The workshop was entitled “Museoyleisöt kartalle? Keskustelutilaisuus interaktiivisista kartoista Designmuseossa” (Mapping visitors. Seminar on interactive maps at the Design Museum Helsinki).

Furthermore, I conducted one group and one individual interview on 26 May 2008. All the designers that had their objects in the exhibitions were invited to these interviews, but only three came to the museum: Yrjö Kukkapuro, Sirpa Fourastié and Tani Munhonen. They were asked to give feedback to the comments left by visitors in the museum, to leave a question for the visitors, and to tell some stories about the object that they have in the exhibition. Diana DeSousa documented these interviews on video.

Two maps were designed. The first was based on a selection of objects in the permanent collection of the Design Museum that had been on display in the Museum’s basement for the previous six years (Fig. 14).

The second was for an exhibition that took part of its name from our project: “The Secret Life of Objects: An Interactive Map of Finnish Design.” There were three instances of this second map in three languages: Swedish, Finnish, and English. Furthermore, we added a question to the map, “What kind of design do we need?” as well as a space for comments related to the whole exhibition, labelled “Your comment on the exhibition.”

Two different stands displayed the maps. The one designed by the Museum’s educational team was installed in the basement during a series of events (an opening of an exhibition, a “family weekend,” and an event at which parents and children gathered to see the results of the “Esa and the Objects” workshops).

The other was designed by the Museum’s architect as part of the whole exhibition. It consisted of a cube on which there was a computer, a keyboard, a mouse, a screen, a hidden DVD, fliers, directional speakers, a sign with instructions, and two large screens. The directional speakers meant that the group of visitors at the stand, whether seated or standing, could hear the audio track that could be accessed from the map and from the video shown on one of the screens. The sound was not audible in the entire exhibition room, only near the stand. At this exhibition, the stand with the map was unattended; no one was inviting or facilitating visitors’ comments.

We produced one video demonstrating how to navigate the map, and we displayed it on one of the large screens. After the video had been at the exhibition for one month, we realised that the visitors did not pay any attention to it; the overall appearance of the stand was boring since all it showed was

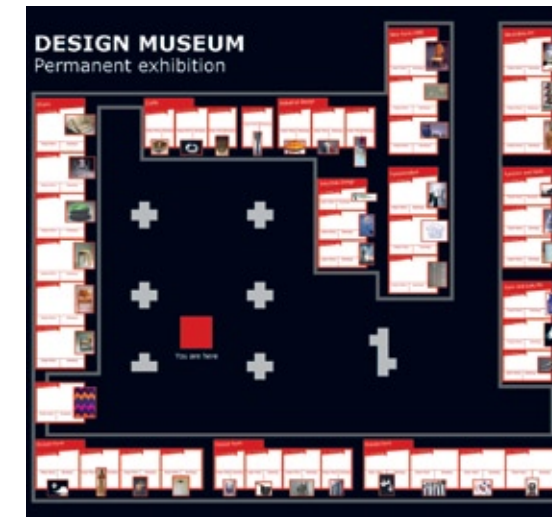


Fig. 14: The Secret Life of Objects: First map based on the images of the permanent collection.

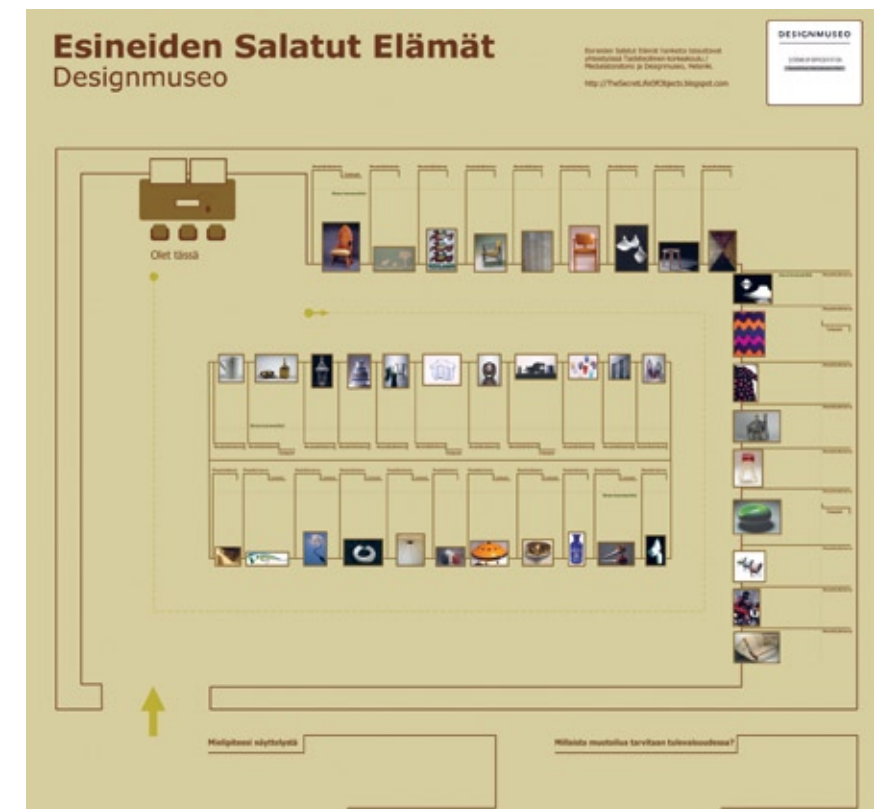


Fig. 15: The Secret Life of Objects: Second map. It was designed based on the objects of the exhibition The Secret Life of Objects: An interactive map of Finnish design.



Fig. 16: The Secret Life of Objects. First stand. It was installed in the basement.



Fig. 17: The Secret Life of Objects. Second stand installed in the exhibition The Secret Life of Objects: An interactive map of Finnish Design.

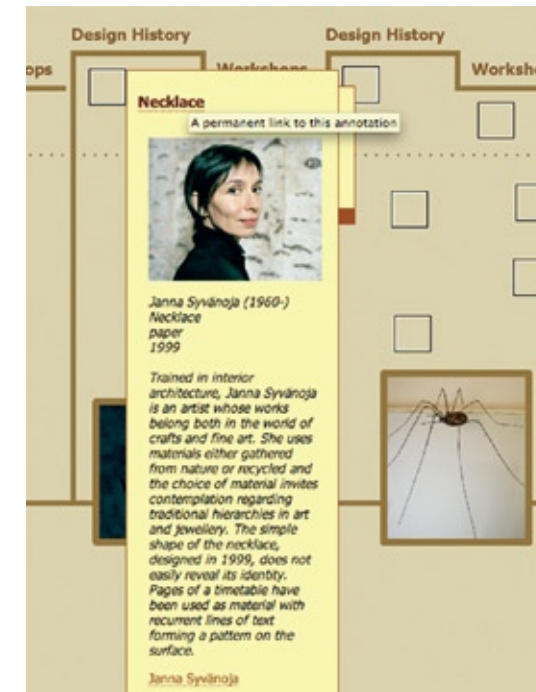


Fig. 18: The Secret Life of Objects: comment made by a museum staff member included in the interactive map.

the map on three screens (computer screen and two large ones). Therefore, we replaced the “help video” with videos shot at the workshop “Esa and the Objects.” The images of children playing, drawing and making sculptures inspired by the material in the exhibition served to brighten up the stand.

The Museum staff wrote texts about the historical contexts of the pieces and selected pictures of the designers and artists. This content was included as comments on the interactive map. Booklets containing the material in three different languages were available at the exhibition.

Text comments left by visitors to the stand were printed and placed near the objects to which they referred. Other comments, such as the poems written by workshop participants, were displayed as part of the exhibition, in one case along with a picture of its author.

A weblog (<http://thesecretlifeofobjects.blogspot.com/>) was started to communicate the developments of the project and to gather material from the workshops, as well as from other activities related to the project. We implemented a new, simplified version of the ImaNote software to facilitate its use by the visitors of the museum¹¹.

The data collected came from events, workshops, interviews, and user studies done in the museum during the preparation, design and test of the interactive piece in the exhibition. This data took the form of videos, audio material, images, screenshots, texts, and notes.

¹¹ Article 6



Fig. 19: The Secret Life of Objects. Ode to Eliel Saarinen's chair written in "Ode to Objects" workshop.



Fig. 20: The Secret Life of Objects. Screenshot of the weblog.

2.4.3 Opportunity Knocks

The first clear missed opportunity was not including in the participative digital board the voice of the designers or artists with their work in the exhibition (this was largely due to a lack of resources and time). Although I did interviews with the artists and designers and had videos and audio recordings, this material was not on the map during the exhibition.

The presence of the computer intimidated some visitors, while others found it familiar and still others associated it with an info point. Many museums have used desktop computers to allow visitors to enjoy their collections online. Some people for whom the computer is familiar did not approach the stand because, since they have PCs at home, they saw no need to use them at a museum. Kevin Walker has pointed out that visitors who spend all day staring at a computer screen will not be drawn to a screen at a museum and, therefore, he recommends that the interactive exhibition experience should not be easy to replicate on a website (Walker, 2001). For those who find computers intimidating, an installation with ubiquitous computing¹² would help to break down barriers. In the SHAPE (Situating Hybrid Assemblies in Public Environments) project (Bowers et al., 2007), researchers made several design proposals for hybrid artefacts "that do not look like a desktop computer." The design of such artefacts took into consideration the special qualities of the spaces in which they were to be displayed. Although these researchers do not speak of the accessibility of such artefacts, they recommend installing them in cases where there are physical objects and digital content as forms of interaction in the museum. As this was the case in this project, further explorations into these configurations could be implemented in the future.

Tangible user interfaces (TUI) and handheld configurations might be efficacious for stands geared towards multiple visitors. Karen Kortbek and Kaj Gronbaek's audiovisual installations offered visitors a different way to engage with the information about an artwork (Kortbek & Gronbaek, 2008). Our trial focused on exploring the stand configuration, but the lack of time and resources did not yield a cosy and well-designed place that encouraged groups to linger and thus participate in the exhibition. At the Design Museum, for example, there were not many places to sit and relax and make comments. Therefore, the resource we offered was underused. I do believe that there is no need to change the stand format, because it has potential to serve the needs of groups or individuals in terms of relaxing, thinking and interacting with new technology. Our experience confirms that it is still a challenge to integrate technology into a space, whatever the format might be.

¹² Ubiquitous computing (ubiquitous computing) refers to technology that has been thoroughly integrated into everyday objects and activities. Pursuing ordinary activities, someone "using" ubiquitous computing engages many computational devices and systems simultaneously and may not necessarily even be aware of doing so.

Other possibilities for enriching the project would be fostering collaboration with marketing experts to enhance the communication about an exhibition, especially about the participatory possibilities of an exhibition and the originality of the proposal. About this, Suzanne Keene has said, “Museums could be more positive about marketing their collections as resource available to work with. All sorts of conventional museum events – new displays, galleries, conferences – could include a creative dimension” (Keene, 2005, p. 116).

In publishing user-created content for the cultural heritage sector, it is crucial to state the conditions of ownership. “Appropriate copyright clearance must be obtained for object metadata, images and GIS data before publication” (Ridge, 2007, p. 5). In this project, we only asked for written permission to publish the material created by workshop participants. We did not state clearly the possible future use of the digital comments left on the interactive piece. Visitors realised that their comments could be printed as part of the exhibition but did not likely imagine other contexts, such as this thesis, in which their comments might appear. A notice that explains the project as part of a doctoral thesis does not suffice. Another missed opportunity, then, was not clarifying copyright issues. If we had clarified to the visitors the copyright possibilities, we would now have more strategies to communicate these delicate issues to visitors.

ImaNote was not optimised to be used abroad, so if foreign visitors, who in this case were many, visited the map from their home countries they were likely to encounter slow performance. Smoother integration with the Museum’s website would have facilitated interaction and encouraged leaving comments. There were three different user interfaces involved in the process: firstly, the software developed by Media Lab as a separate research endeavour; secondly, Blogger (1999/2009), a commonly available media tool that was used to create the project’s weblog; and thirdly, the Museum’s website, which is not run in-house but outsourced, making it cumbersome to change. Further suggestions on developing software as a tool to be used at museums for user-created content can be found in Article 5 and Article 6.

Although we tried to include comments about the overall exhibition and one question on future design, we failed to gather sufficient answers to them. In order to elicit answers to less central questions, these questions should be presented as different from core questions. It was positive for people to understand the main goal of the comments and to respond in kind. Maintaining the focus of the participation was key to encouraging people to leave their own traces at the exhibition.

Although there is room for improvement, *The Secret Life of Objects* is the main case in this compilation, and it holds in its achievements many lessons

learned from previous projects. The other two projects were supportive cases that served my better understanding of the direction of the research.

2.5 Understanding the Context, the Content and the Tools

2.5.1 Museums and Exhibition Venues

This section defines the concept of museum and describes the museums and exhibition venues in which the projects discussed in this thesis took place.

According to the International Council of Museums (ICOM, 2007), a museum is a “non-profit, permanent institution in the service of society and its development, open to the public, which acquires, conserves, researches, communicates and exhibits the tangible and intangible heritage of humanity and its environment for the purposes of education, study and enjoyment.”

The traditional character of museums has been criticised. O’Neill (2006) offers a critical view of the museum. He defines museums as an “instrument of the bourgeois, ideological hegemony, which appears to be part of the everyday world, but whose function is to make the current power structure in society appear natural” (O’Neill, 2006, p. 97). However, thanks to a shift in paradigm from a collection-focused museum to a people-focused museum (Anderson, 2004), a more inclusive museum is becoming possible. For example, Kotler & Kotler (2000/2004) have identified a shift from a community service orientation geared towards education about collections and exhibitions to a “broader sense” of community needs (p. 180). Samis (2008a) proposes conceiving the museum not only as the sum of the objects it contains but also as the experiences it triggers (p. 4).

Clearly, there is not a single conception of the museum; it is in the patchwork of definitions that the museum takes shape. The description by Wittlin (1970/2004) has a relationship to my own research. He understands that the museum’s uniqueness consists of “the three-dimensional reality and the authenticity of objects that matter, and the stimulation they offer to eye and hand.” Museums have the “opportunity to present a number of facts simultaneously and in a context” (Wittlin, 1970/2004). Because of this special characteristic, museums are good places for exploration into the connections between the onsite and online possibilities offered by new media technology. In the cases discussed here, the emphasis on the physical space means that the communication material of the stands and the galleries was crucial.

Heumann Guriam (1999/2004) offers another view of the essence of the museum. According to Guriam, a museum is a place that stores memories

and presents and organises meanings in some sensory form. What matters in museums is both the physicality of a place and the memories and stories told therein (p. 270). In these case studies, I consider digital comments as a possible format for the stories collected both online and onsite.

I would like to introduce some relevant concerns about the perception of the museum visit experience.

The museum provides the opportunity of reaffirmation of the faith; it is a place for private and intimate experience, although it is shared with many others; it is, in concept, the temple of the muses (...) (Cameron, 1971/2004, p.67).

Duncan F. Cameron (1971/2004) proposes the museum as a place for inspiration, introspection and reflection. This might be because many museums are situated in historical buildings that have, over the years, acquired the social function of a temple. Exhibition design has encouraged this atmosphere by producing clean and neutral aesthetic environments that try to disturb as little as possible the act of focusing on the “real objects” displayed. Indeed, there is a pedagogical concern with avoiding external influences in art museums. Clive Bell stated that the artwork alone should offer the viewer an engaging experience (as cited in Csikszentmihalyi & Robinson, p. 139).

Museum-going can be a deeply affective experience (Weil, 1990/2004, p. 79).

The museum as a sacred place makes it an appropriate setting for an experience that goes beyond everyday life (Wakkary, 2005; Cameron, 1971/2004). Liminality¹³ as a characteristic has often been attached to museums (Bell, 2002, p. 4), together with the perception of the visit experience as revealing mainly because people have time to reflect. This is what makes the museum an interesting place to analyse interaction design that might produce and support community-created content.

Even though the shift from a “collection-driven institution to a visitor-centered museum has really taken hold” (Anderson, 2004, p. 1), the traditional notion of the museum as a place for contemplation lives on (Skramstad, 1999/2004, p. 120).

However, it is important to highlight that this shift to which Gail Anderson is referring is the basis of inviting visitors progressively to participate in exhibitions. In 1937 the first documented solicitation of visitors’ comments took place in an exhibition on electricity and light at the Science Museum in London (McLean, 2007). In 1980 in the exhibition COPAN: Ancient City of the Maya at the Science Museum of Boston visitors could help scientists to decipher the meaning and use of mysterious objects (McLean, 2007). Grad-

¹³ Liminality comes from the word liminal and refers to being in an intermediate state, in-between, transitional. (Merriam-Webster, 2009)

¹⁴ The issue of ecology is analysed in depth in Chapter 3.

ually the relationship between the museum, its collection and the people started to change, from the museum being the only producer and gatherer of content material for exhibitions towards a more collaborative practice.

As key changes in the field that has led us to the current situation, Kathleen McLean identifies what arose in the 1970s as “the understanding that participation can encourage and stimulate learning.” Another key change that I identify is the gradual incorporation of new media into museum practices and the appropriation of these tools by museum personnel.

Bell (2002, p. 5) differentiates the ecologies of the art museum from the ecologies of the science and technology museum.¹⁴ According to her classification, each type of museum has its own rituals, practices for visitors, uses of space and implications for design. Traditionally, it was only science centres that promoted an active interaction with their visitors, but currently art museums also do this. Following Bell’s classification, the three museums in which the projects took place have art museum ecologies. The Design Museum Helsinki, the only one that is not an art museum per se, contains works of art in its collection and has many of the characteristics that Bell identifies with an art museum ecology, such as being placed in a historical building: the premises of the Design Museum was built in 1894.

What follows is an introduction to the museums and exhibition venue with which I collaborated. Ateneum Art Museum is one of the major museums in Finland and a part of the Finnish National Gallery. It “produces extensive exhibitions of Finnish art, and the different movements and phenomena it has been influenced by”. “The large collections of the Ateneum Art Museum can be approached from several different angles. The viewpoint certainly varies according to the visitor’s age and personal interests, for example.”

“In 2005, Ateneum asked several well-known Finnish people from different fields for an interpretation or viewpoint on their chosen work of art that was featured in Ateneum’s collection display at the time” (Ateneum Art Museum, 2008).

“For over 70 years, Taidehalli (Kunsthalle) Helsinki has been one of the Finnish capital’s leading venues for temporary exhibitions, showing visual art from both Finland and abroad, as well as current development in architecture, the applied arts and photography.” Kunsthalle is an exhibition venue that operates on a commercial basis and does not have a collection of its own. (Taidehalli, 2008).

“Designmuseo is a specialized museum in Finland that selects and maintains a design collection. The museum is responsible for research and documentation in its field, and for holding exhibitions on design history and contemporary products. The museum also organizes international exhibi-

tions on Finnish art and design.” The Design Museum’s comprehensive and varied collections shed light on the history and development of Finnish design. The Design Museum offers an active learning environment for people of all ages who are interested in design. Their goal is to display the practices of professional design to different audiences and to generate interest in the broad field of design. This is done with the aid of temporary exhibitions, the museum’s permanent exhibition of Finnish design, the Design Studio, and various workshops. (Design Museum, 2008).

My research analyses the experience of being an external interaction designer collaborating with these museums and exhibition venue for different periods of time. The analysis requires understanding the possibilities of these institutions because they were the context that I, as interaction designer, had access to for experimentation. I appreciate that I had the opportunity to work with these museums and exhibition venue, and I hope that this research brings material for discussion and leads to further opportunities for collaboration.

Finally, it is relevant that these museums and exhibition venue have scarce resources, not in terms of their general budgets, but in terms of allocations for developing and implementing new media. None of them have interaction designers devoted to motivating visitors’ participation online or in-house¹⁵. Furthermore, none of these projects received a specific budget from the museum or exhibition venue that housed it but were conducted using resources from Media Lab Helsinki and non-specified museum funds. I do not consider these interaction design solutions optimum, but tools geared towards improving visitors’ experience through new media technologies in low-resource museums or exhibition venues. This is in keeping with Krippendorff’s notion that “a design is always a proposal, a conjecture” (Krippendorff, 2007, p. 79).

Cross defines “satisfactory design” (Cross, 2007b, p. 103) as design that helps to open up and frame the object of research but that is not “an optimum solution” that can be replicated and sold as a product. Following his definition I can assert that the case studies presented in this chapter are satisfactory designs that help me to articulate both the needs of museums and exhibition venues and my own research agenda as interaction designer.

2.5.2 Community-Created Content

Help me to understand and let me talk, too (Rand, 2000/2004, p. 159).

As Rand asserts, visitors want to talk and to be heard. In these case studies, the community voices took the form of digital comments. I decided to concentrate on the content that the museum community created, because all of

¹⁵ I come back to these issues in Chapter 5.

the case studies provided digital material that was then presented to others in the exhibition itself in the form of comments.

From a design perspective, it is interesting to witness the negotiations and trade-offs in the transition towards *user-generated content* (UGC) and to acknowledge the special role that interaction and exhibition designers have in motivating collaboration within the museum community. In the context of museums, UGC has also been referred to as *visitor-authored content* (Simon, 2007), *visitor response* (McLean & Pollock, 2007), *visitor-contributed content* (Fisher et al., 2008), *visitors’ generated interpretation* (Blanchard, 2008), *visitors-created information* (Von Appen, Kennedy & Spadaccini, 2006), *participatory content creation* (Watkins, 2005) and *co-authoring* (Perin 1992, p. 191). Ross Parry (2007) wrote about it as *user-generated content* while referring to content made by curators and visitors as part of the project LIVE! Label.

Departing from UGC (user-generated content) (Hermida & Thurman, 2008) I use this term to specifically designate the digital comments created by the museum community in these case studies. In previous publications, I have used “visitor-generated content” (Article 4) and “visitors-generated content” (Article 3). Subsequently, however, I understood the importance of the inclusion of other members of the museum community such as museum personnel, the artists or designers that have their pieces in the exhibitions, friends of the museum, the online visitors and others interested in the museum collection. Most people understand that ‘museum community’ refers to the museum personnel, not to the community to which the museum belongs. In museum studies, there is a clear division between museum personnel and audiences. By proposing to call both as museum community I embrace these two traditionally separated groups into one phrase for the specific needs of analysing these case studies.

More recently, I also replaced “community-generated content” (Article 5), with “community-created content” (Article 6), because it entails an action of creation and does not have the connotation of people being used to generate certain results, like machines. Furthermore, naming the “user” avoids the diminishing title that word denotes and assures that the creation was done in a group. Many authors have criticised the idea of naming us as users. For example Kari Kuutti (2001) stated “as users we are sort of reduced to appendixes of the machines we are using (...)” (p. 1).

Moreover, in the case of the projects analysed in this thesis, it is appropriate to use the term “community-created content,” because that term breaks apart the visitors/staff dichotomy. The term “community” is used here to speak of visitors, the entire staff including guards, guides, curators, educators, marketing specialists, cleaning personnel, as well as external research-

ers, artists and designers. Though external researchers, artists and designers might be related to the exhibition, they cannot be referred to as “visitors” because they may not necessarily visit the museum or exhibition venue.

The museum community, in this work, has many similarities with the communities of practice developed by Etienne Wenger (1998). Communities of practice have three dimensions: “mutual engagement, joint enterprise and a shared repertoire” (p. 73). The museum community in my cases engages with the interactive pieces and creates content on the basis of a shared repertoire (the collection). It is not in the scope of this work to further analyse the relation between the concept of community of practice and the museum community, but only to clarify the motivation for calling this group a community.

The central idea of including a multifaceted perspective in the exhibition was encouraged, and community-created comments are simply one way to do this. The Museums Association Code of Ethics (2008, p. 20) has suggested the incorporation of the visitors’ voices as a good-practice standard. Fay Blanchard (2008) recommends the adoption of “polyphonic” display strategies to improve engagement with art objects (p. 2).¹⁶ Peter Samis (2008a), an Associate Curator of Interpretation at the San Francisco Museum of Modern Art, added to the discussion that “multiple entry points could be equally valid for experiencing art and artefacts, meshing with the learning styles and entrance narratives of a variety of visitors” (p. 6). In addition, Ivan Karp (1992), a curator of African ethnology at the Smithsonian Institution, pointed out thus: “The tasks of museums involve questioning their own claims about identity and engaging in serious and systematic dialogue with other points of view.” (p. 31).

Other researchers have analysed visitors’ comments on museum collections or exhibitions. Jeffrey Grabill, Stacey Pigg and Katie Witternauer (2009) have analysed the content gathered in Science Buzz, a weblog of the Science Museum of Minnesota. In their research, they were attempting to understand the community that interacts with the weblog, the nature of the online interaction and how the weblog can support inquiring and learning. These researchers used a social science approach to analyse the content that is appropriate for the research questions that they posed.

Matthew Fisher and his colleagues used the concept of *visitor-contributed content* in speaking of visitors’ narratives in art museums (Fisher, Twiss-Garrity & Sastre, 2008). Fay Blanchard called this content *visitor-generated interpretations*, a term that refers to interpretation, rather than creation, in art museums (Blanchard, 2008). Kathleen McLean and Wendy Pollock (2007) address the need for museums to focus on facilitating the exchange of visitor-generated materials and ‘getting out of the way’. Kevin Walker

(2008) discusses visitor meaning-making by personalised learning trails. Peter Samis (2007) views visitors’ contributions as multiple avenues for interpretation. Ross Parry (2007) invited curators and visitors to make labels for an exhibition via the web, with the intention of generating relevant, fresh and engaging content.

In this research, I deal with community-created content in terms of its constant dialogue with the ecology of participation in which it was conceived¹⁷ and its possible uses by the museum community.¹⁸ My own contribution in analysing the content gathered in these three case studies is to explore the set of hypotheses presented in Chapter 1, Section 1.2. At the same time I intend to understand the possibilities for an interaction designer aiming at motivating museum community-created content.

¹⁷ This issue is further explored in Chapter 3.

¹⁸ This issue is further explored in Chapter 4.

¹⁶ This issue is further explored in Chapter 4.

2.5.3 Technology

Museums have always been associated with technology. After all, in one sense, they are themselves a technology of sorts; a medium, a physical form of communication (Parry, 2007, p. 137).

The aim of this section is to describe the role of technology in my own research, specifically, the technology solutions implemented in the case studies that this thesis presents and the technological arena in which they have arisen. Ross Parry (2007) in his book “Recoding the museum: Digital heritage and the technologies of change” gives a complete review on the history of technology in museums.

As an interaction designer, my interest lies mainly in understanding the nuances of implementing, facilitating, testing and communicating the possibilities of a certain technical solution rather than in the actual development of it. Nonetheless, the role of technology is key as I work in the field of new media. Mine is a holistic approach in which technology is one component of the toolkit that an interaction designer may use. I was fortunate enough to work in Systems of Representation, a research group of Media Lab Helsinki that was working on innovative software, the development of which could benefit from my projects in the museum. I published several articles that spoke of ImaNote software and its possible implementation in the museum context to collect digital comments (Article 2; Article 5; Article 6).

As I explain in Chapter 1, my concern with museum community participation was born from the hypothesis that multiple voices in the exhibition could enhance the visit experience. This perception, as well as my own motivation (see Section 1.4.3, “Accountabilities”), led me to the concept with which I worked throughout the three case studies: the collection of commu-

nity-created content during the course of the exhibition. Part of my concern as an interaction designer is to understand the technical tools available and the strategies for their implementation in a specific community.

The technical solutions implemented in these case studies were an application created for *Sound Trace*; ImaNote software in *Conversational Map* and *The Secret Life of Objects*; the browsers in which the applications and the software run, and a weblog service (Blogger) in the case of *The Secret Life of Objects*.

In the case of *Sound Trace*, a software designer in our team put together a special application for this project. Arto Kellokoski made the application using Apache web server, MySQL® Database, PHP programming and Flash.

In the other two cases, ImaNote was used. ImaNote is an open source, free software released under the GNU General Public Licence (GPL). ImaNote is a tool that is limited to the browser. It is a Zope product (2009), written in Python. Zope and ImaNote run on almost all operating systems (Article 5; Article 6; Díaz-Kommonen, Timonen & Reunanen, 2009).

Social technologies in use at museums and exhibition venues are a current topic of discussion. As a web-based multi-user tool that allows users to display a high-resolution image and add annotations and links to those images, ImaNote is a type of social software. ImaNote is used as per-project custom installations. The URL of each map is specific to a project. Therefore installations do not automatically attract traffic from online communities. With the exception of spam engines that twice used the program to leave links to external prohibited resources, ImaNote is not subject to traffic from online communities. As we framed these projects, we did not intend to bring virtual communities into the exhibition venue, but rather to provide a tool for the persons visiting the exhibition to connect to it and with each other before, during and after their visit (Article 2). Given the popularisation of social technology in general and in the museum in particular, if I were to start this research project again today, I would use an array of popular social media tools to motivate community participation and to analyse the presence and influence of online communities that do not visit the real museum.

Finally, I would like to offer a brief description of the technological arena in which these projects took place. I refer to most recent research on Interaction Design or Museum Informatics, where the work done stops being only about delivering content and begins to tackle participatory issues. Herein I highlight the projects and technologies that work with the idea of engaging the museum community by means of their own created content.

At the moment (2009) one of the pioneer museums for the use of social technologies is the Brooklyn Museum, which started working along these lines in 2006 using various Web 2.0 tools such as weblogs including podcasting, photoblogs, vblog and microblogs. For example, they have podcasts

and audio tours that can be accessed by mobile phones. The particularity of their web project is that they have realised how to take advantage of these tools, combining them to communicate with their community. In concert, all these tools generate traffic to the museum's website and interest in the museum (Caruth & Bernstein, 2007; Bernstein, 2008).

The San Francisco Museum of Modern Art (SFMOMA) has innovatively applied strategies for visitors' participation by engaging them in making content by using new technological solutions. SFMOMA was a pioneer in podcasting and encouraging visitors and experts to make audio tracks on its collections. Lately they have evaluated different devices such as mobile phones and iPods to provide visitors with interpretative material (Samis & Pau, 2009).

Multi-player online games (MMOGs) became popular in 2006 and some museums have been quick to understand their potential. Several museums have started to show a part of their collections in a virtual environment such as Second Life (Urban, Marty & Twidale, 2007; Wieneke, Nützel & Arnold, 2007). The Tech Museum in San José has used the platform to encourage and teach visitors to propose and design exhibits and to interact with their content in virtual environments (The Tech Museum of Innovation, 2007). They claim that they do not have traditional designers or developers in the staff; instead, they have a team that facilitates this process and liaises between project participants and production staff in order to turn virtual ideas into physical reality (2007, December 11). Three-dimensional visualisations and reconstructions that could provide visitors with the experience of being in a historical environment, for example, have been implemented in platforms other than Second Life (Schnädelbach, et al., 2002; MacColl, Millard, Randell & Steed, 2002). One example is a digital reconstruction of the Finnish 1900 World Fair Pavilion done by the Systems of Representation Research Group (Díaz, Reunanen & Salmi, 2009).

Other researchers have been involved in embedding technologies in the museum space, making possible interaction with the material in the exhibition. These technologies give rise to other types of interaction not only with text, but also with objects and visitors' bodies, presence or movement. I have closely followed the efforts of researchers in the Interaction and Technology Research Group at King's College of London, which is investigating collaborative means of exploration in the museum through interactive pieces (Vom Lehn, Heath & Hindmarsh, 2001; Vom Lehn & Hindmarsh, 2002; Heath, Luff, Vom Lehn, Hindmarsh & Cleverly, 2002; Heath & Vom Lehn, 2004; Hindmarsh, Heath, Vom Lehn & Cleverly, 2005; Vom Lehn, Hindmarsh, Luff & Heath, 2007).

Researchers of the Interaction Design Centre at the University of Limerick have been exploring the possibilities of ubiquitous computing and user-

created content by providing visitors with means to contribute to the museum's content through voice recording (Ciolfi, Bannon & Fernström, 2007; McCarthy & Ciolfi, 2008; Bowers et al., 2007). Similar cases include the Kattegat Maritime Center and the Interactive Children's Library proposed by the Center of Interactive Spaces in the University of Århus, Denmark (Dalsgaard, Dindler & Eriksson, 2008). Ron Wakkary from Ubiquity Interactive in Canada has proposed tangible user interfaces to interact with the exhibition content (Wakkary, 2005; Wakkary & Evernden, 2005; Wakkary & Hatala, 2006; Wakkary & Hatala, 2007; Wakkary, Hatala, Jiang, Droumeva & Hosseini, 2008; Wakkary, Muise, Tanenbaum, Hatala & Kornfeld, 2007).

There is a cultural trend that influences people's participation: peer-to-peer collaborations on the Internet, in parallel to the research done in the areas of social media, game design, three-dimensional visualisations, tangible user interactions and ubiquitous computing in the museum space. People motivated by the democratic values that peer-to-peer collaboration entails have actively participated in their development and made them successful. A clear example of one such project and platform is Wikipedia (Wikipedia Contributors, 2001/2009). In line with this type of project some museums, such as Powerhouse in Australia (Powerhouse Museum, 2009) position themselves as content-providers, opening their collections to the general public. Powerhouse has released the entire documentation of their collection online under Creative Commons licenses. These licenses allow creators to communicate which rights they reserve and which rights they waive for the benefit of recipients or other creators (Creative Commons Attribution, 2009). In this way, they aim to communicate their otherwise underused documentation, giving rise to user-created content that is inspired by and related to their own collections.

In this chapter I have presented the key elements of this research. These elements are the three case studies, the museums and the exhibition venues, the community-created content and the technology. This description of projects, context, content and tools give the possibility to understand the roles of these elements within this research. I tried in this way to open the path for what comes next: a closer view of the interplay among these elements. In the following chapter I will enter into the actual analysis that would answer my research question: how to create interactive design that encourages museum community participation in exhibitions?

3

The Concept of Ecology of Participation

As designers, we believe that we need to view the world from this systems perspective. The systems approach is the logic of design. Such an approach requires that close attention be paid to relationships and the phenomenon of emergence when evaluating any subset of existence. If the designer's intention is to create something new, not to just describe and explain, or predict and control, it is important to take a systems approach (Nelson & Stolterman, 2003, p. 74).

In this chapter I present my investigation into a concept that maps the opportunities for interaction designers dealing with museum community participation. First I present an exploration into other related concepts used in Interaction Design or Museum Informatics. Subsequently, I define the concept of *Ecology of Participation*, describe its characteristics and use its visualisation to map the case studies. This chapter gives a preliminary answer to the main research question of how to create interactive design that encourages museum community participation in exhibitions that I presented in Chapter 1. In sum, the answer is that when designing for museum community involvement in exhibitions, there is a need to understand and embrace the ecology in which the interactive pieces are immersed. A detailed explanation of the above statement is the content material of this chapter.

3.1 Digging into Ecologies

Ecology is a biological term that means “the totality or pattern of relations between organisms and their environment.” (Merriam-Webster, 2009). I use this term to describe and to connect factors involving an artefact, its design process and, most importantly, the relations between them. Since no design process or artefact exists in isolation, but rather in close contact with others and their varied uses and conceptions, during this research I came to understand all these factors as an ecology. Drawing on the perspectives of some researchers that have previously used the term ecology in Interaction Design, Museum Studies or Museum Informatics, I propose the concept of an *ecology of participation*. Other related concepts, such as assemblies and participative platforms, help to frame this concept and to argue for its potential. Previous uses of the term ecology such as information ecologies (Davenport, 1997; Nardi & O'Day, 1999), cultural ecologies (Bell, 2002), museum as ecology (Wakkary & Evernden, 2005), product ecology (Forlizzi, 2008), and ecologies of artefacts (Krippendorff, 2006; Jung, Stolterman, Ryan, Thompson & Siegel, 2008), help define the term's limits. The concept of ecology of participation permits us to understand elements, groups and connectors in the museum and exhibition context and reveals areas for intervention in the design domain.

For designers theoretical frameworks are tools to interpret and understand certain conditions (Nelson & Stolterman, 2003). I compare these frameworks with the concept I propose, namely the *ecology of participation*, in order to enrich and frame the concept itself. Mine is an explorative design-research agenda that aims to open the landscape of possibilities for interaction designers in museums and exhibition venues.

3.1.1 Assemblies and Participative Platforms

In the search for a suitable term for the aforementioned concept, I explored different possibilities, such as assemblies and participative platforms, which have been used in Interaction design, New Media studies or Museum Informatics. In 2008, I proposed using participatory platforms as a way to include the participative pieces that were in the exhibition in their relation to the collaborative design process in which they were conceived (Salgado, 2008b). The term *participatory platform* is mainly used in connection with online creation, sharing, and collaboration (Goryunova, 2007). In this case, however, I use it to address online and onsite pieces that pool resources. For example, workshop material (poems, music and drawings) was used to encourage visitors' participation in the exhibition. Later, I realised that the word *ecology* was more precise: it emphasises not only identifying and grouping elements, but also identifying relations among them.

Thereafter I analysed the possibility to use "assembly". According to the dictionary, an *assembly* is the fitting together of manufactured parts into a complete machine, structure, or unit of a machine (Merriam-Webster dictionary, 2009). In the context of museums, the term *assemblies* of artefacts and *assemblies* of technologies were introduced by Mike Fraser and his colleagues (Fraser et al., 2003). The goal of using *assemblies* is to "support a coherent experience for visitors" (Fraser et al., 2003), allowing them to make a connection with experiences at different displays and to make sense of complex information. Later, Jon Hindmarsh and his colleagues (Hindmarsh, et al., 2005) used the term to refer to digital and concrete artefacts that are part of an interactive installation in an exhibition. Such installations demonstrate the use of many objects such as cameras, monitors and physical props. In their installations, the term *assembly* helped to connect objects that were spread throughout the gallery space, not just in one corner, and therefore the term *assembly* conceptually connected them. Hindmarsh and his colleagues (Hindmarsh et al., 2005) also proposed that there could be an assembly of activities or actions parallel to the assembly of objects. The focus was on the activities that take place and the artefacts found during the time of the exhibition, since their installations included real-time interactions.

The term assembly is suitable for understanding the connection between different elements of the same kind such as manufactured parts, activities, artefacts or technologies. However, it did not fit my need to understand the relations between elements that are not of the same kind. Moreover, I wanted to come up with a term that allows the re-thinking of the linkages within the groups, and not only to see the groups as part of a whole.

In the case studies chosen here, I concentrate on the design process and

on the lifespan of artefacts that involve practices happening before, during and after the visit or the exhibition. The concept of *ecology* is appropriate since it underlies the notion of design-in-action and over time. It stresses the relationships among its elements. In the following sections of this chapter, I analyse different uses of the concept of ecology. They are arranged in chronological order of publication (from oldest to newest).

3.1.2 Information Ecologies

The first person to introduce the concept of *information ecology* was Thomas Davenport (1997). He proposed this concept as a way to think holistically in an organisation. He described information ecology as integrating diverse types of information, recognising changes over time, emphasising observation and description and the behaviour of people and information. (Davenport, 1997)

Continuing with his line of thinking, Bonnie Nardi and Vicki O'Day (1999) mainly defined information ecology for organisations such as libraries and schools, but they also spoke of what they called the MUD, or *multiple-user dimension*. They framed information ecology as a "system of people, practices, values and technologies in a particular local environment." Their information ecologies do not focus on technology but on human activities that are served by technology (Nardi & O'Day, 1999, p. 49). These authors use the concept of information ecology to analyse already-existing and well-established practices.

My definition of ecologies shares the focus on people and technology with the one that Nardi and O'Day employ but frames them differently. I do not use the term to encompass all the activities that happened in one specific site, but only the ones related to the practice of participation. Therefore, in the case of museum ecology, I do not try to understand *all* the practices that happen at a museum or exhibition venue, but only the ones that might influence the design of participation strategies. My intention is to shift the emphasis from information to the practice of participation itself, in order to focus on the collaboration that participation makes possible. Another advantage of this approach is that it allows the inclusion of participants working outside the museum, such as researchers, artists or designers.

3.1.3 Cultural Ecologies

Genevieve Bell (2002) presents the concept of *cultural ecology* removed from the biological environment "to invoke the museum space and, more generally, the whole of the museum experience". She notes that historically there

have been three types of museums in the United States: art museums, science museums, and cultural or historical museums. She identifies different types of visitors, interactions and rituals, and discusses the design implications of each of these types. She distinguishes three significant components that define the museum ecology: liminality, sociality and engagement. *Liminality* describes mobile or transformative experiences that are set apart from the rest of life. *Sociality* speaks of the museum visit as a social event for groups such as families, classes and friends. *Engagement* refers to the possibilities to learn from and to relate to the objects in the exhibitions.

Genevieve Bell introduced the concept of ecology in the museum context. The characteristics that she defines are useful for an analysis of the ecology of participation. For example, leaving comments in the exhibition and having them displayed as part of the general content relates to liminality, sociality and engagement. It reinforces liminality by giving visitors the opportunity to reflect. As participants can leave a message that forms part of the exhibition, they take time to think, and this encourages a transformative experience. Sociality comes into play when participants discuss as a group what to leave as a comment or when someone is reading a comment from another person. Though in the case studies discussed here, only one person could leave a comment at a time, many participants discussed the content of their comment in small groups. Participants were motivated by the possibility to engage with the exhibition by leaving comments that reflect their memories, thoughts, opinions and questions. The intellectual and emotional engagement that takes place when people can generate the content of the exhibition has a special value, and this positively influences future contributions. I will come back to this issue in Section 3.4, Participation and Involvement.

3.1.4 Museums as Ecology

My aim in reporting on the three case studies above is to offer information about the design of interactive technologies, but also to discuss the practices and values that support those technologies in the museum context. Ron Wakkary and Dale Evernden (2005) examine how suitable certain design responses are to a given ecology and its habitants and, in so doing, propose “museums as ecology.” This was the first time that the concept of ecology was used explicitly with the aim of designing interactive technologies for museums. Wakkary and Evernden also draw on the concept of cultural ecology presented by Bell (2002) and on the notion of information ecologies presented by Nardi and O’Day (1999). Wakkary and Evernden (2005) conclude that ecologies provide museum teams with “an in-depth understanding of the museum’s visit experience and the organization” (p. 8) that can

guide design decisions. In other words, by enabling an understanding of the museum, the ecology framework informs the design process. Their findings have informed and inspired my research, and in keeping with this, I suggest the concept of *ecology of participation*.

Since it is so complex to map the whole range of museum concerns and values, I propose the concept of ecology of participation as a way to frame the elements needed for one particular practice. I focus on the practice of participation and try to involve it in the diversity of inhabitants, places, interactive pieces and other practices pertinent to a given museum ecology.

3.1.5 Product Ecology

Jodi Forlizzi (2008) proposes *product ecology* as “a theoretical design framework to describe how products evoke social behaviour, to provide a roadmap for choosing appropriate qualitative research methods and to extend design culture within HCI (Human Computer Interaction), by allowing for flexible research planning and opportunity seeking” (p. 19). To understand how people forge social relationships with products, she proposes including in the product-ecology people, their attitudes, roles and relationships, as well as the environment where the product is used. In parallel Forlizzi considers including the physical structure, norms, routines and social and cultural contexts of both the people who use and make the product.

The product ecology proposed by Forlizzi is close to my notion of ecology of participation, because it includes people and activities related to a specific product. The attitudes, roles and relationships related to the practice of participation in the museum community are considered in Chapter 5. Nevertheless, focusing on the practice and not on the product itself is a way to present the design question beyond the object or product focus. The aim is, rather, to allow the design process to develop in relation to certain practices. By concentrating on practice, it is easier to speak of the design process and the design solution in an integrated way. Since the practice of participation can happen before, during and after the exhibition, it is possible to design a variety of interactive points and, through them, influence and frame a given ecology.

3.1.6 Ecologies of Artefacts

Klaus Krippendorff (2006) distinguishes an ecology of artefacts different from biological species because biological species interact on their own terms in contrast with artefacts that interact on human terms (p. 195). He analyses how artefacts interact: “There is speciation but also the merging of several artifacts into one. There is migration of features from one species of artifacts

to another” (p.197). Krippendorff believes that as new design objects enter into a relation with other artefacts, they must be designed to survive such ecological interactions.

Later, Heekyoung Jung, Erik Stolterman, Will Ryan, Tonya Thompson and Marty Siegel (2008) have proposed the notion of an ecology of artefacts to “help designers and researchers in the field of HCI to create and analyze interactive artifacts considering their dynamic interplays in an increasingly ubiquitous technology environment” (Jung et al, 2008, p. 201). They identified experiential, emotional and social values related to the use of certain artefacts and demonstrated how these artefacts influenced users’ behaviour and perception of the artefacts.

Both contributions are interesting to the ecological discussion, because they stress the importance of the relations among the components of the ecology. Krippendorff’s use of the term allows recognition of ways in which artefacts interact, influenced by users. Heekyoung and his colleagues use the term to define different values related to the use of the artefacts and how the artefacts influence users’ behaviour. For the specific purpose of my analysis I rather use a term that embraces artefacts, humans, and practices as they were present constantly during the time in the exhibitions.

3.2 Defining Ecology of Participation

Design strategies that go against the ecological wisdom of a culture are likely to fail (Krippendorff, 2006, p. 205).

The aim of using the metaphor of ecology is not to identify elements, categories and relationships and to seal them off into a self-contained unit. On the contrary, it is a way to explore a holistic view of the various dimensions of design and the opportunities it presents. The concept of *ecology of participation* is not geared towards finding one solution for mapping influences and opportunities but, rather, towards widening the frame of action for the people involved. This means understanding the designer not only as someone who seeks a solution for a specific problem within the ecology, but also as someone who maps out possibilities for intervention that go beyond the design of a specific element. These interventions can affect the ecology as a whole by modifying, for example, one of its elements.

Another reason for proposing this new concept is to help unravel the complex process of designing interactive systems for community-created contributions in museums. The notion of ecology of participation grew out of the need to take

apart and make sense of the case studies under observation. According to Ron Wakkary (2005), “A design process is not pre-determined as complex, symmetrical or simple in structure, rather it is a dynamic process that is improvisational and responsive to the changing design situation” (p. 67). Thus, we need to embrace the complexity of design, not only in terms of the process itself but also in terms of all the areas of intervention that a specific situation entails. In a sense, this concept reduces the elements and groups into large ecologies, such as the whole *museum ecology* or *information ecology*, in order to concentrate on the practices, people and artefacts related specifically to participation.

3.2.1 Definition

The ecology of participation is a conceptual tool used in this thesis to understand the specific mechanisms at play in designing for participation in museum communities. The groups involved in the ecology of participation are the community, the interactive piece, the places and the practices. For the ecology to come to life, all members of those groups need to work as an entity. The concept of ecology makes it possible to consider the design process in relation to the resulting design, since ecology necessarily means something that is modified over time.

The word *ecology* fits seamlessly into this analysis because it makes it possible to highlight the relationships between parts and to bring the discussion of sustainability to the forefront. It also makes it possible to think of the interactive piece within the holistic experience of the visit.

The analysis of the case studies made patent to me the need to formulate the concept of ecology of participation as a means to synthesise and map out the possibilities for design interventions. The design decisions made, related to the selection of the elements of each group of this ecology, gave shape to the interaction proposed in the case studies.

People in an ecology of participation can be described according to their role in the team such as designer, educator and exhibition architect, or according to their relation to the project in question. The two parameters are related: in designing for public participation, educators would likely be more eager to explore this area than others whose job description has not historically included the relationship to and inclusion of the visitor. The more actors that are engaged in the ecology of participation, the richer and more varied is the content material gathered.

I have used the term *interactive pieces* to refer to the three pieces done as part of the case studies presented here. Though the term gives space for other forms of interaction, I think the participative element is already given by the overall topic of this work.

In the case of *Sound Trace* I called the interactive piece *participative audio tour*. In the case of the *Conversational Map* and *The Secret Life of Objects*, the name chosen was *participative digital board*. When we had to choose a shorter and easier name for use in the museum, however, we called it *interactive map*.

An interactive piece encompasses the furniture, hardware, communication material, content material (that is, the contents provided by the museum community) and software. The furniture and hardware refer to the concrete material that is needed to display the content gathered and that provides an opportunity for interaction in the gallery. This could be something like a stand or a kiosk, or portable digital gadgets such as mobile phones, PDAs (portable digital assistant), or computer tablets. The communication material such as flyers, signs, headphones, press releases, and advertisements can support and promote participation. The software might allow for and emphasise different types of collaboration and online presences. For example, ImaNote, the software used in *Conversational Map* and *The Secret Life of Objects*, could be used online and by several persons simultaneously. Content material can have different formats (audiovisual or text), employ different styles (for example historical, creative or personal) and propose different navigation patterns (random or linear).

The place refers to the physical and digital environments, both onsite and online, where the interactive piece exists. It might refer to a certain area within an exhibition or museum hall. It might refer to the areas surrounding a museum, as was the case in the Museum of Contemporary Art Kiasma, where tours of the museum's surroundings were organised in relation to an interactive map of Helsinki (Article 5).

Practice refers to a museum's and exhibition venue's ways of doing things. It consists of the concrete features in which a museum's activities and values take shape. Practices mean participating in visits, events, meetings, guided tours and workshops, publishing, curating, conserving, commenting, interpreting and shopping. They may or may not be part of the ecology, depending on how they engage the participation practice proposed by a certain project.

Because of my background as an industrial designer, which gives me training and practice in drawing, a natural way to clarify my ideas is through diagrams. Whenever I find myself explaining a concept I visualise it. As it was part of my own process, I include it in this thesis because it might help other designers to better understand the concept of the Ecology of Participation. It is my take to present this concept with the diagram but I do understand that is not the only possible representation.

The groups involved in the information ecology presented by Nardi and O'Day (1999, p. 60) are people, practices, values and technologies. In my view, technology is embedded in interactive pieces and in practices. Values



Fig. 21: Diagram of the notion of ecology of participation

are an intrinsic part of the practices and people involved and also connected with technical decisions. In the specific case of the ecology of participation, the values that the whole ecology promotes are democratic and geared towards involving the entire museum community. To this end, co-design practices and user studies are implemented with the aim of facilitating collaboration. Other practices could convey and reinforce this value, for example, practices involving how comments are selected for display.

Within these categories, Nardi and O'Day (1999) identify *keystone species*: skilled people whose presence is essential to the effective use of the technology. In the ecology of participation, one keystone species might be the person that supports the practice of participation. In the previously presented case studies, the person who served as a hub between the technology implemented and the institution was me, in the role of interaction design-researcher. Another keystone species was the educator, who in the case of *The Secret Life of Objects* invited the designers to participate in the project. She was the person in charge of introducing the external partners from Media Lab to the museum's practices and staff.

As Heekyoung Jung and her colleagues (2008) state, “(...) due to the multiple layers of an ecology, certain artifacts can work as a hub in a whole system” (p. 209). Facilitating connection to the hub is possibly the role of keystone species in information ecologies as proposed by Nardi and O’Day (1999). However, the keystone species in Nardi and O’Day’s ecologies are people. I would propose that one of the roles of a keystone species is to be a hub between, for example, technology and people, and that this role could be assigned to a person or to an artefact. In the case studies presented this role was the one of the interactive piece.

3.2.2 Implementing the concept

In a given project one particular group or element of the ecology might be highlighted or prioritised, though thus far, I have described all groups in an ecology as equally important. Given my background, I naturally tend to emphasise the places and the interactive pieces within a given ecology. My view of the opportunities for intervention tries not to be enclosed only in the possibilities of the interactive pieces but embraces the other groups in the ecology.

The following diagram shows the ecology of participation and demonstrates the groups included in the three case studies.

This diagram shows that all the projects outlined had an online component that provided visitors with the same material as was available at the museum or exhibition venue. Furniture and communication material were designed and implemented only in the cases of *Conversational Map* and *The Secret Life of Objects*, since in *Sound Trace* the interface used in the museum was a PDA, which was only tested and not available to the general public.

In designing interactive pieces for the museum context that invite the community to participate, it is important to pay special attention to the inclusion or exclusion of museum practices, because they are close to people: in this case the museum community members and their values. Some practices, like commenting, were involved in all the case studies. Other practices, like publishing or shopping, were not included in my research at all, but are included in the diagram. Such practices are part of the museum or exhibition venue and could, eventually, enrich the ecology, including for example, purchasable material related to the same subject matter upon which visitors comment. Printed cards that serve as a memento of the exhibition and other souvenirs could also enhance remote participation after the visit. Other possible resources for the ecology are publications on the exhibition’s topic and material related to the possibilities of participation. I believe that all the



Fig. 22: Groups of the Ecology of Participation included in the case studies.

other practices listed in the ecology of participation diagram are underused possibilities and integrating them into a case study would provide new opportunities.

Collaboration with the community relates to the way different users were taken into consideration during the design process. In this category, *users* are defined as those creating the content of the interactive piece. I mention this issue in Chapter 2, in the section “Opportunity Knocks,” where I explain whom the interactive piece could have included but did not. In *Sound Trace*, the users were the visually impaired adults that visit the museum, though other adults could also have used the interactive piece. In *Conversational Map* users were adult visitors. In *The Secret Life of Objects* users were adults, youngsters and children.

All the cases allowed for group interaction, but only in *The Secret Life of Objects* did groups use them. Although the installation did not encourage large group participation as there were only two seats, groups did stay at the installation and discuss it.

The diagram clearly contains many more blue dots than orange or green dots. As I state in Chapter 2, each of the projects can be seen as a continua-

tion of the previous one, and I intended to create interactive pieces capable of including as many groups as possible. In that sense, each trial was more inclusive than the one before.

3.2.3 Characteristics of the Ecology of Participation

In this section, I review the characteristics that the aforementioned authors have attributed to their notions of ecology, and relate them to the concept of *ecology of participation*.

In keeping with the notion of *information ecology*, Nardi and O'Day's (1999) formulation addresses diversity and scale, making possible personal leverage, the co-evolution of components and a sense of locality. The issue of diversity in an ecology of participation is especially relevant because it includes not only different actors in the museum community, but also different practices and technologies.

The idea of co-evolution or collaboration is key to ecology. In an ecology of participation, there are constant frictions and negotiations between and within groups. For example, the facilitators of an installation at the museum help to overcome difficulties in the use of the proposed interface. Dickie Selfe and Dawn Hayden (2000) propose adding to the information ecologies proposed by Nardi and O'Day (1999) the notion of sustainability. Sustainability is also key to ecologies of participation, because it addresses the ability to maintain the processes, functions, biodiversity and productivity of the ecology in the future. Ecologies of participation imply that digital comments are in a constant state of renovation as the community throughout the course of the exhibition gathers them. Display strategies must be reusable and, therefore, sustainable after the exhibition is closed. In the case of projects originating from a university, not the museum, the issue of sustainability has been a challenge¹ because the content collected is digital in nature and even not seen as worthy of conservation (Article 5).

According to Forlizzi (2008), each instance of a product ecology has its own ecology. Furthermore, the various factors in the ecology are adaptable and, hence, can play different roles. A product ecology can be geographically or virtually bonded. Forlizzi uses the term factors as her unit of analysis, whereas in the ecology of participation the units are groups (community, interactive piece, place and practices).

Each of the case studies that I analyse has helped me to recognise elements and their relationships, but I could draw an ecology of participation for each of them, as proposed by Forlizzi, that would include different groups and relationships. In the ecology of participation, elements are adaptable, and since they relate to each other, they are complementary and serve to moti-

¹ See Chapter 5, Section 5.1.2 for more information about this issue.

vate participation. Geographically and virtually bonded elements could also be part of the ecology of participation since it also includes online and onsite elements.

3.3 Design Dimensions

Though the connection between the three case studies is easily perceived, and they might even be regarded as a path towards a more participative museum experience, community-created content displayed as part of exhibitions is still not a popular phenomenon. The whole idea of museum community participation by leaving comments related to the exhibition and using these materials as part of the interpretation material in the exhibition is a new practice. This practice has been promoted only in certain projects at certain exhibition venues. In Chapter 2 I present some examples in Sections 2.5.2 and 2.5.3.

There is no single answer to the question of how to effect design geared towards people's involvement in museums and exhibition venues. The ecology of participation does, however, offer two clues towards a solution. Firstly, it is absolutely necessary to understand and think about people, their practices and places in which they interact. Secondly, only through the integration of the groups in the ecology and through understanding them as parts of a single ecology is it possible to achieve the desired participation. In fact, the idea of ecology serves to highlight all the relations in which a certain design solution takes place.

Mapping the practices, actors in the community, interactive pieces and places of a particular museum might be a useful way to begin using the concept of ecology. Framing a project not only by thinking of it as a standalone "design object" but rather as a solution that is integrated with the ecology requires a strategy. Since this special type of participation is a new practice within the museum community, more time and resources need to be devoted to its integration with the other parts of the ecology.

I will describe some design dimensions: that is, the forms in which the groups within the ecology interact to influence the design solution in order to translate the concept of ecology of participation into more concrete design strategies. The design dimensions I identify are theme, novelty and presence. They are key issues for designers to understand concrete possibilities. These design dimensions do not attempt to include all the forms in the ecology of participation but serve to describe the ones observed in my cases. From different perspectives, design dimensions map possibilities for intervention.

The first time that I described these design dimensions, I called them *design options*. They grew out of a comparison of different projects, only in one of which I participated (Salgado, 2008a).

3.3.1 Theme

The theme can be that of the exhibition or of the question related to the overall exhibition that people would answer through their participation. *Theme* is the design dimension that does not concern only one group within the ecology of participation but all the groups involved. Theme relates to the community, since some actors in the community will be eager to comment on certain subject matters more than others. The theme influences practices such as commenting, shopping² and guided tours. The theme can frame the presence of the interactive piece at the exhibition itself or online.

The *subject matter* on which an actor comments, how she makes that comment and how relevant it is to the exhibition are among the design factors that influence the perception of a theme. The subject matter on which people comment was the perception of artworks and the theme of the artwork in the case of *Sound Trace*. In *Conversational Map*, most of the comments refer to the perception and aesthetic of the artwork, also bringing in personal insights. In the *Secret Life of Objects*, most of the content relates to memories of use and statements of perception of the design works in the exhibition.

Appeal refers to the power to attract people and to motivate them to comment. In my three cases, people were naturally interested in commenting, because they were interested in the content of the exhibition they went to visit. If, for example, an exhibition discusses a controversial topic, its content might appear linked to online discussions in weblogs. This way remote visitors could also become involved in the discussion proposed by the museum. The themes that the content deals with in my cases are appealing to the museum community, but they are not controversial or heated current issues.

Relevance refers to how the theme discussed in the commentaries relates to the exhibition content. It is important that people's participation responds to a theme that is closely related to the exhibition. The relevance to the exhibition varies. In *Sound Trace* and *Conversational Map* the content material was important because it related to the exhibition, but in *The Secret Life of Objects* the content material was key to make the exhibition what it was, because the whole exhibition was geared towards motivating participation.

² Nowadays museums' shops base part of their offering on themes related to the exhibition on show.

3.3.2 Novelty

Novelty relates to how original a piece is and, therefore, to what extent it challenges, surprises or inspires improvisation to a certain actor in the ecology. Indeed, in order for an actor to participate, there must be a certain degree of challenge, surprise and improvisation (Article 4). User tests and co-design with the museum community is one way to understand these factors and their limits.

Certain parts of the interactive piece might be novel, where novelty is defined in terms of the interface (with the software or with the settings), the content (provided by non-experts, children or other unconventional commentators on museum objects) or the modality (open-ended audiovisual community-created comments).

Specifically, in *Sound Trace* the multimedia resource was audio. In *Conversational Map* all comments were texts, some of which had links to external material such as other publicity sites and information sites. In *The Secret Life of Objects* the content was pictures, text, and links to external resources such as music and videos.

The interface in *Sound Trace* was done with relief buttons on the screen of a PDA (Personal Digital Assistant). The interface in the other two projects was ImaNote, a map annotation tool that was a novelty at the time both for visitors and for the museum workers. The stand configuration in *The Secret Life of Objects* was very similar to info points that museums sometimes have in their exhibition halls. While it is not a novelty, there still is a threshold to approach it for people not familiar with computers.

The content material in *Sound Trace* came from another visitor and a guide. They were comments about the tactile perception and the theme of the artworks. In *Conversational Map* the public made the content that was displayed in the exhibition. Public, staff and external collaborators created the content in *The Secret Life of Objects*. Novelty might also rest on the fact that a certain practice is original for the museum context, such as voting, tagging, creating and sharing content publicly, as was the case with my three cases studies.

3.3.3 Presence

Presence is a design dimension closely related to the places and the interactive piece components in the ecology. As is evident from the ecology of participation diagram (Fig. 21), places and interactive pieces are connected. Therefore, the combination of onsite elements, furniture, hardware and communication material in the gallery is crucial to giving shape to the presence of the interactive piece in the exhibition.

The physical places are the different areas in the museum such as the entry hall, meeting room, workshops areas, auditorium, exhibition areas or corridor, or around the museum in which the interactive piece is located. The physical place that contains the interactive pieces helps to frame their presence in the gallery. In *Sound Trace* it was a wearable device that could be used in the permanent exhibition area. In *Conversational Map* the interactive piece was in the main hall near the entrance. The museum had at that moment only one exhibition. In *The Secret Life of Objects* the stand was in its exhibition area. At that moment there were four other exhibitions in the museum.

Aesthetics in this case refers to the ways in which the interactive piece is viewed and/or perceived. Atmosphere relates to how it influences people's emotions and state of mind. In other words, it connects to the mood that the piece generates.

The aesthetics of *Sound Trace* give the notion that it was in a prototype stage, as the way to attach the buttons to the PDA was in a draft resolution. The aesthetics of the stand in *Conversational Map* was quite minimal, as it had only a white cube and the wall projection. In the case of *The Secret Life of Objects* the stand looked modern, sober and plain with the presence of two modern chairs and two screens.

The presence onsite in each case differed. According to my observations, when there is a facilitator or observer beside the interactive piece, his or her presence will naturally modify the atmosphere around the piece, as will the presence of a camera. In *Sound Trace* there was always a facilitator, as we did not leave the interactive piece for public use: we only performed tests in the museum. In this case, the presence was framed by a combination of hardware, the PDA and human presence. In *Conversational Map* the presence was given by a combination of hardware (computer), communication material in the gallery (fliers, signs, etc) and my nearly permanent presence as facilitator. The stand, the comments displayed around the gallery, fliers and signs with sporadic presence of guards or guides that worked as facilitators formed the presence onsite in *The Secret Life of Objects*.

When analysing presence in pieces that have onsite and online components, there are three issues to take into account: the way people present themselves as authors of the content, the timeframe of the content material both in the exhibition and online, and the management of the content. The first issue is how people present themselves in their comments, as authored or anonymous. We have had cases in which people prefer to give their names and others in which they prefer not to be identified. In *Sound Trace*, others who came later could not recognise the voices, and the comments recorded were unsigned. In *Conversational Map* most of the people signed their com-

ment with their first name; some people recognised acquaintances who had left comments. In contrast, in *The Secret Life of Objects*, most people did not sign their comments, because we did not explicitly add a space for this (see Article 6).

The second issue is the timeframe of both the onsite and online materials. As I explain in Chapter 2, the length of the exhibition and with it the presence of the materials online varied from case to case, from being tested only twice with actual visitors during two specific days to being in the museum for two-and-a-half months. Time is understood as the length of time visitors are actually in the exhibition. In that sense, the interactive pieces allowed visitors to be in contact with the exhibition material over an extended period, since they could access the digital comments from a remote station after they had visited the exhibition. In addition, it allowed them to connect before the exhibition, since the interactive piece worked as a communication vehicle for comments that had been left before a person's visit. The time factor relates to anonymity, because the people involved in this ecology might not be present at the same time and therefore not meet.

A third issue to take into consideration while addressing the online and onsite presence is the management of content. Decisions that influence the comments' selection, maintenance and distribution will pass onto the presence of the interactive piece in the ecology. As Jerry Watkins (2007) remarks, "any successful creative social media system must address not only the co-creative process itself, but also the distribution of content created" (p. 165). Therefore, the presence of this created content in the exhibition is a crucial issue. In the case of *Sound Trace*, the messages recorded in the museum never reached other visitors except those who tested the prototype. In the cases of *Conversational Map* and *The Secret Life of Objects* the community-created content could be seen onsite and online. Comments were moderated retrospectively, only after they had been published.

In the interactive pieces analysed, there is an online component, since the material can be published on the web. In these cases, there are other factors that influence the presence, such as the link, the URL, software used and the coherent use of aesthetic components.

The links might isolate the project or integrate it into the museum's website or other online environments, and these decisions frame its visibility. The ease of use of the URL might also influence possibilities, since people may not want to copy an odd address. In the case of *The Secret Life of Objects* there were two main links to the map, one from the museum website (Design Museum, 2008) and the other from the project weblog (<http://thesecretlifeofobjects.blogspot.com/>).

The software chosen is also a key issue because it influences the online

presence. For example, in the case of *The Secret Life of Objects* we used a popular weblog service, Blogger (Google, 1999/2009), to collect and publish information about the project, making it easier for people to find that information. At the moment (August, 2009) we have had 852 unique visitors to the sites. People might have found the weblog through Blogger search or using the Google search engine, since the weblog service is a Google product.

As previously discussed, the visibility of the content online relates closely to its accessibility and how well it is integrated into the exhibition and the museum. This is why I propose coherence in the aesthetics of the online materials as a final issue in terms of online presence. Also in the context of designing interactive systems for museums, Mike Fraser and his colleagues (2003) have referred to their “goal of assembling displays and interaction devices into a coherent experience” (p. 3). In the case of *Sound Trace* the website design was not thought to be coherent with the exhibition. In the case of *Conversational Map*, the map and the exhibition had a consistent graphic design. In *The Secret Life of Objects*, the graphic design of the map, the software and the exhibition was coherent.

As I previously explained, the ecology of participation is a conceptual tool that glues together groups (places, practices, community and interactive piece), emphasising forms (design dimensions) that make it possible to describe the relations between those groups. This does not mean that if one group is not taken into consideration it is not an ecology of participation. It is merely a way to map possibilities and to take into account as many groups and forms as a certain project requires in order to help the practice of participation succeed.

3.4 Participation and Involvement

Designing for participation means enabling rather than scripting the outcomes. (...) Participation depends on a sustained pact of mutual trust and reciprocity, rather than the pre-scripted and didactic communications more characteristic of museums. Here participation starts to sound much more about relationships than simple interactions (Russo & Peacock, 2009, p. 5).

In this section I will not revise all the literature on participation but only some selected authors who have discussed participation in the participatory design community or have brought the topic up while designing new technology for museums or exhibition venues.

In terms of participation, this work deals with issues related to people (differ-

ent stakeholders in the museum community), with material (the place and the artefacts) and also with the participation of the immaterial (the practices).

In the museum community, designers play a special role in the implementation of new practices. Harold Nelson and Erik Stolterman (2003) define the designer as the one “who has the responsibility to foster design behaviour in other stakeholders and in society at large” (p. 290). Hence, envisioning designers as key agents of the changes that could move the museum field towards design behaviour that promotes participation leads to the need to focus on practices instead of technologies. I focus specifically on practices related to the creation of content in museums or exhibition venues. Other researchers have already translated this concern into practices. Eleonor Wynn (1991, p. 46) proposes practice as a set of skills, judgments and behaviours. Shove and Pantzar (2005) recommend focusing the discussion on the things that are used in, for, or as part of the practice. According to Shove and Pantzar, “practices are shaped by actual, potential and previous practitioners as well as by producers” (2005, p. 62). In the case studies that I analyse, participatory design approaches and embedded museum practices work together in order to integrate technology into the holistic experience of the museum visit. Community-created content emerges as the result of a collaborative endeavour that gives shape to the practice of participation.

Andy Dearden and Haider Rizvi (2008) have explored several meanings of participation in interactive systems design. According to these authors, “participation must be framed as an ongoing engagement that supports learning and development of a wide range of knowledge and transferable skills. The goal of participation should be wider than the individual project and should aim for learning and long term empowerment”. Their goals relate to some of the findings that this work addresses³, but some specification is still needed to better frame “participation” in these cases.

There are many ways to participate or to be involved in an interactive piece, whether at the museum or online. Even watching others interact with the piece is one way to participate. For example, in the case of the exhibition *The Secret Life of Objects, An Interactive Map of Finnish Design*, visitors could participate by reading comments printed and posted in the exhibition.

Hindmarsh and his colleagues (Hindmarsh et al., 2005) identify different levels of engagement. “People will be central/peripheral, active/passive, overhearing/overseeing, watching/glancing, people will be alone, in couples, groups, in the presence of others; and so forth. Recognizing and designing for such variable and highly contingent forms of participation with an artefact, or assembly of artefacts, raises different and potentially more complex challenges than traditionally associated with the design of computer inter-

³ See Chapter 4, Section 4.4.

faces” (Hindmarsh et al., 2005, p. 33). Although I did not take into account these levels of engagement during the design process, all these levels of engagement occurred in the case of *The Secret Life of Objects* and *Conversational Map*. Some of these engagements did not come off smoothly, since, for example, the interactive piece was not designed for multiple users. This creates the opportunity for a design intervention. Taking these levels into account from the beginning would be a good way to increment visitors’ engagement with the exhibition.

Nina Simon (2007) proposes a hierarchy of social participation with different levels. At level one, Individual Receives Content (Museum to Me), the museum in this case is the content provider and the visitors are, or are not, engaged with this content depending on their own interest and motivation. Level two, Individual, Interaction with Content, is the level on which the exhibit gives visitors the possibility to navigate or trigger the content. Level three, Individual, Networked, Interaction with Content, is when individual interactions are available to other users for example, by voting or commenting. Level four, Individual Networked, Social Interaction with Content, is when people are able to and encouraged to comment. Level five, Collective Social Interaction with Content, is when people interact directly with each other around content and promote interaction beyond the content as on active web bulletin boards.

According to Simon’s (2007) classification, the case studies that I analysed are at level four: the digital comments are available and can be commented on by others. However this is what the interactive piece proposed and not what actually happened. In both *Conversational Map* and *The Secret Life of Objects*, some comments were made about previously published comments. However, there was no real conversation with multiple replies. The dialogue stopped with one reply.

In the case of *The Secret Life of Objects*, most of the users who added a comment under a previous comment did so unintentionally. As explained in the article (Salgado, et al., 2009a), for visitors it was easier to add comments by clicking on “new comment here” than by attaching a comment to a previous comment. Here, the content of the new comment did not relate to the previous comment.

In order to reach level five, more active commentators need to be involved. This could provide not only a more extensive catalogue of different views on the exhibition, but also different patterns to navigate and to react to the proposed interactive piece. Another strategy for encouraging collective social interaction with content is offering the online possibilities of these pieces to school visitors. Although that was done in the case of *The Secret Life of Objects*, restrictions on time and resources did not allow me to follow up the use

at schools. Observations of the use in this context could provide new ideas for the development of the interactive pieces.

When Simon (2007) formulates the hierarchies of social participation, she focuses on what actually happens in the museum. In my opinion, a distinction must be made between what happens and what the interactive piece proposes. Such a distinction would be useful because, in some cases, the designer’s proposal might not be clearly understood and, as a consequence, the piece might be underused. People need to perceive the interactive piece as involved in an *ecology of participation* in order to actually reach Simon’s fifth level. Moreover, another relevant point could be the possibility for visitors to take on practices previously done only by museum staff, such as selecting the material to be displayed. In my interactive pieces there was not this possibility since only museum staff or the interaction designers had the rights to manage the content created by different actors.

Harry Brignull (2005) sets different levels of engagement with a community display. His scale identifies various levels from being present, bodily reaction, chirping (one word statements or interjections), shout-outs (instructions to people directly interacting with the piece), chat and discussion (with people interacting with the piece), and direct interaction (individually or as a group). Being present is the lowest level of engagement and direct interaction is the highest level of engagement. This kind of analysis leaves aside the question of what happens once there is direct interaction, because even in direct interaction there are different levels of engagement.

Linda Kelly and Angelina Russo’s (2008) analysis on participation in museums classifies the users into categories according to their involvement. The categories are creators, spectators, joiners and commentators, these not being mutually exclusive. The problem of using categories is that the question still remains of how a creator or commentator, for example, engages with the exhibition. It is this question that I address in Chapter 4, where I analyse the content created by the museum community. People involve themselves with the interactive piece through the content they create in different ways. Therefore, it can be meaningful for interaction designers to understand how, in order to plan from the beginning to include different voices.

In relation to the design cases at museums and at a library, Peter Dalsgaard, Christian Dindler and Eva Erickson (2008) propose a continuum that goes from high to low participation. Their working definition of participation is based on a pragmatic perspective. Participation for them is “(co-)exploring, (co-)constructing and (co-)contributing to the place as a resource for knowledge.” Their example of co-exploring is when visitors take pictures of the collection as a way to engage with the subject matter. They describe co-constructing as happening in a project where visitors build a fish by joining

plastic parts of the fish (head, body and tail) and then release those fish into a virtual sea. In another case from the same group (Dalsgaard, Dindler & Erickson, 2008), co-collaborating happens when children annotate physical material with digital recordings, adding content to the shared database in a library. In that case, children were commenting on books they had read. According to this group of researchers, co-contributing entails a high level of participation when the free-form visitor-created content is coupled with the physical library.

3.4.1 This participation

Concerning my thesis, there is a need to identify how people get involved. Because of the special characteristic of this involvement I do not think that the previously reviewed analysis that classifies the participation in levels (Brignull, 2005; Simon, 2007; Hindmarsh et al., 2005; Kelly & Russo, 2008) can properly describe the participation in my proposals.

In the particular cases I analyse, the participation is open-ended (free-form) and includes community-created content based on speech or text. This type of involvement is very different from interactions in which there is physical involvement or movement (Valli, 2000/2009; Kortbek & Gronbaek, 2008) or object manipulation (Tahiroglu, 2008; Wakkary & Hatala, 2007) that provokes a certain audiovisual response. As these responses are previously designed and determined, the result is not open-ended. In my proposals I take the content created by different actors and make it available and sharable for others as the main content of the interactive piece. Such interactive pieces also differ from pieces where everything is given and the person can find his or her way to navigate, discovering the exhibits or work at the exhibits at their own pace, for example, through CD-ROMs installed in the gallery. Moreover, it differs from proposals that let visitors comment but this content is only real time and therefore cannot be retrieved afterwards: it does not remain in the exhibition. One interesting example of this is the case in which online visitors to the United States Holocaust Memorial Museum were invited to a scheduled panel presentation. They could chat among themselves or with the presenters (Swiader, 2007).

In the article *The Aesthetic of Participative Design Pieces, Two Case Studies in Museums*, I call the participation I propose “intellectual involvement.” I maintain that it is not only intellectual involvement but also creative and emotional. It is an intellectual involvement when it provokes people to give well-articulated comments, but there are also some cases in which the comments are mainly of a creative quality as in the case of poems. In addition, there are comments that tell about the emotional connection between peo-

4 In Chapter 4 I come to this topic and present examples from my cases.

5 See Chapter 1, section 1.2.

ple and objects⁴. Visitors left in-depth, personal and creative reflections that indicated involvement with the artwork or design work exhibited through the interactive piece. In the case of *Sound Trace*, one visitor commented that, for her, it was important to leave something meaningful, and that was not easy (Salgado & Salmi, 2006). The involvement depends largely on all the explained design dimensions, which serve to shape the content material.

In this chapter I have analysed related concepts to finally argue for the need of an Ecology of Participation, a new concept to better understand opportunities for interaction designers in museums or exhibition venues. In the following chapter I open up the idea of involvement by analysing the comments from the museum community. Moreover, I present the set of hypotheses introduced above⁵ and argue for them.

4

Analysis of Community-Created Content

Museums have long been places of inspiration, conversation, investigation, and celebration – places that feed our natural curiosity about the world. Our most important work lies in more fully articulating the quality and the tenor of the dialogues museum exhibitions could be having with visitors (McLean, 2004, p. 210).

We do not do our best when we create a one-way dialogue that is assertive and one dimensional. We do our best when we offer multiple avenues of interpretation, and when we keep a lot of room for audience response. Could it be that in this new participatory age, the museum is the sum not of the artworks it contains but the new experiences and way of thinking it triggers? (Samis, 2008b, p. 11)

4.1 Presenting Community-Created Content in the Light of the Hypotheses

In this section I want to demonstrate how community-created content can be used as accessible interpretative material in the museum, to extend the relationship with the museum content, engage people incorporating emotional and creative aspects, validate multiple perspectives, bring complementary material related to the exhibition, integrate new members into the museum community, and spark discussion within the community. By analysing the content gathered I want to explore the following set of working hypotheses¹:

¹ These hypotheses have been presented in Chapter 1, Section 1.2.

- Community-created content (CCC) could serve to make content more accessible to new audiences.
- CCC could extend people's engagement with the exhibition material over a period of time.
- CCC could support the learning that takes place in the exhibition by engaging people actively.
- CCC, once displayed, could validate multiple perspectives and generate discussion from the exhibited material.
- CCC could open possibilities for dialogue and exchange within museum community.
- CCC could help to identify and to integrate new members of the community and to understand their expectations related to museums and exhibition venues.
- CCC could bring in complementary documentation and interpretative material on the artefacts in the exhibition.

² Luigina Ciolfi and Liam Bannon (2003) introduced the term "design sensitivities". I come back to this issue in Chapter 5, Section 5.3.

My own perspective as an interaction designer, exploring these hypotheses and drawing upon "design sensitivities"², differs from a social scientist approach. I borrow from qualitative research methods, in order to inform a design agenda as many other designers have done before. Other researchers in the communication field have analysed museum community-created comments gathered online in the context of museums (for example Grabill, Pigg & Wittenauer, 2009). This approach is social-science driven, which differs from my analysis. I in turn answer to the set of hypotheses and my main research question of how to create interaction design that motivates people's engagement with the exhibition material.

The content material analysed in this chapter consists of the comments left by the different actors during the course of the exhibitions in two muse-

ums and one exhibition venue. These exhibition maps are content material, as they were in use in the cases of *Conversational Map* and *The Secret Life of Objects*. In the article “Re-Thinking an Annotation Tool for Community-Created Content” (Article 6), I investigate the maps and their design process. In the current chapter I do not include the exhibition maps.

All community-created content came in the form of text or audio left at the exhibition. Here, for the purpose of this analysis, I present the comments outside their context and multimedia resource. The digital comments are a representative, if limited, sample of community-created content that was gathered through interactive pieces in exhibitions. In *Sound Trace*, the content was part of a conversation and therefore could not be counted as units. Though not composed as comments, I edited this content as comments in the interest of making a prototype and analysing the data.

Significantly, I did not record these comments, but they were the input of people in the exhibitions. Silverman (2000) suggests that the way we record data is “important because it is directly linked to the quality of the data analysis” (p. 142).

In the two last cases, the fact that community members themselves insert the comment makes it meaningful, because they shape their contributions in terms of extension and the nature of the content. One bias that this method entails is that the design of the interactive piece influences the content gathered, as only people comfortable with computers and attracted by the stand leave comments. I have discussed these issues in other publications that analyse recorded and written material gathered during the periods of observation in exhibitions (Article 1; Article 2; Article 3; Article 4).

According to Denzin and Lincoln (2000), “qualitative research has a multi-method focus, involving an interpretive, naturalistic approach to its subject matter. This means that qualitative research studies things in their natural settings, attempting to make sense of, or interpret, phenomena in terms of the meaning people bring to them” (Denzin & Lincoln, 2000, p. 2). In the context of design research, it is not possible to affirm that the material analysed was gathered in “natural settings” because, as a designer, I intervened in the exhibition situation. This is a designed environment, and my goal is to reveal how these design qualities shape content created by people.

The particularity of these reflections, compared with a social science perspective, is that I describe design sensitivities and how field studies are conducted in a designed environment. Furthermore, considerations regarding how designers can affect people’s participation, and with it the content material gathered by the interactive pieces, are a part of this endeavour.

My proposal in these case studies was to make content on art or design objects in the exhibition. When maps were used, this content was placed

near the objects in question. When comments did not refer to a specific object but to the whole exhibition, they were placed in a sector of the digital map assigned to these comments. Comment placement on the digital map, then, constituted a certain pre-classification. The spelling of all comments has been corrected and they have been translated into English whenever the original was in another language.

I have grouped and re-grouped community-created content according to the set of hypotheses. Although quite general, these groups and their respective sub-groups map an array of material for further interpretation. As an interaction designer making use of qualitative data analysis methods, my categorisations and interpretations focus on testing the set of hypotheses.

The notion of qualitative research that makes sense of or interpret phenomena in terms of the meaning people bring to them (Denzin & Lincoln, 2000), informed the methods I used in reviewing the comments gathered in the case studies. The possible future uses of these digital comments are discussed in the conclusion to this chapter and serve, I hope, to support one of the main arguments of this thesis: community-created content represents the people interested in museums and, therefore, it should be considered an important component of exhibitions. This chapter will discuss what to expect from the engagement of the museum community in exhibitions. The way to answer this question is by analysing the created material and the possible uses of it by the museum community.

4.2 New Vocabulary, New Aspects and New Resources for Old and New Audiences

For this study, accessibility does not only relate to access to the content of the exhibition but also to the use of the interactive pieces. Understanding the concept and being able to navigate the piece and to add contributions are key factors for the use of the pieces (Article 4). In another article “Links between Accessibility and Participation. Multiple Voices in the Design Museum Helsinki”³ (Salgado, 2008b), I further explore these issues. In this section, however, I limit myself to dealing with the issues of accessibility that relate to community-created content. Even if this thesis does not delve into what user-created content can make possible for different groups in the museum community, I do want to highlight a few findings. Community-created content opens up new content to new visitors through the vocabulary, emotional and creative aspects, multiple perspectives, multimedia resources, and online access that these interactive pieces enable.

3 The original version is in Spanish “Enlaces entre accesibilidad y participación. Múltiples voces en el Museo de Diseño de Helsinki.”

Visitors and museum personnel, in my cases, can enjoy other persons' contributions displayed around the gallery and in the stand. These contributions, once shared, act as interpretative material for them in turn to relate to the objects in the exhibition.

Lisa C. Roberts (1997/2004) asserts that at a certain moment in the museum field, "it became clear that the task of interpretation was first and foremost a task of connection: getting visitors to connect to what they see, on whatever terms that might be. At issue was the legitimization of personal experience as a source of meaning *different from but no less valid than* curatorial knowledge" (Roberts, 1997/2004, p.220). Advocates of this view began "experimenting with interpretation that encouraged visitors to look inside themselves" (Roberts, 1997, p. 220). In the cases I discuss here, museum staff created new labels, guides and workshops in the interest of this change. In *The Secret Life of Objects* it was not only the visitors who produced new interpretative material, but also the staff and the designers.

This comment made by a visitor was displayed beside a design object in the exhibition and in the interactive map. The design object was "Rocking chair".

“ Arcs and colours
Excellent chairs, cute, humorous. I fantasised about these chairs for a long time and at some point a suitable pair came. The chair is like a pet. It smiles and gestures to me like a funny rascal, in its own way, each day. No other lounge chair does the same, but the morning starts well when I read the newspaper in its arms and drink my morning tea in it.⁴

⁴ Original in Finnish

The following comment was displayed in the interactive map. It was compiled by people from the museum staff who looked for pictures of the designers and suitable links that could be added to their material.

“ Yrjö Kukkapuro (1933-)
Rocking chair
“Experiment”
birch laminate, tubular steel, wood, leather
1982
Avarte Oy
Yrjö Kukkapuro graduated in interior architecture from the Institute for Industrial Arts in Helsinki in 1958. The basis for his design is in ergonomics. Kukkapuro has made an impressive amount of furniture for public spaces in his career. International postmodernist currents gave rise to the “Experiment” collection of furniture by Kukkapuro, first exhibited at the Milan furniture fair of 1982. The success of

“Experiment” was evident in the fact of it being featured in 32 different newspapers and trade magazines.

Yrjö Kukkapuro (this was a link to the designer's company:
<http://www.avarte.fi/english/designers/yrjo-kukkapuro/>)

Both comments, the one made by a visitor and the one made by a museum professional, complement each other. On the one hand, the material created by the visitor differs in terms of its tone and because it brings a creative and personal perspective. The person here is referring to emotions and the atmosphere that the design object evokes in him or her. On the other hand, the material created by the staff has a more educational quality, giving information about the designer, the design context in which the object was made, and the design object itself. They were both used as interpretative material in the exhibition *The Secret Life of Objects, an Interactive Map of Finnish Design*.

4.2.1 Vocabulary

Visitors' daily vocabulary for commenting on the pieces in the exhibition makes it easy to approach the exhibited material. These examples show the simplicity of the vocabulary and their connections to people's everyday life.

“ Clown

Nice for a children's party...but sweet and soft.
Comment left in The Secret Life of Objects.

“ I really like these glasses... the design is just simple and elegant...
I would like all of them at home in my kitchen...for sure, I will drink water (or something else ;D) all the day Lucie!
Comment left in The Secret Life of Objects.

⁵ Moomins are characters from a series of books for children by Tove Jansson. They are well known in Finland.
“ I have one of these cups with Moomins⁵.
Comment left in The Secret Life of Objects.

“ I have bought the same shampoo here in Finland but with tar.
Comment left in The Secret Life of Objects.

Furthermore, as these museums and the exhibition venue were in central Helsinki and visited by many tourists, the interactive pieces gave them the chance to comment in their own language (if using a Latin alphabet) or access material written in simple English. In these cases there was no jargon or specific vocabulary that only one group can understand. Even in the cases where this specialised vocabulary appears, it could be a way to identify the

communities that visit the exhibition and for them a way to connect with others with similar interests.

4.2.2 Creative, Emotional and Personal Aspects

There is no such a thing as a visitor. The people who visit museums bear differences of many sorts. Our task is to talk to them in person, through comment cards, and over the world wide web, and to design multiple possible entry points for their interest (Mastai, 2007, p. 176).

As stated above, the material brought by visitors to the exhibitions also provides a personal and creative aspect. Once this material is displayed, the institution shows to the visitors that there are many ways to engage with the exhibition material, including emotional and creative approaches.

The art or design works in the exhibition are evocative objects. According to Turkle (2007) evocative objects bring together thoughts and feelings (p. 5). “Some objects are experienced as part of the self, and for that have a special status: a young child believes her stuffed rabbit can read her mind; a diabetic is at one with his glucometer” (p. 8). While encountering objects and images in the exhibition people’s feelings, memories and thoughts connected with their life are awoken.

In the project *The Secret Life of Objects*, my strategy for motivating the creation of personal and creative comments was to organise special workshops (Article 3). Collecting poems and music inspired by the objects of the exhibition was one way to inspire other visitors to leave a similar type of material.

Participants in the workshop *Ode to Objects* created these poems:

(Ode to a light) Ode to Objects	(Oodi valaisimelle) Oodi Esineille
The block light	Palikkavalaisin
it shines;	se loistaa;
Warmth	lämpöä
Coolness	kylmyyttä
Joy	iloa
the past	mennyttä
its form	sen muoto –
Mysterious	on salaperäinen
calling us to it	luokseen kutsuva
revealing all	kaiken paljastava
lina	lina ⁶

6 Translation by Mike Garner



Fig. 23: The Secret Life of Objects. Design work in the exhibition. Harri Koskinen. Block lamp. Design House Stockholm.

Anti-Ode to a Lamp (Ode to Objects)	Anti Oodi Lampulle (Oodi Esineille)
A man invents a lamp	Mies keksi lampun
that is not a lamp	joka ei ole lamppu
He hides the lamp	Hän piilottaa lampun – piilottaa
inside ice.	jään sisään.
I don’t understand	Minä en ymmärrä
I am already cold	minulla on muutenkin kylmä
I want warm light, yellow and graceful	haluan lämmintä valoa keltaista
	ja sulavaa
A woman invents a new lamp	Nainen keksi uuden lampun
she places it inside	hän laittaa sen auringon
the sun.	sisään.
Every morning it smiles	Joka aamu se hymyilee
at her	hänelle
through the gap in the curtains.	verhojen raosta.
Nana	Nana

Their contrasting emotional response to the objects in the exhibition (in this case, the lamp) allows the museum to show that there is not only one possible interpretation of the same object and that the collection can be a source of artistic inspiration. In line with this thinking, Graham Black states “visitor participation requires an impact on the emotions and senses as well as on the intellect” (Black, 2005, p. 203). The poems and the pieces in the exhibition stimulated emotions and senses of visitors that later came to the gallery or accessed the content online.

Many comments from casual visitors that came to the exhibition were also written creatively and in a very personal way.

“ **Spiders' horror**
Spiders give me the creeps but they also fascinate me...so strange that
I fear them but at the same time I want to look at them closely...
I guess fear and admiration go hand in hand?!
 Comment left at The Secret Life of Objects

“ **Rhizome**
They sound like implants, born of the rhizome⁷.
 Comment left at Conversational Map

⁷ Original in French

“ **Cave**
Front and forward, the light generated by the path into nothingness.
An analogy in Plato's *Republic* between reality and illusion. The main
image is of the men they see on the walls of a cave, only shadows of
real objects that move around outside the cave. When these men
leave the cave and see that they cannot, upon returning to the cave,
convince those who have never been about the reality of the objects⁸.
 Comment left at Conversational Map.

⁸ Original in Spanish

I cannot add here the improvisational pieces that guitar students composed and played inspired by the objects of the exhibition. Taking these improvisational pieces into account, it is possible to say that these special workshops that I have proposed to the museum were useful not only to collect material and to display it to motivate other visitors, but also to open up new ways in which visitors could be invited to relate to and be part of the exhibitions. These workshops were special types of invitations that allowed for an emotional and creative relationship to the exhibition. The workshops provided a space and time for visitors according to their own capabilities and creativity, to generate artistic expressions inspired by the objects of the exhibition. The encounter that the participants had during the workshops differed from normal visits, because it allowed visitors to express themselves using the artistic medium with which they were comfortable.

Another issue that arose during The Secret Life of Objects was how to invite the museum staff to also comment on the exhibition in a relaxed way, letting themselves create personal and creative content. When staff members left a personal comment, they did not identify themselves as staff members. It seems that unless staff members made informative content, they did not wish to be identified. Special invitations and ways to classify or sign this content can be explored together with the museum staff in the future.

Through these examples it is possible to observe how community-created content help visitors to find emotional, creative and personal values related to the objects in the exhibition.

4.2.3 Multimedia resources

With *multimedia resources* I refer to the formats of different materials during the case studies analysed, such as text, audio and visual languages. Multimedia resources make it possible for people who do not have a background in visual culture to relate to visual material. For example, a writer can relate to the object in the exhibition by reading the poem that is based on the object. Likewise, a musician can talk about and understand an object by listening to a piece of music based on an object (Salgado, 2008b).

In the second case, *Conversational Map*, I collected personal comments coming from visitors to the exhibitions. The software I was using, ImaNote, made it possible to add comments not only in text but also in music form, or whatever other format could be linked online. I encouraged people to put links beside their comments. I even suggested to visitors that their comment on a certain piece could take the form of music. Although no one left a piece of music as a comment, visitors did add links to other artists' websites, to promotional and to philosophical writings.

Some examples are:

“ **Philosophy**
This little man thinks very big thoughts. Perhaps a bit too big.
Link: <http://plato.stanford.edu/entries/plato/>
 Comment left in Conversational Map.

“ **Bubbles**
Glass suspended, eyes moving, the space occupied by air"
photo of soap bubbles: <http://tonificante.blogia.com/upload/pompas.jpg>⁹.
 Comment left in Conversational Map.

⁹ Original in Spanish.

“ **Float**
The so-called floating tanks that are fashionable and that I have
always wanted to float in came to mind when the horizon disappeared.
It seems as if gravity alone would no longer be committed to me, at
first I was a bit scared to step in.
Floating tanks: <http://www.floataway.com/>. This comment refers to
Markus Kähre's installation.
 Comment left in Conversational Map.

The links that connect with external materials and the content of the comments are examples of how, during the museum visit, people tend to connect with issues that relate to many situations and areas, including the visual art field. These connections show a rich spectrum of people and their interests, and they could provide means for other people to approach the artwork.

4.3. Engagement over a Period of Time

Although museum community-created comments would be easier without online publication, in my cases publication was possible and beneficial. Online access allows visitors to come back to their comments, or to those of others, and to the exhibition material, fostering a longer relationship to the exhibition (Salgado, 2008b). Physically distant visitors have access to some material about the exhibition. Schools can use the material in the classroom. Observations of online access after the visit are not part of these case studies but may be useful in the future, for example, in cases that the online material is retrieved for educational purposes and used in the classroom.

Reflective comments were written from remote stations, as in the following example that refers to Markus Kähre's installation.

“ **Spaceless space**
I recently heard a lecture by a Spanish artist called Roc Pares. He has worked with the idea of a virtual void. I see a certain similarity between Kähre's and Pares' works, except that Pares works with the means of virtual reality and Kähre's piece is purely based on the physical. Both works also remind me of an article “Psychology and Nothing” written by Eliot Hearst (1991, *American Scientist*, 7, 432-443). Hearst writes about how hard it is for us humans to think about something that “is not” and that we are programmed to deal with things that “are” and “exist.” Thinking about Kähre's piece, it might be that we are programmed also to perceive “what is” and not “what is not”.
Galleria virtual: The website of Roc Pares' work Galería Virtual.
Comment left in Conversational Map.

The author of this comment consulted literature and online information after tracing a connection with his own knowledge related to the piece in the exhibition. Linking specific bibliography to the exhibition material was facilitated by the possibility to engage to the exhibition during a longer period and from a remote station. It is not only visitors that can connect to the exhibition from a remote station, but also the museum staff could connect with what is going on in the exhibition hall, by reading and participating in the online exchange.

4.4. Learning by Doing and from Peers

Although this work does not intend to tackle all the possibilities that community-created content offers for visitors in terms of learning, it is necessary to touch briefly on some relevant points about learning. These digital comments offer two main advantages in terms of collaborative learning at the museum or exhibition venues: the possibility of learning from peers by sharing digital comments, and learning by doing through editing one's own contribution.

Regarding both issues Bill Watson (2007) in his article “Writing to Learn in Museums” affirms that “writing to learn can be as important to learning in informal environments as it is to learning in formal environments. There is time for reflection during and after experiences with exhibitions at museums. When that reflection is done in writing, the opportunities for learning expand not only through the act of writing, but also through the collaboration that recording ideas and reflections affords” (Watson, 2007, p. 154).

I consider that the following is a clear example of reflection done in the writing of the comment, because of the difficulty of describing the performance of an object, summarising in a short comment, and communicating with others who have not had the experience of using it.

“ This thing is very good, says an open-sea fisherman. It's amazing how the designer has got the idea of letting water pass through the head of the fish, thus making it wobble in a nice way that the big fish can't resist.
Comment left at The Secret Life of Objects

The following comment is the one by the designer.

“ I have used the prototype that is shining black for fishing. The name comes from the black challenger, Muhammed Ali, so Big Mouth. (...). A rainbow trout took the first prototype that I made for this product. If someone finds it, he can return it, because it has a telephone number in the base. It was a long time ago. (...). You can buy it in sports shops, in Stockmann¹⁰, in the museum shop, they also sell them in eBay¹¹, the collectors of the first series, they are more expensive than in the shops. Do you know that these are traditional objects that people collect? It has its own sub-culture; they are really passionate about them.
Comment made by Tani Muhonen, the designer of the product during an interview as part of The Secret Life of Objects.



¹⁰ A department store in Helsinki

¹¹ eBay is an online marketplace, enabling trade on a local, national and international basis.

Fig. 24: The Secret Life of Objects. Design work in the exhibition. Tani Muhonen. Big Mouse.

As described by John H. Falk and Lynn D. Dierking (2000, p. 141), experts in museum education, museums create unique milieus for collaborative learning in which peers create social bonds through shared experience and knowledge. In this context, these interactive pieces enhance collaborative learning by proposing new designs for exchanging community-created comments. Palmyre Pierroux (2005) sees museum learning as a situated social activity where objects and texts are mediating tools in constructing meaning. Based on these understandings about museum learning I can add that the community-created content in museums can provide people with a way to find common interests with others and to relate to the material exhibited. Both finding common interests and relating to the objects are ways that support meaning construction.

According to Falk and Dierking visitors “come to the museum with a wealth of previously acquired knowledge, interests, skills, beliefs, attitudes, and experiences, all of which combine to affect not only what and how they interact with educational experiences but also what meaning, if any, they make of such experiences” (2000, p. 87). The special characteristics of these interactive pieces that allow visitors to create and share open-ended comments is appropriate for embracing the expectations and needs of different people. The different types of contributions give enough evidence that people with several viewpoints and understanding on the exhibition material could share their comments through the interactive pieces.

After analysing learning in museums, Graham Black (2005) made several suggestions, including the notion that “exhibition contents should not be ‘closed.’ They should reflect different viewpoints and provide opportunity for visitors to question content” (p. 150). Likewise, Mihaly Csikszentmihalyi and Kim Hermanson (2004) state, “Information that is presented as true without alternative perspectives discourages the motivation to explore and learn more” (p. 155). Whether displayed at the exhibition or online, these digital comments created by visitors provide new viewpoints and a clear invitation to question content. Some of the personal statements made by visitors are a provocation for others to comment.

“ Pastiili

I always wonder who sits in here? It is such a nice form but really uncomfortable

Comment left at The Secret Life of Objects.

Other visitors had a different opinion on the same chair and were prompted to tell it:

“ Pastilli trial

12 Original in Finnish.

What a nice easy chair, a neat design and it swings nicely ☺¹²

“ Pastilli is the best

13 Original in Finnish.

Our pastilli is in our living room and the children like to take turns spinning around and adults (and children) watch television on it. It is the favourite item in the living room and a piece of furniture we fight over!¹³

Kevin Walker (2008) pays attention to one way of structuring visitors’ activity: personalised learning trails. These trails are efficient mental models when they involve a narrow focus, a manageable amount of data. They are built on a narrative or conversational model and emphasise the process of construction, not mere data capturing. In other words, making a trail for someone else to follow helps to build visitors’ knowledge (Walker, 2008). With these interactive pieces, visitors construct a comment for someone else to see. In doing so, they pay attention to creating a synthetic narrative, and they learn in the process. One visitor put it in these words:

“ **I am frightened by the responsibility of leaving a comment, but of course each of us sees the world in a different way and everybody has her own perspective about what she likes or dislikes.¹⁴**

14 Original in Finnish.

Comment recorded for Sound Trace.

Marshall McLuhan (1959/2003) advises educators that teaching must increasingly put the students in co-teacher roles. This statement could be extended to the museum field, in which visitors’ learning is enhanced once visitors act as co-commentator on the exhibition. Visitors took the role of being the co-teachers in the exhibitions, producing examples of content that have valuable information in parallel to their own personal perspective. In the following example, there are personal memories mixed with material from the context of use of the design objects in the exhibition:

“ Beer and mead!

Jerry containers by Rislakki have been involved in many situations. When I was a kid, they were often used for mead or other soft drinks, later for beer, and perhaps one red Rislakki jerry was used even for an occasional dose of sugar wine (kilju). One Midsummer, we collected a dozen empty containers and constructed a floating ferry for a bonfire. Otherwise good, but the bonfire sank and it was quite a massive

operation to collect un-burnt junk back to the beach. Typically, the tiny air-hole cap had a bad habit of disappearing and then one had to tweak a stick or something for a cap. Excellent product indeed!¹⁵

Comment left in The Secret Life of Objects.

15 Original in Finnish.

Though an in-depth analysis of the possibilities of community-created content for learning did not take place within this research project, one could consider that this practice supports conditions for learning.

4.5. Validation of Multiple Perspectives

In the first trial, *Sound Trace*, the project proposal consisted of gathering comments on the perception of sculptures. The following comment made by a visually impaired person about a sculpture serves as an example of how visitors' perception could enrich the exhibition by providing a different perspective.

“ I can tell more about these feelings. How this cloth feels like cloth, for example. The skin becomes a cloth and the cloth falls down. In the fur, the finger gets mixed up and turns, and the nail feels very hard, but immediately when it gets to the finger it feels smooth. Another technique was probably used for sanding the nails and the finger. The same about Andromeda's hair. It feels like each hair is separate, like you could really comb it easily. It is really exciting to think how she has combed the ponytail and then came the curly part. There is a lingering feeling in my hand that the materials really change, although they do not change at all. There are different colours of things. Of course, for me it is easy to describe because I have seen everything normally, and I still remember which kind of colour green is. When the question is about this small Greek boy's black hair, the typical black hair and olive skin, of course, this kind of imaginative image came immediately. The material changes in the hands¹⁶.

Comment recorded for Sound Trace.

16 Original in Finnish.

The example shows how the perspective from a visually impaired person can help others to come closer not only to the artwork but also to another person's perception. At that point, we considered the multiplicity of voices and their subjectivity a means to bridge the worlds of the visually impaired and the sighted (Article 1).

In the two following projects, I emphasised the multiplicity of perspectives without making specific invitations to a certain minority. The variety of perspectives, tones and topics of discussion exceeded my expectations.



Fig. 25: Touching a sculpture in Ateneum Art Museum. Sculpture title: Echo. Photographed by Anna Salmi.

Community-created content took the form of memories, perceptions, feelings, jokes, expressions of desire to own, orders, questions and answers. Most were creatively written.

Memories connect the visitor with his or her personal experience. In this example, the artwork provoked a visitor's childhood memory.

17 Only the title was originally in Finnish: "purkutalo"

“ House to be torn down¹⁷

This work reminds me of a house that was located on my way to school when I was a small child. It was a house to be torn down. The residents had left the building years ago and it had been taken over by the kids from the neighbourhood. The house was a terrible mess: graffiti, old furniture, porn magazines, and beer bottles... It was a bit scary but somehow fascinating. It had no owner and there were no rules. For me it was the one and only place where I could draw on the walls. I could spend hours after school drawing there. This artwork reminds me of those walls. Even the wallpaper seems familiar...”

Comment left at Conversational Map.

In this example, the visitor remembers how he once used the object in a humorous way.

“ Scissor sister

I used this pair of scissors when I was a kid to cut my sister's hair...
Comment left at The Secret Life of Objects.

Funny remarks were present in various forms; some related to the objects in the exhibition and some to the designers.

“ Holy scissors

My girlfriend who is a costume designer doesn't allow me to use those scissors for cutting paper, she tells it would make the scissors less sharp. (I doubt that this is true). That is why I call them holy scissors.
Comment left at The Secret Life of Objects

“ Such a quiet man and such a booming success!

Well-done Harri! I could never congratulate you face to face... so I can do it like this! Is it true that you are paid loads by companies just to think? Well, that is wise in such uncertain times.
Comment left at The Secret Life of Objects

In some of the comments people refer to their perception of the objects of the exhibition, telling their impression of the objects. Sometimes these perceptions are closely related to their memories:

“ Blue shampoo bottle

I think I used about 100 bottles of this shampoo during my childhood years at our summer cottage where we spent every single weekend and holidays. And I loved it (the shampoo, I mean).
Comment left at The Secret Life of Objects

“ Looks like fake Chinese to me.

Comment left at The Secret Life of Objects

In *Conversational Map* the variety of topics on which people commented also exceeded the design proposal. To take one example, I did not contemplate the obvious need to comment on the whole exhibition but only asked people to comment on the artworks. Therefore, in the next case *The Secret Life of Objects* the digital map contained special spaces for different comments, such as on the whole exhibition, on the future of design, comments made

**Fig. 26: The Secret Life of Objects.
Design work in the exhibition.
Kirsti Paakkanen. Hieno shampoo.**



by the staff about the design objects, the designers, and their companies, or producers, and comments collected during the workshops. In *The Secret Life of Objects*, there were also comments about the misplacement of previously posted comments; one comment asking where to buy a certain object; and one comment on where in his or her home someone might place the object exhibited.

Sometimes the same comment addresses several issues. A single comment might give an opinion about one piece and a constructive criticism on the whole exhibition, as well as offer a philosophical reflection.

“ Amazing and simple

Less is more... we are often told! But really says who? Well, the necklace is a good example although aphorisms never work properly. Don't you think?
Comment left at The Secret Life of Objects.

This is an example of different issues dealt with in the same comment:

“ Kaj rocks...still!

A Finnish designer so revered by Finnish designers, especially the Modernists, that if you don't like him you'd better not tell them so! But I do too like Kaj's forms and if you think that it's all about function...well, think again! Kaj must have been very political. At least, I hope so...
Comment left at The Secret Life of Objects.

In this case, the same comment creatively articulated aesthetic appreciation of the object, some information about what other designers think about the designer and a message to other visitors.

The variety of perspectives was clear in the comments collected. None of these community-created comments tried to emulate the voice of the curator, impartial and informative. On the contrary, they sit comfortably in their own subjectivity and partiality. This array of perspectives serves to undo the notion that there is “one truth” about the content of an exhibition. Can the community-created content left by the museum community help the museum to “tell a more accurate and full story” so visitors from all cultural groups might be able to say “Hey, that’s mine?” (Gaither, 2004, p. 110). According to my findings, visitors’ multiple perspectives help others to connect to exhibition content without disturbing the narrative of the exhibition.

4.5.1. Criteria for Selection

The selection criteria for displaying community-created content is a delicate issue that relates to how museums and exhibition venues want to show the multiplicity of perspectives collected. In the context of museums this issue has already been discussed (Ridge, 2007; Von Appen, et al., 2006; Samis, 2007, 2008b; McLean, 2007; Simon, 2007; Fisher et al., 2008; Hoang & Kjorlien, 2008; Farber & Radensky, 2008).

Both the Science Museum of Minnesota and the Ontario Science Center review their comments before publishing them. The museums only post scientifically valid information, and thus they check the comments before publishing them, a task that takes only one to two hours per week for a four- to five-person team. This allows them to avoid comments that do not refer to the museum’s content (Von Appen et al., 2006). Peter Samis (2008b, p.5) explains that they have used WordPress’s akismet spam (unsolicited commercial messages) filters on the weblog and removed a handful of comments unrelated to the exhibition topic.

Mia Ridge (2007) discusses issues of trust and authorship when talking about user-generated content (UGC) in the museum. She says “trust is important when users are learning or going to act on information, but may not be as important when reading about the experience of other users” (Ridge, 2007, p. 3). In my experience, once participants are allowed to comment, it is difficult to limit the nature and theme of contributions. They comment creatively on a wide variety of topics, proposed or not. This makes it difficult to predict and to classify comments beforehand. In the case studies that I have reviewed, contributors have included information whose accuracy is

pertinent. The following comment is an example of a contribution made by a visitor that enriched the information the museum provided. It is informative and accurate.

“ Eeronauts

The furniture by Eero Aarnio has prompted a particular fan club: the “eeronauts.” All around the world, they have incorporated his work not only into everyday life, but also into pop culture, from sci-fi to Playboy. These signs cover magazines, videos, movies, etc.

Comment left at The Secret Life of Objects

The comment is a good example of how community-created content can bring complementary documentation and interpretative material to bear on the artefacts in the exhibition. In the case of *The Secret Life of Objects*, there were comments made by design experts who were part of the audience of the Design Museum, such as the following.

“ Lifecycles

The approach of objects, services and their systems ought to move from form-giving functional qualities towards whole lifecycles and the systems in which they exist. This would permit the participation of the whole range of actors (from designers to producers to users to disposers) in building more sustainable futures.

Comment left at The Secret Life of Objects.

Peter Samis (2008b) proposes inviting an external artist to curate a weblog, in order to give it a “more precise shape” (p. 10). Although the idea was not implemented, it could be a means to allow artists to participate by giving the interpretive material published online a direction. It could also be a way to provide a selection criterion for the publication of comments. Moreover, it would be of interest to provide other members of the museum community with the possibility to select the content, such as a group of visitors, volunteers, or friends of the museum.

In *The Secret Life of Objects*, all comments were published online and some of them were deleted after they had been on the web for a time. This is what is called a “reactive” form of moderation. In *Conversational Map*, only an empty comment was deleted. In *The Secret Life of Objects* I deleted two comments that were advertising links to external resources unrelated to the exhibition. Reactive moderation has the advantage of providing the user with immediate publication, which has a positive impact after contribution. Visitors deemed real-time publication important. But the lack of feedback after

Fig. 27: The Secret Life of Objects.
Design work in the exhibition.
Alvar Aalto. Vase.



publishing and the difficulty of seeing the recently published comment were perceived as a drawback (Article 5).

Reactive moderation was possible, because the design team was confident that the volume of incoming contributions would not exceed our ability to select them soon after publication. The experience in *Conversational Map*, where there was only one empty comment and the rest were related to the content of the exhibition, made us sure we would not receive much spam or numerous irrelevant comments.

With *The Secret Life of Objects*, there was another instance of selection: selected comments were displayed in the exhibition itself near the objects upon which they commented. During the first month that the exhibition was on display, only a few comments were printed and placed in the gallery. After that first month, I performed user studies in which I observed visitors at the exhibition and asked them about the printed material beside the objects. Visitors did not realise the intention behind these comments. The amount of printed material was not enough to disclose the degree of commitment and risk that, by including comments, the exhibition took on. Therefore, more comments were printed and placed beside the design pieces. In this case, I selected which comments to print and decided to print most of them, even the ones that did not seem appropriate for a museum. These are some examples:

“ Wait

Wait... so are we allowed to sit on these chairs? I really want to, but I feel like alarms would go off if I did, and then you'll have to come and drag the stupid American out.

Comment left at The Secret Life of Objects.

“ Aalto

The only thing I know is that it is by Alvar Aalto, what can we put there? Whatever you want! Candies, dry fruits, why no condoms? I think it's a good idea for these times.

Comment left at The Secret Life of Objects.

In other institutions and under other conditions the selection criteria for comments might need revision if dealing with a controversial topic, for instance. Each project requires different strategies for the management and display of community-created content. Drawing on our experience, it is possible to say that visitors can be trusted to comment in the context of museums or exhibition venues, both in the physical space and online.

4.5.2 Validation

Displaying visitors' personal responses was a way to validate them and that, in turn, motivated visitors to make associations with the objects on display. In seeing others' comments, visitors came to feel that their own interpretations, in informal language, were valuable and legitimised by the museum. Furthermore, they could easily connect to what they were seeing by reading about other visitors' experiences.

“ I like it, it brings more to the object when you hear others' comments, your own memories and imagination come along (...)

from an interview as part of the project The Secret Life of Objects.

Regarding this issue, Suzanne Keene (2005) says that the museum “needs to provide its services in a way that tells non-professional users that they have as much right to draw on the collections as anyone else” (p. 62). I maintain that giving visitors the possibility to make comments and displaying them as part of the exhibition is one way to allow them to draw on museums' collections.

Once again, giving visitors the possibility to comment on the exhibition is a means to valorise their knowledge and experience, but also a way to make

visitors feel like external collaborators or part of the museum community. Their contribution, in the case of *The Secret Life of Objects*, is displayed in the gallery and shown to other visitors as an example of the connections that they could draw with the museum collection.

4.6. Dialogue and Exchange

In order to nurture the dialogue and exchange within the museum community, there is a need to provide special invitations. It is not only a question of designing an interactive piece and letting it be at the exhibition, but also of providing the necessary resources for some key contributors to populate it with content material.

4.6.1 Invitations

The material presented in this section is not derived solely from an analysis of the comments but also from interviews with visitors at the exhibitions. In the ecology of participation, visitors were classified by age, group or individual visit, distance of residence from the museum, and disability. Their reason for using the interactive piece depended on their previous experience in exhibitions or other collaborative forums, on the perception of other visitors' contribution, on the possibility of commenting, and on the type of invitation received.

First, I present the types of invitations to collaborate. Richard Sandell suggests that the theme and nature of people's contributions are closely connected to the invitation (Sandell, 2007, p. 4). My cases can exemplify Sandell's assertion, as the theme and nature of the contributions were closely connected to the invitation people received. These interactive pieces offered community-created content as interpretive props to influence the process of meaning-construction in the museum or exhibition venue.

In offering interpretational clues to other visitors at the exhibition, visitors and other members of the staff play a role previously only available to curators. Participation on the basis of the intellectual involvement of visitors making content for the exhibition in a given context, in art and design museums, is new. Community-created content used as an invitation differs from other participatory frameworks designed to the same ends, such as invitations to participate in the design process of the exhibition, to bring objects, or to vote or to comment in a guest book¹⁸.

Secondly, I consider visitors' perception of the possibilities of comment-

ing. When museums provide sufficient means and appropriate platforms to collect community-created content, visitors actively contribute with comments. In *The Secret Life of Objects*, after seeing the comments in the exhibition, visitors' reactions changed. Most of those interviewed were very enthusiastic.

“ Really good, in my opinion. It is in fact totally new, it gives more to those objects, as we see them in quite a different way as in the poem (...) I think the exhibition is enlivened by these comments (...) I have not seen this anywhere else yet (...). I come here to the museum often, but this is something really new!”¹⁹

¹⁹ An extract and summary of an interview in the museum, the original is in Finnish.

Still some visitors did not capture the difference between the comments displayed in this gallery and the labels in the rest of the museum. Other visitors did not appreciate the presence of these comments:

²⁰ Original in Finnish.

“ They are like something thrown in there”²⁰.
Comment about *The Secret Life of Objects*

According to the interviews, people's appreciation of the proposal positively influenced their decision to contribute. Nevertheless, there were cases in which people perceived the exhibition and the interactive pieces as interesting but did not contribute.

As these three venues are in central Helsinki and are often visited by tourists, the audience, and hence their comments, is international. Therefore, these digital comments deal with the issues involved in real cross-cultural exchange, such as the foreign impression of Finnish designs. In *The Secret Life of Objects*, this foreign perspective was included in the exhibition through digital comments.

The following examples contain explicit references to this.

“ Finnish design inspires me whenever I buy objects. Their high quality makes me think twice before choosing an object. They are practical, sit well with furniture, and their use of materials is good. Hard to say how much I appreciate your designs. Tonnie van den Broek, The Netherlands.

Comment left at *The Secret Life of Objects*.

“ Aalto vase

Definitely one of the most well-known pieces of Finnish glass design in the world. I live in the U.S and have this vase at my home in many sizes

¹⁸ In Chapter 1, Section 1.1 there is more detailed information on this issue.

and colours, and it makes me appreciate the artistic talent we have in Finland²¹.

Comment left at The Secret Life of Objects.

²¹ Only the title was in Finnish: Aalto vaasi

Minimal

All this Finnish design makes me want to listen to minimal techno music.

Comment left in The Secret life of Objects.

Design is Cool!

We from the States think you Finns have good design, yeah!

Comment left at The Secret Life of Objects.

When in the future I think about Finland one of the first things that will come to my mind will be this kind of glass.

Comment left at The Secret Life of Objects.

There are other comments in which Finns recognise the objects in the exhibition as part of their daily life and tell stories about the use of these objects to foreigners. For example in this case, a grandmother writes.

Grandmother

There is a Savoy vase in every Finnish home. The size and colour just varies. It's suitable for everything: flowers, fruit and stones. It is a true Finnish classic²².

Comment left at The Secret Life of Objects.

²² Original in English.

The visitors themselves propose another way to invite others to contribute by writing orders or questions. They are of special interest, because they motivate conversation, between visitors to the exhibition or between staff members and visitors:

Is there somewhere neutral in the midst of polarization?

Comment left at Conversational Map

Ergonomy

Is that the basis for all good design?

Comment left at The Secret Life of Objects.

Stale Orange

Throughout my life this design has remained the same. For a while I thought that was a liability, but now it has become a true classic. If you do not own one, DO GET A PAIR! This is not a shareholder speaking...

Comment left at The Secret Life of Objects.

There are some examples of direct personal messages to the designers with objects in the exhibition.

hi Sirpa!

I met Sirpa at Reka's birthday party. Her daughter was great and she helped by photographing Heidi Lunaba's feminist wallpaper in public. I still haven't shown Sirpa the picture of that occasion. Sorry Sirpa!! The cube seems great, what a pity I can't try it...

Comment left at The Secret Life of Objects.

During an interview conducted in the Design Museum with some designers that had objects in the exhibition, I had the opportunity to talk with Sirpa Fourastié. She read the visitor's comment and added:

I think people should be able to try it because it is the question of material, and the mass, and how heavy it is. They could also criticise it in a way that could be useful (...). In an exhibition in Milano I have seen children crawling over, using it as a castle and going inside and then going out, or closing it, so it is like a hidden place. Of course you shouldn't zip yourself completely inside (Laughs).



Fig. 28: The Secret Life of Objects. Design work in the exhibition. Sirpa Fourastié and Susan Elo. Futon "Kuutio".

As part of the interview activities with designers I asked them to add a question related to their pieces. This is the question that Sirpa Fourastié left (see Fig. 26):

“ Do you think there are many zips? Sirpa

Strategies such as collecting pictures of the objects by the visitors in the real situation of use were discussed during these interviews with designers but not implemented. Encouraging different actors within the museum community to leave questions in the interactive pieces was one way to populate it and spark the dialogue among designers, artists, museum staff and visitors.

4.6.2 Authorship

In the case of *Sound Trace*, as the comments were audio comments extracted from the interviews, they were not signed. It was possible to track the authors of the comments, though, because there were only two user tests.

In the case of *Conversational Map*, most of the comments were signed because it was necessary to log in before adding a comment. Those who did not want to leave their real name used nicknames.

In the case of *The Secret Life of Objects*, a customised instance of ImaNote software was used in order to avoid the process of logging in for visitors to the museum, as it was perceived as difficult in the previous trial (Article 6). Therefore, people could sign the comments if they wanted to, but there was no specific space on the form encouraging them to do so. As a result, most of the comments in this case were not signed, even when they were personal. People did not seem concerned about the fact that their comments would be open to the general public online. Comments were mainly anonymously granted for sharing, and no ethical concerns about future use were expressed.

Comments prepared beforehand by staff members were not signed, but they were placed in a certain area on the map to distinguish them from the others. In addition, the fact that they had a more formal voice and a photograph made them easy to recognise. Although I did not analyse them in this section, they co-habited with the other comments in the interactive map.

Many members of the museum staff left personal comments on the interactive map, but with the exception of one guide they did not identify themselves. This seems to suggest that, in this context, authorship is not relevant. In the future, if participatory practices are implemented in every exhibition and the number of contributions increases, the issue of authorship could become important to the community (Article 6).

It is essential to note that visitor participation in the form of mainly anonymous comments does not entail issues of ownership. Visitors were not concerned with the future use of their comments. If other formats are proposed for visitors' participation, such as showing visitors in photos or videos, or if they were to write longer contributions, it might be necessary to revise the conditions of publication.

4.6.3 Attitudes towards Audience Participation

Most of the material of the following section is based on the museum bibliography, and some is based on interviews with museum experts over the course of my research.

Although the museum staff consists of many different people in different roles with different opinions about museum community participation, I treat them as a group that, generally speaking, does not tend to consider community-created content a source of interpretative material for the exhibition.

Experts in museums identify the problem related to museum community participation. To open the stage for discussion I chose Suzanne Keene's and Bandelli's opinions.

The problem is the attitude that only museum staff may confer meaning on the objects; only museum staff may interpret them; only museum staff may have knowledge about them; only museum staff may publish on them. (...) At the moment museums all too readily assume that the only meaningful research is that which their own staff carry out (Keene, 2005, p. 62).

A dialogue is possible not just when people begin to speak, but when they start to listen. Despite many museums' effort to encourage people to comment, speak up, and have their say, it is unclear whether anyone is actually listening. In many institutions, only the floor staff and the marketing department are actually interested in what visitors have to say (Bandelli, 2007, p. 4).

There are, as Bandelli points out, always exceptions, and the staff working on my projects was part of that exceptional group that trusted visitors and external partners to comment on the exhibition material. Indeed, they were even willing to publish these comments online and at the exhibition.

Kevin Walker adds to this discussion that “the very word ‘visitor’ connotes passivity – someone who visits a collection owned by a museum, then goes away (...)” (Walker, 2008, p. 110).

Finally, Harond Skramstad (2004) says that

the process of systematically listening to consumers and potential consumers goes against the grain of traditional museum practice, which assumes that the museum is teacher and the audience is learner and that the museum cannot allow its audience to play a role in defining its program (Skramstad, 2004, p. 130).

More positively, Keene proposes that museum researchers use the comments as meaningful material that offers information about the context of use and the perception of the material exhibited (Keene, 2005, p. 62). Many comments spoke of the context of use. All the following comments, for instance, refer to the same containers.

“ Water collection

We always had some for water and gas collecting at the summerhouse, starting in my childhood. No well and three kilometres to the mainland²³.

Comment left at The Secret Life of Objects.

23 Original in Finnish.

“ Plastic containers

Plastic containers are reminiscent of childhood. I collected water from a fountain. Those colourful objects create art and shouldn't be thrown out²⁴.

Comment left at The Secret Life of Objects.

24 Original in Finnish.

“ **So is this Finnish design? It can't be true? This is a learning experience. I thought that such containers were almost a universal model, used all over the world. These can be found at my retired parents' home, let's say... in MULTIPLE!!²⁵**

Comment left at The Secret Life of Objects.

25 Original in Finnish.

In the words of Keene (2005), “Many objects or even collections are poorly documented, and people can identify them or provide information about them, or contribute memories or knowledge to enrich the context for them. There are many ways in which museums can (and some do) facilitate and enable people to contribute to the richness of the collections (...)” (Keene, 2005, p. 97). I would add that through allowing people to comment, a dialogue can emerge between museum staff, visitors and external collaborators, and that in such dialogue all the participants make contributions valuable

to the museum. In *The Secret life of Objects*, the collection was not only used as the point of contact between people and the material culture but also as a means of research. People discussed the objects and their meanings through their created content. They investigated the connections to their own life and to their environment.

In parallel to the deeper understanding of the objects in the exhibition, museum staff could use this material to learn about visitors and their visit experiences.

People go to museums for many reasons and have predetermined expectations for their visit. These motivations and expectations directly affect what people do and learn. (...). Museums succeed best when they attract and reinforce intrinsically motivated individuals. (Falk & Dierking, 2000, p. 137).

In order to understand people's motivations and expectations the analysis of community-created content could be crucial for the museum personnel.

On the basis of the comments collected at one exhibition, Peter Samis (2008b) classified visitors as *Culturati*, *Hungry Minds*, *Social Seekers* and *Family-Focused*. While I do not want to examine his classification here, it is important to highlight that he was able to come up with relevant interpretations of visitors by analysing the comments left on a weblog. One of the staff members I interviewed at the Design Museum Helsinki said that through the comments, “we will learn more about the objects and understand people's needs and what they would want to experience when they come to the museum.”

Analysing comments is one way to get to understand visitors, but another possible way facilitated by these interactive pieces is to engage in dialogue with visitors during the time the exhibition is on show. The following example shows how a visitor can propose a conversation to a staff member.

Visitor's comment based on the scissors in the exhibition:

“ **I have heard a story about these scissors, where the colour of their plastic part is a result of the prototype process in which they used some leftover pieces of plastic that happened to be orange, the orange that afterwards was used... is that story true?²⁶**

Comment left at The Secret Life of Objects.

26 Original in Finnish.

The answer was:

“ **The story is true. Fiskars had made a juice extractor before that. The juice extractor used orange plastic that accidentally ended up on the scissors handles when the first syringe was chosen. Workers were**

involved in the decision, and the colour orange was chosen for the handles.

Comment left at The Secret Life of Objects.

Allowing other members of the staff who do not normally make interpretative material for the exhibitions to be meaning-makers could be a way to reinforce the multiplicity of perspectives. Similarly, an argument might be one way to become more familiar with the interests and expertise of the museum staff.

Ron Wakkary and Dale Evernden (2005) have informally recorded stories connected to artefacts owned by scientist collectors. The stories ranged from where the object was found, how old it was, the difficulties of mould-making onsite, humorous tales about transportation and about objects temporarily getting lost, to what the objects tell us or how the meaning has changed. They have identified the scientific collectors as an important source of information about the exhibition and have included their stories in an audio object.

In *The Secret Life of Objects*, museum guards and guides actively populated the map with stories of use or even stories about visitors' comments. For example, a museum guide added a story told by a visitor:

“ Gigantic mobile phone

The travel-card reader designed by Tapani Hyvönen and his team looks like a 'gigantic mobile phone.' One visitor to the museum told the story to the museum guide.

Comment left at The Secret Life of Objects

This example allows me to illustrate how community-created content could help to identify and integrate new members of the community and to understand their expectations related to exhibitions.

The issue of the conservation of the community-created content is important because it relates to how the museum staff perceive this material. Several researchers in the museum field have spoken of the need to gather local knowledge related to the collection. For example, Suzanne Keene (2005) has said that “it is critical to realize that the collection is only as useful as the information that is available relating to it. Any museum can preserve objects and display them, but it has been argued that only museums embedded in local culture can preserve knowledge about them” (p. 40).

These comments are also testimonies of cultural memory. “Cultural memory allows spiritual and familiar practices to be maintained, often through oral tradition” (Mesa-Bains, 1992, p. 103).

In *Conversational Map* the staff asked for a copy of the comments I had collected. In all the three case studies, during the course of this research project, we promised to preserve them during the time the project was ongoing, but beyond that, their future is uncertain. Community-created content is valuable insofar as the museum community is committed to it. The more time and effort the museum staff is able to invest, the better the content. Therefore, more interest could arise for its preservation.

4.6.4 Involvement within the Museum Community

External collaborators include design researchers, artists or designers whose work is part of the exhibition; researchers whose topics are closely related to the exhibition's theme; students, teachers and guides organising workshops or tours around the exhibition; volunteers, friends of the museum and possible others. In some cases, curators and guides are external collaborators to the museum, because they are not part of the permanent staff but hired for one particular exhibition.

In *Conversational Map*, the artists in the exhibition showed their interest and positively reacted to the presence of the interactive piece that collected public feedback in different formats. They continuously came back to check the comments on their artwork. In the case of *The Secret Life of Objects*, I conducted a workshop with three designers with pieces in the exhibition. Although their pieces were not the ones most commented on, they were enthusiastic about getting to know the reactions of the visitors. It was my hope that the designers could respond to visitors' comments during the interviews, thus creating a dialogue. Questions from designers were also collected as a starting point for dialogue. Due to lack of time, this did not happen until the last week of the exhibition, and so their comments were not displayed with visitors' comments. Even though the conversation channels were provided, time and resources for tending this dialogue would have been beneficial.

The community-created content collected during the exhibition could provide material for researchers working in fields related to the exhibition's topic. Ideally, work with these researchers would start at the very beginning, even planning the exhibition together. This would provide cues to guide community-created content towards researchers' concerns. Two more examples related to the case studies illustrate alternative uses: artists could use the material that people left on their pieces to better understand the perception of their artwork; industrial designers could use an exhibition like *The Secret Life of Objects* to examine the emotional issues that link people with a certain object.



Fig. 29: Example of comments attached to the exhibition's displays. All these comments relate to the same object, the scissors designed by Fiskars. The comment above is, "The first thing that a friend of mine that moved abroad asked me to bring was one pair of Fiskars scissors ;-)".²⁷

²⁷ Original in Finnish.

To sum up, these are the ways that community-created content could become meaningful to staff members.

- Complementing the documentation on the collection, including information about context of use and perception of the objects, their intangible heritage and pertinent oral information
- Deepening museum staff's understanding of visitors' experiences
- Opening up possibilities for dialogue and exchange with visitors, with other members of the staff and with external collaborators
- Making new members of the staff into meaning-providers and, as a consequence, allowing members of the staff to better understand each others' interests and expertise

- Bringing new members from the staff and external collaborators into the museum community by producing a sense of belonging in them
- Opening up possibilities for dialogue and exchange with visitors, members of the staff and other external collaborators
- Providing content material to researchers whose field of interest relates to the exhibition.

If interaction designers can take into account the whole ecology of participation in designing an interactive piece, the comments will be valuable to many members of the museum community. I have only evaluated the community-created content obtained from interactive pieces used in the case studies in which I was involved. Most of the comments in these cases were in response to interactive pieces, and I believe that their content enabled and motivated discussion during the visit to the exhibition. Personally, some of these comments enabled me to pay attention to pieces in the exhibition that I otherwise might have ignored.

This chapter has presented an analysis of community-created content gathered in terms of its possibilities for opening up the museum visit experience. The set of hypotheses allowed classifying the content material, providing enough evidence to determine them as true. A relevant museum studies bibliography has helped me to complete this analysis. Since I analyse the comments from a purposeful perspective, I do not bring negative issues or constraints to the discussion. Those concerns are discussed next in the conclusions.

5

Conclusions

The museum exhibition is both the most public and the most traditional form of programming, offering access to artifacts and generating public discourse on related topics. Here the museum invites audiences to explore ideas, stories and collections in an environment that has been carefully curated and designed. In the past three decades, museums have embraced technology as a tool to enhance this environment, giving visitors multiple forms of engagement and narrative paths. Over time technologies will transform the current exhibition experience even more fundamentally (Thomas, 2007, p. 4).

5.1 Summary of the Contribution and Limitation of this Thesis

An answer to the research question “How can we design for museum-community involvement in exhibitions” was superficially proposed in article number five (Article 5). In that article we explain the need to think holistically while designing for participation in the museum context. As the notion of “thinking holistically” did not enable me to truly understand fine distinctions in the design process, I developed the concept of *ecology of participation* while analysing the case studies presented here. Later I reformulate my research question as how to create interactive design that encourages museum community participation in exhibitions. The groups within the ecology and their possible relations helped to analyse each case study and the opportunities for intervention they presented. By implementing this concept, it is possible to understand the opportunities that appear with each specific design process and artefact. The concept of ecology of participation maps the groups involved in a museum context and thus makes it possible to better understand participation in a given project. The groups in this ecology are the interactive piece, the community, and the places and practices that are part of the museum. My argument is that it is vital to understand and contemplate all these groups and their components when designing for participation. Participation needs to be grounded on existing resources, people and practices at the museum. Another important issue is collaboration and integration of these groups, both during the design process and the exhibition. The *ecology of participation* aims to provide resources to support and motivate the implementation of digital tools not only for visitors but also for all the other actors in the community. The interactive pieces deployed during this research provide an arena for exploration with different multimedia resources and creative means to connect with the material in the exhibition.

The set of hypotheses articulates the rest of the research endeavour. In Chapter 4 I present them and explore them through the examples provided in the case studies. The hypotheses are that community-created content:

- Serves to make content accessible to new audiences
- Extends people’s engagement with the exhibition material over a period of time
- Supports the learning that takes place in the exhibition by engaging people actively
- Validates multiple perspectives
- Opens possibilities for dialogue and exchange within the community

- Helps to identify and integrate new members of the community and understand their expectations of museum exhibitions
- Brings complementary documentation and interpretative material to bear on the artefacts in the exhibition.

I compiled a list of the positive results of encouraging the community to engage with the exhibition through the use of digital media tools such as the ones used in my cases. By highlighting the possible benefits while creating, compiling and displaying this content, I purposefully avoid all the discussion about the organisational changes needed to forge a more open culture of participation. The fears and contradictions that museums face in opening up new channels for participation are presented briefly in Section 5.2.3, “Listen and Trust the Community”.

This thesis argues for a cross-disciplinary, cross-institutional and participatory approach to interaction design that aims to involve as many members of the community as possible.

5.1.1 Sustainability Issues

Although the three case studies are presented in the first chapter as a continuous endeavour or narrative, they were not perceived as such at the museums with which I collaborated. Nonetheless, the whole project of sewing the three case studies together serves to demonstrate that sometimes “an interactive co-exploring of the design space” (Mattelmäki, 2008, p. 65) can happen in a succession of cases. In this way, the sustainability of the endeavour happens across projects and is not the burden of each one. However, the issue of sustainability is complex and must be further reviewed.

I distinguish two key concerns in this work: how museums bring about community involvement through this practice of creating and sharing content related to the exhibitions, and how museum community-created content is gathered, selected, preserved and exhibited.

Regarding the first, there is a need for museum community-created content to become an integrated part of the exhibition before, during and after it takes place in the form of material exhibited at the exhibition. Research work in this field, including mine, tries to help in the dissemination and acceptance of open culture in museums and exhibition venues.

(...) Commons-based peer production, and social production more generally, are not only sustainable but actually efficient ways of organizing information production (Benkler, 2006, p. 107).

Following Yochai Benkler, a researcher of the networked information economy, I claim that museums and exhibition venues will in the future value community-created content and adopt peer production as a means to enrich and complete the documentation on their collections as well as to enhance the visit experience.

In relation to the second concern of how museum community-created content is gathered, selected, preserved and exhibited, I make two points. First, the question of how to gather content relates to the work of designers, mainly, in these cases, interaction designers. Second, questions of conservation and exhibition are connected to museums’ views of the relevance of the collected material. Significantly, questions about the preservation of this digital material were not discussed in these cases. It was taken for granted that there are resources to update and maintain the servers and, hence, that the material would be preserved. According to the experience during these case studies, it is crucial to design for participation not only before and during the exhibition, but also after it, in order to ensure that the community-created content can be retrieved, re-used and made available to future researchers. Saving, preserving and collecting the material gathered is one way to show interest in listening to the community, and it is essential throughout the whole process.

5.1.2 Limitations

The combination of these three elements – the designer, the resources, and the situation – is always unique, which makes every design process an *ultimate particular* (Löwgren & Stolterman, 2007, p. 9).

The conclusions presented here are drawn from an analysis of the case studies and the conditions in which they were implemented. These conditions were influenced by the Finnish cultural, social, and technological context in which the studies took place. Though Finland is active in technological research, development and innovation (Tekes, 2008) the situation in Finnish museums does not reflect this. At the risk of overgeneralising it is possible to state that museums in Finland are not active participants in the discussion about open culture and do not contribute actively to the development of new technologies for their use. There are many reasons for this, and it is not the aim of this thesis to delve into them, but rather to describe the conditions in which this project was realised. Though goals have been set to improve accessibility by developing online services and digitalising collections (OPM Ministry of Education, 2008, p. 19), the reality is that museums in Finland do not have the necessary support to invest in the development of new media

technology that would meet their current needs. The museums with which I have collaborated are not exceptions in terms of these issues; information technology services in Finnish museums are mainly outsourced or one-person efforts. Similarly, in Finland little has been done regarding the inclusion of museum community-created content.

According to Peter Samis (2008a) “Part of our task is to encourage visitors to slow down (...) to take their own time” (p. 10). Not only visitors need to slow down, but also the people involved in making projects for museums, including designers. Unfortunately, at the moment in the museum field few resources are devoted to reflecting on design issues.

Nevertheless, it is important to acknowledge that this work was done in Finland. The Media Lab at the University of Art and Design in Helsinki provided me with the necessary institutional and financial support.

Another important issue to take into account is that computer literacy in Finland is high (Statistics Finland, 2008), and therefore the level of participation in new technologies in Finnish museums might be higher than in other countries.

Certain factors, such as the way the collaboration was framed in each of these cases, render this study atypical. Though there had been some prior collaboration between the University of Art and Design Helsinki and some of the museums involved, each of these endeavours was unique. Limited generalisation is warranted because of the different groups that were involved in the ecology of participation and its reliance on the human factor.

This thesis encourages an open culture in the museum by giving voice to visitors, museum staff members previously unheard, and external collaborators both in the gallery and online. As part of the design practice I recognised the need to provide interactive pieces and their related ecologies to support the collaboration of many of the actors in this community. In this way, I advocate changing curatorial practices to allow for participation.

5.2 Recommendations to Museums

On the basis of my observations during the design and development of these three case studies and during the writing of this thesis, I would like to make some recommendations to museums. I acknowledge that for museums to be able to implement some of these recommendations there must be a change in the policies that shape their current performance and their mechanisms for fundraising.

These recommendations might sound obvious to the interaction design

community, but with the aim of embracing museum professionals, I add them to this section.

These recommendations on the use of new media technologies in the museum context are based on the analysis performed in the previous chapters.

5.2.1 United We Stand, Divided We Fall

Once again, Suzanne Keene is the one that instigated museums to open up collaboration possibilities. According to Keene, “museums need to be much more active in forging partnerships with universities and colleges” (Keene, 2005, p. 62).

Long-term collaboration with university departments is key to furthering digital design projects in museums. Each case in this research was carried out in a different museum, and sometimes it was difficult for people involved from each institution to understand the others’ agendas, goals and needs. Cross-institutional collaboration is a challenge but, by creating a common long-term agenda, research projects in which both universities and museums are involved could be developed. Furthermore, museums could benefit from the inclusion of interaction designers and their capability in the design and development of new media projects. Participation and motivating it is a part of interaction designers’ area of expertise.

Suchman (2000) affirms that there is a need to “acknowledge and accept the limited power of any actor or artifact to control technology production/ use” (p. 10). Though controlling is not possible, influencing is, and it presents a great opportunity. Museums could proactively influence the development of technologies to be used in their spaces, thus encouraging design and research that meets their specific needs.

In these cases, the design and development was free of charge, the design-researchers working in the museum were external, and no one was paid by the museum. However, there was a concern with the time these projects consume. This question was formulated in the workshop with museum experts organised at the Design Museum Helsinki in the context of the exhibition “The Secret Life of Objects, An Interactive map of Finnish Design.” In fact, though the software did not require special maintenance while it was in the exhibition (Article 5), it did imply a significant time investment on the part of the museum staff involved. Yet, due to that investment, the result was in keeping with their needs and expectations.

Another important issue was that while bringing ImaNote, an open source software, to these two museums in Helsinki, I contributed to a platform that other museums can freely modify and adapt to their own needs. Regarding this concern Susan Chun and her colleagues affirm that one “unrealized op-

portunity for museums' potential is to share not just their collections and interpretation but also their software and software development methods, by building and adopting open source software and collaborating using open source models" (Chun, Jenkins & Stein, 2007, p. 135). Especially, in my cases, where the software development methods involved the use and the evaluation by many actors, it was important to take the opportunity to share solutions both with the open source and with the museum community. The version of the software that we used in *The Secret Life of Objects* is one step towards creating an open museum-specific application.

One challenge that I observed was to get different museum departments to collaborate on the project and not leave it in the hands of a single group of staff members. As in mapping groups in the ecology of participation, the goal is integrating practices to support and enrich participation.

5.2.2 Promoting and Guiding Community-Created Content

" (...) There is no one 'visitor-centered' way of interpreting something because museums do not have a single, homogeneous audience" (Roberts, 1997, p. 223). Therefore, if museums want to enact the ongoing shift towards visitor-centred exhibitions, museum community-created content must be supported. By promoting community-created content it is possible to create a more pluralistic museum experience. As I argue in Chapter 4, the benefits for the actors in this community are many.

Several researchers in the field of museum studies support the presence of multiple perspectives in the exhibitions:

Museums have become increasingly aware of the power of interpretive devices that personalize and humanize stories to facilitate connections between visitors and the subject matter of the exhibition (Sandell, 2007, p. 115).

If some visitors create and others consume, there's a social interaction. Thus, every exhibit that aspires to be social should encourage at least two verbs – one that transmits and another that receives. The visitors involved shouldn't have to directly engage with each other to have a social experience (Simon, 2008).

Blanchard's (2008) thesis on visitor-generated interpretations asserts that comments are vehicles of interpretation that help visitors to engage with the exhibition material. She recommends that museums adopt a polyphonic display strategy. Blanchard (2008) also states that visitors could be guided to produce particular kinds of content. "When visitors are unguided and unprompted, contributions tend to be shorter evaluative messages... when

given more guidance more visual analysis is produced" (Blanchard, 2008, p. 48).

In my case studies, the strategies used to guide the content material were to give special invitations to different members of the community and to support already existing practices such as making connections between people's life and the museum collection. The workshops run in *The Secret Life of Objects* provided creative and personal content that shape future contributions. They were a way to demonstrate the importance of their contribution to visitors, but also a way to show the museum that other types of invitations could bring new refreshing material to the exhibition, in this case, the poems and music. I further explore this issue in Section 5.3.3 in describing the role that designers might play.

The ability of any institution to give meaning and value to people's personal and collective lives will take on even greater importance than it has today (Skramstad, 1999, p. 131).

5.2.3 Listen to and Trust the Community

Trustworthiness and authority in a museum grow directly out of skill and experience well exercised as well as out of continual connection with the audience served. In the new world of the new century, the authority that the museum claims will be built not primarily through its collections nor on its specialized expertise, but through those resources engaged in conversation and dialogue with those audiences the museum serves (Skramstad, 2004, p. 131).

Only by listening and trusting the community can we support community-created content in museums. This community includes, among others, the museum experts who have specific fears and display specific contradictions about community engagement. Regarding this issue, Suchman (2009) identifies "that there are tensions and contradictions that arise when we adopt a strategy that distributes practices previously identified exclusively with certain people and places (...) across a wider landscape (...)" (Suchman, 2009, p. 1).

The biggest fear of museum curators, when it comes to making room for visitors' voices, is populating the museum with non-experts' opinions that could diminish the trust people have in those experts. At the moment, museums are one of the most trusted media institutions in terms of the accuracy of the information that they communicate. Regarding this issue, Sandell (2007) asserts that "the qualities visitors attribute to the museum as a medium – truthfulness, worthiness, reliability, the capacity to 'tell the truth'

– and the potential for museum visiting to be an especially active mode of consumption, ...make the museum a relatively efficacious and highly valued provider of resources within the mediascape” (p. 135). Hence, even if museums accept and promote material from outsiders such as visitors or external collaborators they cannot relinquish their responsibility to provide accurate and impartial information, because this is highly prized by the public (Keene, 2005, p. 186).

As a consequence, the question is how to design for the coexistence of both types of content material, the one created by the community as a whole and a curatorial voice, and how to set the rules for its management. The case studies presented in this thesis explored these questions. Furthermore, they allow me to corroborate that when the design proposal includes listening to and trusting the community, the content material could be of great value to the various actors involved.

Regarding the issue of trust, another relevant fact is the small number of community-created comments that were not related to the exhibition. Developers of interactive pieces are always afraid to give the floor to the visitors, because it might create a huge volume of irrelevant comments. In my experience, visitors respect and trust museums that assume that there will be only a small number of such comments. Other projects in museums have had similar results (Trant, 2008; Samis, 2008b). Indeed, much more far-reaching community-created projects like Wikipedia have reported little need to use mechanisms to correct acts of vandalism (Benkler, 2006, p. 74).

The museum staff needs to be listening to what is going on with their interactive proposals. It is not enough to set up an interactive piece that involves the community in the design process and then, when the piece is online and the exhibition up, forget about its existence.

Building trust is the beginning of any design communication process (Nelson & Stolterman, 2003, p. 55).

In line with Nelson and Stolterman's statement I agree that the only way to fully understand and make use of the possibilities offered by museum community-created content is to constantly heed and enrich the conversation. A common concern of museum staff is the time required to nurture this dialogue. Once the dialogue has started, all parties must be committed to sustaining it.

Other museums have offered weblog platforms on which their visitors can make comments on the exhibition and engage actively in discussion with online visitors (Von Appen et al., 2006). But little efforts have been made where designers could plan an integration of the educational programme as

a source to populate their interactive pieces. Due to the open environment that the Design Museum Helsinki provided me, I had the chance to propose and coordinate a set of workshops, different from the ones the museum was offering at the time. Such special workshops help to gather audiovisual materials for populating the interactive piece displayed.

In the case studies analysed here, participation is very much in keeping with the cultural trends established by technology, such as peer-to-peer. Actors in the ecology constantly incorporate new practices, and the practices in turn take new shape. This shift to collaborative culture and peer-to-peer approaches must be taken into account when thinking about the future implementation of technology in a museum. People motivated by the fair and democratic values that projects like these entail made them successful by actively participating (Benkler, 2006). If museums understand themselves as a content provider opening their collection to the general public, they can enrich their often underused collections. They could provide tools that encourage community-created content that is inspired by and related to these collections. For these reasons, museums need to provide open structures and platforms that allow for expansion and flexibility. The Powerhouse Museum, Australia's largest and most popular museum, released its collection documentation under a Creative Commons license (Chan, 2009, April 2), which means that educators can now use more freely the collection records and encourage their students to do the same.

One of the salient writers in Museum Studies is Duncan F. Cameron (1971/2004), who tackled these issues in his seminal “The Museum: A Temple or The Forum.” There, he urged the museums to engage in the “reestablishment of the forum as an institution in society” (p. 68). Cameron's proposal was very much in line with the current discussion in museums: it proposed including other voices in the material to deliver to the audience.

“In a plurality of tongues what happens to scholarly speech? Naturalistic interpretation, rooted in empiricism, has traditionally claimed cognitive superiority over those based on moral, communal, or popular considerations. But who can claim superiority in an equalitarian society?” (Ames, 1992/2004, p. 94). Perhaps Ames's questions are now even more crucial to the museum context than when they were written.

“How will anthropologists and other cultural workers help people come to terms with the growing multicultural and multivocal realities – discordant realities, one might even say – of contemporary society? (...) Or will they be lost in the cacophony of voices, reduced by public criticism, populist sentiments, funding restrictions, and the forces of the marketplace to bland pronouncements and tangled rhetoric?” (Ames, 1992/2004, p. 94-95). There are many questions on the risk of including many voices in the museum. My

answer to these questions is that there is a need to design so that all voices can coexist. Design for participatory practices must contemplate different voices and discourses, trying to make a more inclusive patchwork in which each voice can be heard. Strategies to differentiate and manage the multiplicity of contribution are part of this endeavour.

5.2.4 *Stick Your Neck Out*

The unknown and the experimental should be given a chance to happen, to become whatever they become, good or bad (Cameron, 1971/2004, p. 62).

There is a need to permit experimentation and even failure while developing interaction design in the museum context. Though I have always felt the museum staff to be grateful, the harsh criticisms of the interface design proposed demonstrates a lack of understanding that the framework of collaboration was a research project. Therefore, the prototypes and software solutions were under development and provided some innovative component that needed testing as part of the research agenda. The museum should not aim to receive ready-made solutions from the university but see the collaboration as an opportunity to influence the development of technology by being the “research field” for experiments and by providing content. This collaboration must be furthered to foster suitable development of technology for museums and their communities.

According to Nardi and O’Day (1999), the process of defining ecologies involves “forging connection between practices and effects, and also assuming a place within the ecology for ‘unpredictable effects’” (p. 54). The *ecology of participation* entails the need to support experimentation in museums, because it allows identifying new and possible paths for design interventions.

5.3 Design Sensitivities

Instead of talking about recommendations or implications for designers, Christian Hindmarsh and his colleagues proposed “design sensitivities”¹ as a means to inform designers of interactive systems possible in the context of museums and galleries (Hindmarsh et al., 2005). Their work focuses on the “opportunities for sustained interaction with and around the exhibition by providing resources for participants themselves to creatively shape and configure the experience of others” (p. 35-36). Design sensitivities include:

a) The presence of strangers and companions,

¹ The authors used the term assembly, because their interactive pieces are spread around the museum space so as to create an assembly.

- b) The presence of different forms of interactions and co-participation such as verbal/ non-verbal, passive/active, central/ peripheral,
- c) Actions and viewpoints of the assembly,¹
- d) Reverse scalability meaning variable numbers of people within exhibition spaces.

I believe this list covers many of the concerns presented at the exhibition space during the design of interactive pieces. I would include some issues that could help designers to make more informed choices, in the specific context of design for encouraging participation through community-created content.

5.3.1 *Re-defining the Designer’s Role*

“A series of changes in the technologies, economic organizations, and social practices of production has created new opportunities in terms of how we make and exchange information, knowledge and culture” (Benkler, 2006, p. 2). In the face of these changes, designers are re-defining their roles in society and taking advantage of opportunities to create a human environment. According to my colleague Kari-Hans Kommonen (2005), “designers ought to take a stand on how technology is used as a driver of social change, and on what kinds of developments society should promote. One can participate in this debate if one knows what is going on and is capable of making constructive and realistic suggestions concerning future designs” (p. 108). Following his line of thought, I proposed interactive pieces at the exhibition as a way to open up the museum, a traditional institution with great potential for hosting discussions and becoming a forum for important debates.

With this in mind, designers involved in digital design projects in museums can work towards integrating the groups in the ecology and nurturing content material. By doing so, designers perform different roles, including that of a facilitator (Dearden, Finlay, Allgar & McManus, 2002) or a gardener (Nardi & O’Day, 1999, p. 140) who helps to create “views of desirable future developments” (Kommonen, 2005, p. 113).

The notion of the ecology of participation could be a tool for designers. It can help them to locate their own projects in the spectrum of possibilities and to identify different actors, practices and spaces among the museum resources. Designers working as external collaborators, as I did in these projects, could benefit from the mapping that the ecology of participation promotes. Designers in the museum staff could re-think their previous and future projects to better understand and expand their areas of influence in the museum.

5.3.2 In Constant Dialogue with the Community

Though as an external collaborator to the museum I did not have a daily opportunity to work with the staff, the artists and designers, or the museum visitors, I did try to engage in a constant dialogue with them during the projects. This dialogue opened up opportunities to collect feedback and to foster greater mutual understanding. It was in this dialogue that these interactive pieces were evaluated and validated.

Now and in the future, evaluating museum technology experiences will require ongoing institutional support beyond a single project. Evaluation in the formative improvement cycle, especially for new media, learning technologies, digital libraries, extended online learning experiences, network designs, which have global visibility, can no longer be ignored. Evaluation should be a necessary part of everyday museum practice to gather information that helps to make ongoing improvements (Hsi, 2007, p. 186).

Following Hsi's thoughts in my cases, I performed user studies and observations as an integral part of the design project. I consider these studies a part of this ongoing dialogue. This is why the set of questions was not predefined but improvised on the basis of a set of concerns. Placing interactive pieces in the museum and performing user studies with the visitors who happen to be there at the time provides a very approximate sense of audience reaction. It is a great advantage when interactive pieces can be evaluated in the real context and space where they will be presented. Events organised by the museums are especially useful for quick evaluations, because a significant number of visitors are present and available for observation or even interviewing. Evaluation happened at different moments of the design process and future scenarios of use also arose.

In this way, it is possible to affirm that the museum community has been influencing the design of the interactive pieces while using them. This issue aligns with the ideas of design-in-use (Henderson & Kyng, 1991) and "design in use" (Brandes, et al., 2009).

User studies and observations in the museum space (Article 6) as well as the analysis of the content material from the viewpoint of the designer (see Chapter 4) have advantages and disadvantages. On one hand, I am not an evaluation expert; the analysis might not be entirely transferable to others in the community. On the other hand, I see the evaluations and validations as a part of a dialogue that enriches the designers' views on the subject and increases empathy with the people who will ultimately enjoy the design solution. Designers involved in evaluation, instead of outsourcing the evalu-

ation to specialists, have the advantage of providing straightforward ideas for future work. For example, in the case of *The Secret Life of Objects*, I was constantly observing and proposing changes, so the design was not a static outcome but an ongoing endeavour during the time the exhibition was on. However, I acknowledge that external evaluators can also inform and contribute to design decisions. A combination of both would be ideal.

5.3.3 Shaping Content Material

Though my analysis of the content material does not intend to demonstrate the relationship between the design strategies implemented and the digital comments gathered, it does give an idea of a certain affiliation.

The concept of ecology of participation suggests a response to the question of how to shape the content material gathered by interactive pieces. The answer relies on the inclusion of different groups in the ecology of participation. Community-created content is a result of design strategies that allow including these groups into a single ecology of participation. These design strategies include populating the interactive pieces with content, facilitating and promoting people to contribute to content. Community-created content is useful for many actors only when many of these actors are included in the design process.

It is not possible to know exactly why visitors decide to make the effort to add creative and informative comments. Was it the communication material at the exhibition? Was it their relationship to the museum or to a person involved in the project? Were they inspired by other comments? Were the visitors frequent online creators in other forums? All these reasons are interconnected. Different strategies would motivate other kinds of people to react, so designers must contemplate the group dynamic in an effort to devise a coherent proposal. Though it is not in the scope of this work to analyse the expectations and limitations of the members of the audience, based on research done in learning from museums (Falk & Dierking, 2000, p.87), I acknowledged that they vary. Therefore, the interactive pieces need to embrace different levels of engagement and different types of contributors. In my case studies the open-ended result of the content material was a key feature. In addition, the explorations that took place in *The Secret Life of Objects*, where visitors were encouraged to leave audiovisual material, were also a way to include the expectations of different visitors (See Section 4.2.3. Multimedia Resources).

On the basis of my experience during these case studies, pre-prepared material yields better responses from visitors (Article 3) and having a facilitator from the museum staff or external is key to encouraging people to take part

in the participatory process (Article 6). Therefore, I conclude that while it is not possible to shape content material, it is possible to facilitate situations in which active participation might emerge to influence its variety and richness.

5.4 Broadening the Scope of the Contribution

In the yet to be created area of therapeutic manmade environments, museums could act as pioneers (Wittlin, 1970/2004, p. 50).

Some appropriate places in which the results of this thesis could be applied are libraries, because they have so much in common with museums. Museums, public botanical gardens, zoos, science centres, galleries, cultural centres, festival spaces, parks and exhibition centres are all open or closed public spaces in which people spend their free time, learn, enjoy, and are entertained. Therefore, designers working in all these multifaceted spaces could make use of the concept of ecology of participation in designing for people's involvement.

Museums could contribute to the wider discussion about open culture by changing their way of formulating more collaborative and transparent platforms. In this way, they could shape the discussion around their collections.

This open culture in the museum context implies more careful design for participation, where mechanisms for evaluating, validating, managing, exhibiting and preserving the collected material are envisioned from the beginning of the projects and constitute an intrinsic part of the whole.

Museums have much to learn from peer-to-peer networks. These networks require minimal financial investment to create content. Museums could open their online and in-house resources to the public and so support people to actively collaborate with them. The open use of collections and resources can benefit the cultural heritage domain.

A full understanding that “non-market production in general, and peer production in particular, are phenomena of much wider application than free software and exist in important ways throughout the networked information economy” (Benkler, 2006, p. 90) would mean an important advance in the cultural heritage sector. Such understanding would make it possible to devise strategies that take advantage of emerging opportunities.

5.5 Projections for the Future

Digital media have an enormous potential, not yet exploited at all seriously, for enlivening, explaining and enhancing access to collections. Technologies that can be used to link people and collections in real places, that get away from keyboards and screens, could be revelatory. Another challenge for designers in digital media will be that posed by online collections (Keene, 2005, p. 107).

Further analysis of interactive pieces could reveal who comments and who does not. Moreover, communication experts could make an in-depth analysis of the material gathered in order to reach conclusions about the trends and expectations that visitors' comments entail.

By following these case studies and what was happening in the field, I noticed the potential for remixing embedded technologies so that they contribute to opening up platforms for collaboration in the museum. When the museums explored social technologies, for example, the initiative came from the media team, which did not fully explore the possibilities of interacting with the museum space. Only proposals that included handheld devices or kiosks have been implemented to present their online solutions in the museum space. I see a great potential in co-exploring embedded technologies together with platforms that support community-created content.

By understanding their roles as facilitators and platform providers, designers can be key actors in the changes to come. Promoting dialogue and listening to the community can enable them to forge the path towards design proposals that motivate participation.

Our work as designers has expanded. Whereas we once concentrated on design proposals, the current approach truly understands the ecologies within which these proposals are immersed, allowing them to operate more seamlessly in new contexts. Once design proposals have come to involve participation, the new challenge is to make them grow through collaboration with the community in which they will be implemented.

The development of new technology along with the shift to a collaborative peer-to-peer culture must be taken into account in thinking about future designs for the museum. Incorporating practices such as tagging, commenting, voting systems, or even bookmarking will likely be a part of the museum visit experience in the future. These practices serve to open the visit experience and provide opportunities for dialogue around the exhibition. However, if one truly wants to forge an open museum in constant dialogue and collaboration with the community, then it is necessary to involve all the actors in setting the agenda. Participatory design approaches could be applied when it

comes to making important decisions and involving those who are not currently part of the group of decision-makers. Museums need to understand the potential of participatory projects in order to reinforce the dialogue with their community. There must be a growing interest in social technologies on the part of audiences and staff in order to nurture dialogues with the community. Once the practice of listening to the community has been established, new types of conversations will take place both online and in the museum space itself, enhancing the quality of discussions that happen during the visit experience.

This thesis is useful for interaction designers because of both the practical findings it offers on the design of digital tools and their implementation strategies and the theoretical findings related to the analysis of the design for participation. For museums that are trying to open new means of conversation with their communities, my work could help encourage sustainable collaboration. Above all, however, I hope to positively influence the museum visit experience by reflecting on the development of tools and concepts geared towards engagement in the exhibitions.

5.6 Linking the Essay and the Articles

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This book consists of an essay and six articles that were previously published in other forums. In parallel to the articles presented in this compilation, I wrote other articles that relate to my experience in the museum and also informed this research. The selection tries to give a compact and coherent understanding of the analysis and design process that took place during this research.

As part of my research agenda trying to include the different members of this community into the design proposals, I expressly decided to establish a dialogue with people in the field of Museum Studies and Museum Informatics. This is why my work was presented in these forums multiple times. With the exception of one (Article 6), the papers in this compilation represent my contribution by reporting to forums where museum workers gathered.

The articles are grouped according to the theme with which they deal. Within each group, they are presented in chronological order. The first group presents the case studies. Each of them has a different focus that was relevant to my analysis at the moment of its publication. In Chapter 2 I describe each case in terms of the same set of categories: goals, accomplishments, and opportunity knocks. These articles are the original publication of these three case studies.

Group one

Article 1: “Äänijälki: Opening Dialogues for Visually Impaired Inclusion in Museums” presents the case study of *Sound Trace*, showing the exploration during the design process of an interactive piece for a group of visitors with disabilities. It describes the concept of an audio guide that aims at collecting and sharing visitors’ traces in museum exhibitions, enhancing the visit experience. It is an ambitious project description of a service for the visually impaired community. It contemplates a portal and a handheld device connected to the museum place by a wireless system. The article ends with posing a set of questions that opens different strings for discussion. I later explored some of these questions while implementing the next two projects.

Article 2: “Visitors’ Voices” presents the case study of *Conversational Map* and outlines the possibilities that visitor participation through digital comments could bring to an exhibition venue. This time the project was not as ambitious: the idea was to listen to the visitors of an exhibition during a short time and to share the content with other visitors. I considered the content valuable in terms of the possibility to bring more knowledge on the pieces in the exhibition. This article recognises the value of the multiplicity of voices in the exhibition for enriching the experience of the visitors and the value that the content can have for researchers. However, it does not analyse what the different voices are and how they differ from the informative and neutral tone of the interpretative material displayed in exhibitions.

Article 3: “Co-Designing Participatory Practices around a Design Museum Exhibition” presents the case study *The Secret Life of Objects* in which we explore the possibilities of co-designing in museums. Co-designing, in this case, means including visitors, staff and external collaborators in a series of joint activities during the design process phase and during the period that the exhibition was on display. Workshops and events organised together allowed us to compile material that populates the interactive map. We understood this material as triggers of visitors’ participation. We conclude that participative practices can be a tool that motivates visitors to engage with the exhibition and a resource in the design process. At the moment of writing this paper we did not realise that participative practices were of key importance in engaging also the museum staff. Furthermore, museum staff contribution is what makes this project richer than the previous ones and successful both in terms of the community-created content and in terms of the potentials to explore my set of hypotheses.

Group two

This second group presents three articles that analyse and compare the case studies to each other and to other relevant cases in the field. Through these comparisons I attempt to offer new perspectives on understanding the cases and the possibilities for media designers in the field.

Article 4: “The Aesthetics of Participative Design Pieces: Two Case Studies in Museums” uses elements from *Sound Trace* and *Conversational Map* to analyse the aesthetic features of interactive pieces. The article explores topics such as inclusion which are beyond the scope of this thesis. Nevertheless, inclusion, for example, has been further discussed in Chapter 4, Section 4.2. Moreover, I introduce in this article the idea of intellectual involvement that helps me to understand the special participation I propose. In Chapter 3, Section 3.4 I expand the idea. Therefore, I can claim that this paper was an alternative path with an aesthetic focus that helped me to elaborate on ideas that proved to be a clue to the final thesis.

Article 5: “Using On-Line Maps for Community-Generated Content in Museums” is a comparison of *The Secret Life of Objects* and a project performed by Joanna Saad-Sulonen, another researcher at Media Lab Helsinki, at the Museum of Contemporary Art Kiasma. In this paper we address the mechanisms at play when using online maps in a museum context to trigger and expand visitors’ involvement with the content of an exhibition. It introduces the need for holistic thinking while designing interactive pieces. This article opens to me the path to bring the concept of ecology of participation as a way to add a well-articulated description of this holistic thinking.

Article 6: “Re-thinking an Annotation Tool for Visitor- and Staff-Generated Content” is an analysis of the experience of using an annotation tool, ImaNote, to gather and share comments at the exhibition space. It focuses on the possibilities and constraints presented by two cases, *Conversational Map* and *The Secret Life of Objects*. It introduces the concept of *ecology of participation* for the first time. The concept is further explored in Chapter 3. The key question of this paper is how to customise a tool for deploying museum-community content as a means to enhance the visitors’ experience. This analysis focused on the annotation tool and is a complementary approach to the one presented in the main essay of this thesis, in which I also propose potential roles for museums’ professionals and for interaction designers.

As I explained above, the articles add the possibility to see through the design process and provide other viewpoints on the case studies. The essay and the articles complement each other informing on the work done and providing highlights for the opportunities to come in the museum context.

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Compilation of Articles

Article 1: (A.1)

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Article 3: (A.3)

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Article 4: (A.4)

Salgado, M. (2008). The Aesthetic of Participative Design Pieces: Two Case Studies in Museums. International Journal of the Inclusive Museum, 1(1), 105-110.

Article 5: (A.5)

Salgado, M., Saad-Sulonen, J. & Diaz, L. (2009). Using On-line Maps for Community-Generated Content in the Museums. In J. Trant & D. Bearman (Eds.). Proceedings of the Museums and the Web 2009. Toronto: Archives & Museum Informatics. Retrieved on May 19, 2009, from <http://www.archimuse.com/mw2009/papers/salgado/salgado.html>

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Äänijälki

Opening Dialogues for Visually Impaired Inclusion in Museums

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Article 1

Abstract

This paper describes the project: Äänijälki, keskustelun äävi (Sound-trace, Opening Dialogue). The project is used as a case study for analyzing visitor experience enhanced through active participation in museum exhibitions.

While walking through an exhibition, visitors have access to the message from the museum. The experience is more engaging when visitors go to an exhibition with a friend that knows about the subject exhibited. The whole practice refreshes when someone tells the visitor something that connects her own life with the exhibition in an informal language with personal opinions. The idea of the project is to open this dialogue with other, possibly anonymous, visitors in order to augment users' experience.

The way this idea takes shape is creating a social tool for exchanging comments about the experience of going to and being in an exhibition, leaving audio traces in the process. These traces allow a dialogue within visitors that are not necessarily present at the same time in the exhibition.

Sound Trace is a service for visually impaired people and their related community for exchanging advices about exhibitions. Sound Trace is an instrument for enhancing accessibility and the experience in the context of Finnish museums. At the same time, it is a platform for collaborative sound gathering created mainly by visually impaired people. Despite that, our aim is that every visitor can listen sound-traces.

The visitor participates in creating knowledge in the exhibition, and in exchanging it with other future visitors. All visitors have something in mind while in the exhibition, and they are inspired or provoked. Sound Trace is a tool for sharing these thoughts. Visitors and pieces in the exhibition will open their existing dialogue, by making it audible.

This service has two main elements: a PDA (Personal Digital Assistant) device with texture touchable screen (for using in the Museum) and a WWW portal (for remote use). The visually impaired person will leave audio traces in the exhibition by using a PDA device and/or the website. All the information addresses to visually impaired peo-

ple in Museum pages is in the WWW portal, as well as the traces left in the museum connected to the exhibition as a whole.

Keywords: museum, inclusion, user centred, visually impaired, assistive technology, social tool

1. Introduction

After our observations, we found out that visually impaired people are interested in going to museums and exhibitions in general, but they do not have the information they would need in order to enjoy a visit. This information is related to accessibility issues as well as about opportunities for them to enjoy the exhibition. They are an excluded community not fully taken into consideration while designing exhibitions (e.g., there is no a feedback board where they could exchange comments about exhibitions).

On the other side, we wanted to know how do visually impaired people “visualize” and bring visually impaired people’s world closer to the sighted people’s world by providing descriptions and comments. Thus, we create a tool for visually impaired people and their related community (e.g. friends, family and workmates), for them to use for exchanging advices about exhibitions.

“How can a blind person from birth form in his mind the idea of figures? I think that the movement of his body, the successive existence of his hand in different places, the non-interruptive sensation of a body passing through his fingers, give him the notion of direction.” (1)¹

¹ Salgado did the translation from French to English.

Sound Trace is project about creating a service by Finnish museums for visually impaired people and their related community. This first phase of the project is done in collaboration with Ateneum Museum², The Finnish National Art Gallery, in Helsinki.

Sound Trace will be used for sharing hints about the experience of going to and being in an exhibition. The goal is to motivate visually impaired people to visit museums by providing a tool to get information about museum spaces and exhibitions, with their “comments.”

Sound Trace consists of creating a platform for collaborative audio gathering of people’s comments related to the museum exhibition.

This service has two main elements: a PDA (Personal Digital Assistant) device with texture touchable screen (for using in the Museum) and a WWW portal (for remote use). The visually impaired person will leave audio traces in the exhibition by using a PDA device and/or the website. They can also access other visitors’ comments, and museum’s experts through earphones from the PDA.

All the information addressed to visually impaired people in museum pages, is in the WWW portal, as well as the traces left in the museum connected to the exhibition as a whole and to accessibility issues.

Sound Trace is a multi-user system that has a simple interface and requires no training. People coming in groups to the museum can record a part of their conversation, and share the listening of traces left by others.

2. Background

This initiative was born after coordinating a usability test study in the context of the Museum of Cultures in Helsinki for improving the Digital Facsimile of the Map of Mexico 1550. Many visitors had very interesting comments about the Map. Some of them were Mexicans and had comments related to the city and the places where they have been. One expert in the Map came and had a lot to tell about the history of the document. A researcher in our team had a lot to add about how they took the photographs and how the map is conserved in the Museum in Uppsala. Others were anthropologists and had other points of views. The Map was alive while listening to them, their impressions, stories, and reactions!

An exhibition is a unique opportunity to collect data about the items, personal stories, questions, jokes, recommendations, etc. This is why the content of *Sound Trace* are visitors’ comments.

² Ateneum Art Museum; <http://www.ateneum.fi/>

3. Process

In the beginning of the development of this project we decided to make accessible the exhibition’s information in the Museum, and remotely (e.g. from home or workplace). The idea behind this was to make available all necessary details about an exhibition beforehand, since visually impaired visitors need information about accessibility issues, and the museum experience before the visit. In one visit to a museum with a visually impaired person, she noticed that she would not have gone to the museum we proposed because she didn’t know there were so much hands-on experiences in it.

It was important for us to make Äänijälki available for all blind and visually impaired persons. This is why we never experiment with Braille based applications. In this way, people that have only recently lost their sight can use this tool.

The metaphor of a compass helps to visualize directions for different implementations that we analyzed during the process of defining this project. A key issue of this project is how to make the data gathered accessible. Some ideas about managing the tracks that Defining this project implied several testing periods. Test methodologies varied.

Defining this project implied several testing periods. Our design approach was user-centred using a varied number of methodologies.

We experimented with a touchable-screen with texture for a desk terminal when considering the possibility to install a computer in an isolated place inside the museums.

Tests of the prototype were done in the Media Lab, with sighted people that had their eyes covered. The prototype only worked by having someone behind-the-scenes who is pulling the levers and flipping the switches, in our case copying the testers behaviour in the computer. This allowed testing of an interface concept before the system was fully working. This type of technique is called the Wizard of Oz. (2)

Everybody could easily understand and use the prototype. Although the test was successful, we considered that the idea of a separate place inside the museum is not a right concept while considering inclusion. Moreover, we thought that it is beneficial for our concept to have a mobile device in order to enhance accessibility, and comments related to specific items.

During this test we realized that the content was important for the participants. The fact of having only two comments was a bit frustrating.

In order to clarify our goals, we used scenario-based methods. Scenarios are stories. They are stories about people and their activities. They are widely

used in the field of software design for arrive to a common understanding of what are the user’s activities, tasks and behaviours. (3). In these scenarios, we described different visitors situations, analyzing pros and cons of the tool.

Ateneum Art Museum only to visually impaired persons gives permission to touch certain sculptures. We went with visually impaired persons and a museum guide to create the content for our PDA device. The descriptions, we gathered from the visually impaired visitors, in order to produce the content for the prototype, are surprisingly visual.

In the case of these sculptures in Ateneum Art Museum, sighted people can enjoy the traces that visually impaired people left in certain sculptures, after touching them. See figures 2-3-4

For managing the information, in this phase of the project, we decided to do a timeline that combines in a chronological order comments related to the building, the exhibition, and the pieces. The comments come in alteration from the visitors and from the museum guide.

The aim is to produce a tool that is user-centred and an example of both of Assistive technology and Universal design. Universal Design is the concept of designing products that are usable by all people, including people with disabilities. When applying Universal design, the aim is to improve the usability making the product suitable for people with disabilities. (4)

The next phase is to test the demo PDA application in Ateneum Art Museum and the WWW Portal. The testing will include in-depth interviews, semi structured interviews, and behavioural observation with visually impaired persons. The interviews will be held in Ateneum Art Museum and in people’s houses when evaluating the WWW Portal.

4. Content

The visually impaired people will be the co-authors together with the museums’ experts of the content for both the PDA application and the web portal, leaving audio tracks during the visit. The content of these inputs relates to the exhibition, to the building, or to accessibility issues. The tracks could be “attached” to a certain piece, space or to the exhibition as a whole. That means that the comments will be reachable from certain places, and will relate to them. In the case of the remote dialogue, the comments are managed in the same way as inside the exhibition, making explicit the link between a comment and the referred item.

The content of *Sound Trace* is divided in two:

- a) SHARE: content connected to experience of being in an exhibition that people like to share because it is nice to be “heard” and to give a comment.
- b) ORIENTATION: content connected to the place, the real building of the museum and the accessibility. It has details that visual impaired people need for navigating and orientating inside the building and on their way to the museum.

Sound Trace in Ateneum Art Museum allows the following actions: a) listen and record the directions for arriving to a certain sculpture, toilet, cloak-room b) listen and record stories related to the sculptures, the building and the exhibition in general.

Sound Trace uses speech, because the goal is to present it as a natural component to visually impaired people, as Ubiquitous Computing where the aim is to make the technology invisible to the user. Also, speech is essential to enable systems to be used by disabled people and so is important for Universal Design. (4).

Technical resolutions have been explored for the device to use in the museum, using both mobile phones and PDA devices. We decided that a PDA is the appropriate solution. The current prototype uses the Hewlett-Packard iPAQ h5450.

The technical functionality consists from server and client side elements. Server side consists of database, server software and hardware. The client side of this service consists of a PDA and the client software in it. The client software contains necessary interfaces and hardware support to use the service and to communicate with the server. The main line of communication will be Wireless LAN. User positioning and recognition will be implemented using Bluetooth. Bluetooth stations are essential for each piece or room in the exhibition, so each area in the museum can be recognized as its own space, and can be recognized through visitors’ PDA (positioning).

The product is demoed by using Apache server, MySQL Database, PHP-programming (server-side) and simple Flash-application in the Client side.

5. Dialogues

The traces allow a dialogue within visitors that are not necessarily present at the same time in the exhibition. It is an exchange of ideas between fu-

ture, past and present visitors to museums. Future visitors get to know about *Sound Trace* and even enter questions before the visit. Present visitors leave a comment in the moment of the visit. Past visitors can remember something and add it later, or they can even check for some information that was added after. One visitor is able to reach the message left by his friend that was in the exhibition some time ago, or to listen to anonymous comments. *Sound Trace* provides information about exhibitions, information that is not coming from journalist or expert discourses.

Simultaneously, visitors and pieces in the exhibition open their already existing dialogue by making it audible. Visitors have something in mind in the exhibition, are inspired or provoked by the exhibition. This is why *Sound Trace* is a social tool that contemplates the human necessity of commenting, criticizing and recommending.

Sound Trace facilitates the communication between the museum, as an institution, and the visitors. Many museums are looking for more visitor-focused ways of approaching their audiences. (5).

The museum institution sends a particular message to visitors using *Sound Trace*. Visitors can reply leaving feedback to the museum. The message of the institution (which is the message of an expert, with formal language and monotonous voice) is complemented with the message coming from the visitors. Once *Sound Trace* is implemented, visitors and the museum institution will generate a new understanding of their respective roles.

As *Sound Trace* allows a dialogue between visitors that are not necessarily present at the same time in the museum, visually impaired persons that normally have problems in meeting by chance (or recognizing that they meet) in a public space could “meet” inside the museum or in the web portal.

Wakkary and Evernden, while analyzing a case study of an Ambient Intelligent Museum Guide, saw the chance to give form to the intellectual knowledge of the museum staff in addition to the embodied knowledge of the artefacts. They wanted to catch the informal and yet engaging delivery of specialized knowledge on behalf of the museum researchers. (6)

The difference is that *Sound Trace* includes all other visitors beside the researchers.

It can be compared with Wikipedia,³ because the content is open, and every user can modify it, but the content in *Sound Trace* relates to exhibitions, to physical places, or to pieces inside exhibitions. The object themselves, the exhibition and the building by their presences in a certain place affects visitor’s comments.

We share the believe with Ciolfi and Bannon that understanding the concepts of space and place can be beneficial when addressing a project about physical spaces enhanced by technology. Places offer visitors cultural, struc-

³ Wikipedia:
[http://www.
wikipedia.org/](http://www.wikipedia.org/)

tural, social clues that shape their actions. (7). Our experience in the Ateneum Art Museum, a historic and respectful building showing art from the 1750s to the 1960s might probably differ when designing for other museums involved in the service. Analysis of this comparison is part of our research concerns while developing *Sound Trace*.

It was evident to Wakkary and Evernden that once the artefacts were connected to people, the understanding of these artefacts became deeply connected to all aspects of the museum ecology. The comments from museum researchers came out in the form of storytelling that covered activities related to the artefact, conservation, storage, research and display technologies, meaning and values associated with the artefacts- all situated in specific contexts of time and place. (6)

6. Conclusions

There is a need to change museum experiences and convert them to more participative ones, connecting people’s comments to the exhibition. The visitors participate creating knowledge in the exhibition and exchanging it with other future visitors. We think that in this way the visit is more active, communicative and engaging.

The feedback we are gathering in our interviews in museums, while making the content with visually impaired people and in the test sessions, is encouraging.

Sound Trace is a project in the beginning of its development, but we believe that in a future, it can influence the visitors’ experience positively.

Opening the dialogue to the visually impaired people is a good way of making the exhibitions more inclusive and engaging by exchanging opinions about the exhibition. In the path of working for this project, we understood the need from the museums to communicate with the visually impaired community, and the need of visually impaired persons to get information about museums.

Silvia and Victor Margolin highlight that the foremost intend of social design is the satisfaction of human needs. *Sound Trace* tries to enhance quality of life, directed to a specific vulnerable population and can thus be framed into social design. (7)

The main question in *Sound Trace* is how the insights that people leave in the museum change the experience of being in a museum, enhance the accessibility, and generate a manageable amount of data for remote use.

Other important issues are:

- How could these comments improve visitor's learning about the exhibition? How does *Sound Trace* generate education added value to the exhibition? How can the museum collect information about the exhibition's theme with *Sound Trace*?
- In which way *Sound Trace* influences interactions within visitors in the context of a museum visit? For example: Will the talk of the visitors be organized around the listening activity, or the other way around?
- How to evaluate, classify and perhaps select the content that visitors are leaving in the exhibitions?
- In the case of opening this service to all visitors. How can editing the gathered data be adapted to the practices and processes of museums? How effective is *Sound Trace* for collecting feedback from the visitors?

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Abstract

This paper presents various interactive installations with the common denominator of giving voice to visitors of museums and exhibition venues. It describes the case study of Conversational Map (Keskustelukartta) in the context of the exhibition venue Kunsthalle. Conversational Map is an interactive installation that was deployed in the Young Artists' Biennale: Small Heaven in November 2005. The installation uses ImaNote (Image Map Annotation Notebook), a Web-based multi-user tool under development in the Media Lab. Conversational Map makes it possible for visitors, artists and staff to participate actively by leaving comments and links to multimedia resources in a common interactive board. Visitors who have already visited the exhibition can access the Website remotely and add remarks. There is a whole new field to discover, involving visitors and artists in making the content of the visit. Multiple voices for the multiple artefacts in the exhibition enrich the experience.

Keywords: exhibition, participation, content, interactivity, design, installation, user-contributed content, museum

Introduction

During four days in November we installed an interactive piece in Kunsthalle (exhibition venue in Helsinki). Its name was Conversational Map (Keskustelukartta). It had two main elements: an installation in the exhibition hall and a Web page. The staff and the visitors were the co-authors of the content material. They left comments in the Conversational Map using the interactive installation or their own workstation accessing the Web site.

Comments left in the exhibition were accessible from home, before or after the visit.

The goal was to test a platform for collaborative gathering of material related to the exhibition, new material that could renew the experience of the visit. At the same time, we wanted to evaluate the possibilities of installing a piece that involves visitor comments as a part of an exhibition. This project in the future might be a service for museums or exhibition venues. The aim of this test was to improve the prototype and to understand future dimensions opened up by this type of design intervention.

To make this design intervention possible, we used ImaNote.

Background

In this section we go through some previous projects that also included comments coming from other sources than the curators in exhibitions.

Wakkary and Evernden (2005), while analysing a case study of an Ambient Intelligent Museum Guide, saw the chance to give form to the intellectual knowledge of the museum staff in addition to embodied information of the artefacts. They wanted to acquire informal and interesting knowledge from the museum researchers.

In the case of the visitors' board created in the exhibition Iron Ladies: Women in Thatcher's Britain at the Women's library, the idea was that visitors answer the question, "What do the 1980's mean to you?" Participants wrote ideas on small pieces of paper and placed their notes on a large board. The role of the board was continually changing during the exhibition until it

became a central focus in the exhibition. (Byatt, 2005) We selected this case because it opened to the public another practice which is related to the guest book but goes beyond it by asking a specific question and placing the answers in the context of the exhibition.

In “Re-tracing the Past: exploring objects, stories, mysteries” (Ferris et al, 2004), an exhibition in the Hunt Museum, there was also the possibility for visitors to record their opinions through an interactive phone station. Other visitors to the exhibition could later listen to the recorded opinions.

We can also mention *Sound Trace* (Äänijälki), a project that aims to collect visitors’ comments in Ateneum Art Museum, The Finnish National Art Gallery, in Helsinki. It is part of the activities of the Systems of Representations Research Group. It is now in the prototype stage. It is an audio database that allows visitors to have a dialogue with other visitors who are not present at the same moment in the exhibition.

Sound Trace will be used for sharing hints about the experience of going to and being at an exhibition. The goal is to motivate visually impaired people to visit museums by providing a tool to gain information about museum spaces and exhibitions, with their ‘comments.’ (Salgado & Kellokoski, 2005)

Is there a tendency to allow visitors to participate more actively in making the content of the exhibition? These projects let visitors contribute to the exhibition in an open way. These contributions are playing a new role in making the content of the exhibition.

Conversational Map

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About ImaNote

Image Map Annotation Notebook is a tool that has evolved as a response to the needs of two research initiatives of the Systems of Representation group at the Media Lab; namely, the Map of Mexico 1550 and Exploring Carta Marina Cultural Heritage Forum. Among the key objectives of these projects has been the dissemination of cultural heritage artefacts via the use of digital technology. (<http://imanote.uiah.fi>)

Initially the design and functionality of the tool grew from the need to display a version of the digital facsimile of the Map of Mexico 1550 at different exhibition venues such as the Aztecs exhibition in London and Germany during the years 2002 to 2004. The facsimile used in these exhibitions was a high fidelity two-dimensional digital replica created from a subset of the data gathered for the project. It used 64 X 64 bit tiles to manage the some 800

megabytes of data involved and was displayed as a stand-alone interactive installation with a touch screen.

Between the years 2003 and 2004, the tool was re-designed and re-engineered for use in the display of Digital Carta Marina and of the Map of Mexico 1550 on the Web. This development was done as part of CIPHER, a research and development project in the area of cultural heritage funded by the European Union IST 5th framework. A class of 6th grade pupils and their teacher tested and used the tool in the creation of an exhibition on the history of cartography in Scandinavia (<http://cipher.uiah.fi/forum/events?lang=en>).

The interactive structure for both the standalone and Web versions was designed around the strategy of navigation of information space via multiple levels of magnification. This was implemented through an overview zoomable user interface. (Hornbøeck & Bederson et al., 2002) These interfaces have been defined as systems that employ “two or more distinct views to support the investigation of a single conceptual entity.” (Baldonado & Woodruff et al., 2000)

Our work at this point was also informed by developments of the on-line map collections of the American Memory project at the Library of Congress in Washington, D.C. (<http://memory.loc.gov/ammem/help/view.html#map>). A key difference, however, was in our choice to develop Open Source software that is freely available and does not require the use of special plugins in the Web browser software.

In the years 2004-2005, as a part of the project on the Narratives and Legends of the historic centre of Mexico City, the opportunity arose to further develop the tool so as to be able to display the video legends created by the students of the Interactive Design Program of Universidad Iberoamericana de Ciudad de México. As a result, the tool was further developed into ImaNote. (http://www.dis.uia.mx/conference/HTMs-PDFs/Lily_Diaz.htm)

Functionality of ImaNote now includes the ability to add notes that are saved on the server-side. These notes display, among other things, text messages, links to multimedia resources on the Web, and tags (or keywords). There is a search facility to locate notes according to tags entered, and it is possible to load multiple images. The artefact displayed can be a cartographic specimen as is the case with the cultural heritage objects mentioned earlier or the composite image of the contents of an exhibition as is the case with Conversational Map.

Interactive Installation

Conversational Map was a design intervention in Kunsthalle, during the Small Heaven, Young Artists Biennale in November 2005. Two of the four

days chosen for the display of the piece were exceptionally crowded days because the venue organised activities and workshops together with the artists involved in the exhibition.

The interactive installation consisted of a sign, a pile of leaflets, a computer (hidden), a keyboard, a mouse, a projector and a stand that held the keyboard and the mouse.

The stand was a white cube on the top of which were the keyboard, the mouse and leaflets, and it had a shelf that held the projector. This installation was placed in the hall, near the entrance and the ticket office. The sign and the leaflet described the installation, invited the visitors to leave comments, and informed that the information would be only used for research purposes. A link to Conversational Map was in the leaflet and on the Kunsthalle's pages. This link was available only during the four days in which the installation was at the exhibition.

We made a map of the exhibition, taking pictures of the pieces exhibited and placing them on top of the plan of the exhibition hall. Although the plan of the hall could not be perceived, the art pieces were put in their respective locations to the others.

This map could be navigated using ImaNote. Annotations to the map could be addressed to the whole exhibition and/or each of the pieces.

In some cases, instead of referring to one piece, the visitor/commenter wrote directly to the artist.

Each comment could contain a title, a core message, a link, a title for the link, tags, the author's name and the time and date of editing the message.

There was no initial material gathered in Conversational Map before it was placed in the exhibition. Although one of our aims was to elicit comments that could be relevant for other visitors, avoiding trivial content, there was no editing. Offensive material would have been edited.

Concept

This project is about collecting and provoking visitors' comments. In that sense, we can refer to the project as a kind of feedback board, where visitors can leave their comments. On the other hand, we cannot describe Conversational Map as only a feedback board, because the comments we wanted to collect were open. Most of the comments in a guest book of an exhibition address the question, "How do you like the exhibition?" The typical comment in a guest book is "I like it" or "I didn't like it". The practice of leaving open comments is fairly new in the context of museums and exhibition venues. ImaNote allows people to leave as a comment any piece of media that

is on a Web site and that can be accessed by a link. For example, a comment about a certain sculpture could be a piece of music or a video.

Conversational Map aims to absorb connections that visitors made or inspirational thoughts that visitors had during the visit to the exhibition. It tries to open the dialogue between visitors and pieces by making it visible. Visitors have something in mind and are inspired or provoked by the exhibition. Visitors left a piece of their own identity at the exhibition through the annotations.

Visitors can reply to the exhibition, to other visitors or to the artists. This is why Conversational Map is a social tool that contemplates the human necessity of commenting, criticising and recommending.

Our hypothesis is that involving visitors' comments in the message of the exhibition makes the visitors more committed to the experience. The audience is an active participant, leaving traces of their own knowledge. In that way the commitment to the contribution makes the whole visit a participative experience.

The institution shows it appreciates the input of visitors by giving them the possibility to show what they know, to summarise it, and to present it to other visitors. This is a learning experience. Meanwhile, we can also add the fact that the exhibition venue agreed to give the space for this installation, highlighting the importance of visitors' opinions to the staff.

The traces left by the visitors allow a dialogue among visitors not necessarily physically present at the same time. It could be an exchange of ideas between future, past and present visitors to museum or exhibition venues. Conversational Map combines exhibition information coming from experts, from family and friends of the artists, and from other visitors.

At the same time, this project allows gathering knowledge about the audience and even about the material content of the exhibition. An exhibition is a unique opportunity to collect data about the items exhibited. The role of the exhibition venue no longer consists of only disseminating its own knowledge. The exhibition could be presented as a part of a research process, with an option for gathering contributions from visitors. These contributions could be in the form of personal stories, questions, jokes, recommendations, music, etc. Conversational Map facilitates communication between the staff and its visitors. It allows the staff to acquire more personal insights from the visitors, not only demographic data. As in the case of Conversational Map in the Young Artist Biennale, it might also allow the artists to communicate with the public.

The exhibition venue can send a particular message to visitors using Conversational Map. This message can be an explicit question or an open one. The message of the institution (which is the message of an expert, in formal

language) is complemented by the message coming from the visitors and the artists.

Moreover, Conversational Map explores the hybrid space of museums, exhibition venues and Webs, focusing on the possibilities and needs that the 'after the visit' moment can offer.

Comments

More than 55 comments were gathered during the four-day period. Most of them were in Finnish but there were some in English, Spanish, and French. Some of these comments referred to other visitors' previous posted comments. Some of them referred to the exhibition as a whole, and most of them to specific pieces or artists.

Four of these comments contained a link to other Web pages. For example, there was a comment to one artist: "This reminds me the work of the American artist Melora Kuhn. She also makes animals (monsters and others) painted with people." Link: Melora Kuhn (<http://www.melorakuhn.com/>).

In some cases people added to the comment tags. These tags were mainly used for inserting connections that pieces awoke in visitors. For example the message "Great for children" that said: "This was by far my favourite piece, so simple and interactive. My daughter enjoyed it a lot." was given the tags: soft, yellow, uterus, mother. (The content of the comments were translated by the authors of this paper into English.)

People also left comments from home. Some of the comments people added from far away stations were very long and thoroughly considered. It seems that for some visitors, the home setting inspired them to write more than the exhibition setting did. Most of the people we talked to were pleased to have the possibility to leave messages from their house. Allowing and provoking a moment of reflection after the visit was an important part in our concept. We think that the limited number of days that the piece was online limited an important flow of comments from far-away stations.

We classified the comments into ones that evaluated the exhibition, ones that expressed visitor response to a certain piece or the whole exhibition, and ones that were poetic.

First, the messages that evaluated the exhibition included: "Versatile", "Enough innocent and funny works." We realised that this group's comments were not the guest book type ("Great, thank you."). Instead, most of them had been carefully thought out before being posted.

Second, the messages that gave visitors' personal responses: some of these were personal, such as: "Floating," "To my mind come the floating tanks that

were in fashion and that I always wanted to have (...)." Link: Floating tanks (<http://www.floataway.com/>).

Because the length of the comments was not restricted, people could tell stories such as: "Demolished house."

"This work reminds me of a house that was located on my way to school when I was a small child. It was a house to be torn down. The residents had left the building years ago and now it had been taken over by the kids of the neighbourhood. The house was a terrible mess: graffiti, old furniture, porn magazines, beer bottles... It was a bit scary but somehow a fascinating place. It had no owner and there were no rules. For me it was the one and only place where I could draw on the walls. I could spend hours after school drawing there. This artwork reminds me of those walls. Even the wall paper seems familiar..."

Last, messages that were poetic, inspired by the pieces exhibited, included: "The cave."

"In front and more forward, the light makes the way to the nothing. It looks like an analogy to the republic by Plato in between the reality and the illusion. The main image is from the men that see in the wall a cave only the shadows of the true objects that are moving outside the cave. When these men leave the cave and see the real objects, they can't convince to the ones that have never left the object reality."

Or the case of: "Rhizome." "They are like the implants that were born from the rhizome."

Testing the Piece

Salgado was in the exhibition for three days out of the four of the exhibition. The first two days she was actively involved in telling about the project and inviting participants to add comments. The third day she was doing passive observation and some interviews of artists and visitors.

Reactions towards the installation differed. Most of the visitors did not approach the stand unless they were invited, while a few left comments without our intervention.

Visitors coming alone, or accompanied by one person, left messages. Visitors coming in groups did not use Conversational Map. We believe that this happened because the setting contained only one computer. Future installations with more than one terminal could make people in groups eager to participate.

The installation might be perceived as cold. This could be improved by de-

signing a cosy corner where people could relax while thinking about what to comment.

The leaflet was an important component, as it provided people with a tangible reminder that the Web site was available for further writing, and it provided the Web address.

The feedback we got from the artists and from the staff was positive; they were glad to have the piece in the museum. Some of the artists came several times to see if they had received any comments from visitors. Some of the visitors did not see the advantages of having “the computer instead of the book”. Others thought it was a good idea, but the program was too difficult to use. Others left a message and gave the impression that they were comfortable with it.

Discussion

The richness and number of comments surprised us positively, although our presence in the exhibition inviting visitors to comment likely was a crucial factor in the collection of the content material. Analysis of this material is a part of our future agenda.

The content material was a collage of items coming from staff, artists in the exhibition and visitors. Contrary to our expectations, staff and the artists were not actively involved in leaving comments. One person from the staff felt that if she left a message for one artist, she had to leave comments for all of them. The artists were not well informed about this installation and its possibilities beforehand. They would have liked to have time to think about what to add in Conversational Map. During the weekend of workshops in the exhibition venue, they were busy with their own presentations. Some of them thought that they could put a link to their Web pages, but they finally did not do it. The reality of having the piece in the exhibition showed us that in order to convince artists and staff to record comments, the design of the communication system had to be re-thought.

The first comment connected to the piece is relevant because it influences how later visitors perceive that piece. In this case, we began with a blank page, but we wonder if artist and staff participation before the opening of the exhibition could have sparked the process. We also think that by encouraging the public to ask questions instead of leaving comments, a fluid dialogue with the artists and staff could be opened up. In this case, visitors could have the opportunity to read the answers online, without having to come back to the exhibition.

As mentioned above, Keskutelukartta is comprised of several layers. These layers are the installation; the software (ImaNote); the communication system with visitors, artists and staff; the context (Kunsthalle); and the exhibition (Young Artists Biennale). With this interactive installation we tried to promote a new practice that provokes more involvement from the participants. Careful design of the intervention in its different layers is vital, since they all are interrelated.

Our perspective is user-centred; we want to develop a product that is easy and pleasurable to use. We believe that beginning this project with some days of trial in the context of the Biennale gave us material for understanding future possibilities of Conversational Map for other exhibitions. These sorts of tests in real contexts with real people are meaningful steps in our design process.

Conclusion

As Ivan Karp (1992) points out, the tasks of museums involve questioning their own claims about identity and engaging in serious and systematic dialogue with other points of view. Is there a need for tools that allow multiple perspectives to appear in the museum or exhibition context? In this way not only staff and boards (unrepresentative of the multiplicity of our society) have the right to be heard, and a more pluralistic vision can be offered to visitors. Conversational Map is an example of such a tool.

There is a whole new field to discover by involving visitors in making the content of the visit. Multiple voices for the multiple artefacts in the exhibition can enrich the experience. We believe that these comments are worthwhile to collect because visitors to museums and exhibition venues are experts in their own fields, and the connection of their knowledge to the exhibition piece can enrich the experiences of other visitors. However, installations that involve visitors raise questions on the reliability of the sources inside the exhibition space and on the editing and censorship that can filter the material posted. There are some real challenges here, as well as real opportunities to gather information valuable for future visitors and future exhibitions on related topics. It also could be material for analysing discourses and practices inside museums.

Conversational Map is a project at the beginning of its development, but we believe that in the future, it can influence exhibition visits positively, giving a fresh touch to exhibition content. Once Conversational Map is implemented as a general practice, visitors and the institution will generate a new understanding of their respective roles.

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Co-designing Participatory Practices around a Design Museum Exhibition

Article 3

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Building a Participative Platform

The project *The Secret Life of Objects* started with the Design Museum's objective to develop services for their permanent exhibition on Finnish design. The starting point was a series of workshops with children that focused on certain design objects using new technology to interpret them. In collaboration with researchers and designers from the Media Lab of the University of Art and Design, the project was redefined as an exploration in how to generate conversations around design objects with different groups by using different media resources (both on-line and on-site).

The focus was on visitors' generated content, in the form of comments to be displayed in the museum gallery as both a way to complement the curator's texts and enrich the visitor's experience by means of inclusion. Comments were redefined to include stories, opinions, memories or feelings, not only in the form of written text, but also sounds or images. To communicate this to visitors we created workshops in which visitors made poems, music, drawings and pictures around the permanent exhibition objects and displayed these comment examples through an interactive map in a stand that linked the object to the comments and invited new contributions. The workshops and events provided the initial material (stories, ideas, memories, and new artefacts) for populating the map and for triggering further comments from casual visitors.

The interactive map of the exhibition could be reached on-line and in the exhibition space through an especially dedicated stand. Visitors could then join conversations opened up by participants in the workshops or events, either in the gallery itself or from a remote station, at home. In combination

with the interactive map we also set up a weblog to describe and communicate the evolution of the project (1).

The first workshop "Esa and the Objects" was designed for five-year-old children and took place both at a kindergarten and in the museum. This workshop consisted of five sessions about an object, guided by three facilitators from the museum. The children were invited to discuss the properties, uses and familiarity of these design objects and were given details of their historical context.

The second workshop "Sound of Objects" was designed for a group of teenagers eleven to twelve years old engaged in learning guitar. Students came to the museum and went through a guided tour in which six design objects were introduced and then they improvised music based on these objects.

The third workshop "Odes for Objects" was designed for two groups of teenagers taking classes in creative writing. After a guided tour focused on six design objects in the exhibition they wrote a short story based on one of them. To close the session each of the participants wrote an ode inspired by another design object.

The development of the project had two phases. In the first phase (October 2007-February 2008) the interactive map was deployed as part of a stand in the permanent collection exhibition of the Design Museum that has been hosted in the basement for the past six years. For this phase only a small selection of the objects in the exhibition was in the map. We followed the emergence of the conversations in a series of events (one family weekend, one event and one exhibition opening) from November 2007 to February 2008. All the time that the stand was open, there was someone inviting visitors to try it out and facilitating the use of the interactive map.

In the second phase (from March 2008 and still ongoing in May 2008) a possibility was offered to put up a temporary version of the permanent exhibition in the Design Museum which took the name of our project: The Secret Life of Objects, an Interactive Map of Finnish Design. For this phase we created a new map (in three languages, Finnish, Swedish and English), a new stand, improved the software, created new texts for the map and acquired a faster Internet connection. This time most of the 50 objects in the exhibition were also in the map (40 objects) as discussion points. During the time that the exhibition was open, from 18th of March to 1st of June, the stand showing the interactive map was in the gallery without any facilitator. During this phase, while casual visitors added comments to the map, we printed and added to the exhibition space some selected comments. These casual visitors' comments brought a pluralistic view based on the objects.

The stand also had two versions, one in the first phase of the project and another in the second, with the new exhibition. The second version of the stand consisted of a table, two chairs, a computer, a DVD, the fliers, a help sign (explaining the basics of how to use the map), a mouse, one computer screen and two large screens.

All the components of this project, the weblog, the interactive map, the stand, the exhibition, the workshops and their documentation methods involved, worked as pooled resources to make a *participatory platform* that motivated visitors to comment.

Visitors' Generated Content in an Interactive map

Museums are incorporating into their websites and in the galleries tools that motivate their visitors to create material based on or inspired by their collections. Currently there is a wide array of projects in which visitors' generated content is displayed in the exhibition space and in museums' websites exploring the possibilities of weblogs, podcasts and/or other web 2.0 resources (2) (3) (4).

In The Secret Life of Objects, visitors' generated content was gathered and displayed using available resources. For example, YouTube (<http://www.youtube.com/>) was used to show videos recorded in the workshops on-line, as part of a wider concept to make a museum WebTV. Open Source software ImaNote (5) allowed us to annotate and navigate the map with the layout of the exhibition. The functionality of ImaNote includes the ability to add and locate comments to an image (in this case the map of the exhibition). These comments display, among other things, text messages, links to multi-

media resources on the Web (such as the music done by guitar students in the workshop) and images. This software – developed as a research project – let us carry out the trial and explore the challenges that the museum context offered.

In this particular case a map was the interface to connect the objects in the exhibition with visitors' comments. Visitors could easily find the objects and the material based on them. Salgado and Díaz-Kommonen have tried this concept before in an Art Museum in Helsinki (6). Using the map we gathered and displayed in parallel visitors' and curators' comments.

Visitors' Experience

Although the concept of museum as a forum for discussion (7) is well known, the actual practice to actively comment on the exhibition is new to visitors. Therefore we need some time to install it as a popular practice in the museum visit. Visitors are not used to having this chance. In our case during the nearly three months the interactive map was on display we got around 100 comments.

There are many different kinds of comments. In some cases, visitors criticized or prized the objects or the designers, sent a personal message to the designer, told some memories or stories that relate them with the objects, such as how they used an object, posed questions, added material that relates to the object and gave the objects sound. For example: Otto, 6 years old, added the following comment to an art object called Spider: “fgyhfgecbvgfhdgffetrrdfvggbvvcg ffdssdsfsssssdvc cdbdcvdfgghghghghghh”. There are examples of comments that pose philosophical questions: “spiders give me the creeps but they also fascinate me... so strange that I fear them but at the same time I want to look at them closely... I guess fear and admiration go hand in hand?!” and “Once I had a dream where I saw the same spider and it was a surprise for me to see that somebody had the dream before and he decided made it for real. Everything is already invented then?”

After observing and interviewing visitors during the exhibition, researchers in our team realized that most of the visitors do not necessarily try to use the interactive map unless they are prompted. However most of those who used it had a positive impression of it. The visitors interviewed read the comments printed in the exhibition and enjoyed the presence of a personal and multifaceted view as part of the exhibition. Displaying visitors' responses to museum pieces was an exploration in validating their contribution and encouraging participation.

Conclusion

The alliance between the designers and researchers (coming from Media Lab) and the educational staff in the Museum gave an original and educative character to this project. The interactive map and the workshops shared one goal: to collect audio-visual material that tells stories about the objects. Events, workshops, media documentation and the interactive map at the museum were co-designed as a coherent whole in a multidisciplinary group. We believe that it was a good strategy to use the material coming from the workshop in order to trigger causal visitors' comments. The richness and creativity of the comments gathered are partly due to the triggers that activated them. As the comments included visitors' points of view, can we say that a new participative museum is being built?

Visitors' participation can be measured only by when visitors leave a comment or not, yet it might also include those aspects of engaging with the exhibition, as for example reading previous visitors' comments. The visitors we interviewed value the presence of the other visitors and enjoy reading comments. It seems that visitors contribute further when they see that other visitors' comments have been respected and displayed as part of the exhibition's message. Participation is an empowering element when related to everyday life objects as in a design museum, and it is one way in which visitors and museums' staff can open up a fluid dialogue that extends beyond the museum visit. In many museums there are activities, as for example workshops, where this conversation starts, but it closes when the workshop finishes. In the case of "The Secret Life of Objects" project in the Design Museum Helsinki, our aim is that the conversation continues after the visit.

Participatory practices offer huge possibilities to widen the social role of the museum and they can also give new political meaning to a traditional cultural institution (8). In future the interactive map of design objects by the Design Museum could serve as a platform for a variety of topics from designer and consumer ethics to local collaborative design projects. The aims and status of the interaction with audiences within the museum organization becomes the crucial question (and this is a current debate in the museum field). What will be the status of documents produced by visitors? How are they preserved and what is their value in the museum organization?

In the design-research process close collaboration with the education department of the Design Museum was natural because of the traditional role as link between the museum and audiences. How can the methods and tools enabling participatory practices be integrated in all museum practices from exhibition planning to marketing? Participative practices could be a tool that

motivates visitors to engage with the exhibition and a resource in the design process.

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The Aesthetic of Participative Design Pieces: Two Case Studies in Museums

Article 4

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Abstract

In the two cases discussed in this article, the participative pieces propose an exchange of comments between visitors (not necessarily at the exhibition space at the same time), artists, pieces exhibited, exhibition and museum. This exchange enriches the experience of the visit.

The two case studies are Conversational Map (*Keskustelukartta*), an installation in Kunsthalle (Taidehalli), Helsinki during an exhibition at the Young Art Biennale entitled Small Heaven, and Sound Trace (*Äänijälki*), a participatory audio guide at Ateneum Art Museum, Helsinki.

In this study, the concept of participative design pieces is a way to connect interactive pieces in a museum to the collaborative design process in which they were conceived. The term “participatory design” is used here to discuss on-line and on-site pieces that pool resources.

What makes these participative pieces aesthetically appealing? Participative pieces in this context are intended to be tools for accessibility as there is no aesthetic experience if the visitor cannot engage with the exhibited work. These participative design pieces are tools for inclusion that encourage visitors to actively generate content. To this end, these pieces should be understandable and accessible, coherent, multimodal and multilingual; they should draw on familiarity with something previously known and be attractive, challenging and surprising. They should allow for improvisation and contemplate the social interactions that take place in the exhibition space.

ACM Classification Keywords

H5.2. Information interfaces and presentation (e.g., HCI): User interfaces.

J5 Arts and Humanity

Author Keywords

Aesthetics, museums, participative design pieces, visitor-generated content, participation, and accessibility.

1. Introduction

This paper examines the qualities and considerations that allow participative designs to be perceived as aesthetically appealing. This analysis is based on two case studies: Sound Trace (*Äänijälki*) [Salgado and Kellokoski] and Conversational Map (*Keskustelukartta*) [Salgado and Díaz-Kommonen]. In these particular participative pieces understanding brings appreciation and, with it, interesting comments.

1.1 Sound Trace- Äänijälki

Sound Trace [Salgado and Kellokoski] is a participative guide that gathers and shares the comments of visitors at Ateneum Art Museum, The Finnish National Art Gallery, in Helsinki. Starting from the possibility that visually impaired people could touch certain pieces at the museum and then leave an audio comment about their tactile experience, *Sound Trace* allows visitors to listen to these comments. In practical terms, this is how it works: a person enters the museum and gets a portable PDA (personal digital assistant) through which s/he can listen to other visitors' comments and/or leave a comment about particular pieces in the exhibition. It is also possible to respond to the comments of earlier visitors. The visitor leaves audio traces either at the exhibition itself or on-line through a web portal. The web portal contains all the information geared towards the visually impaired, as well as the comments the visually impaired have left about the exhibition.

This project has two main goals. The first is to motivate visually impaired people to visit exhibitions in museums by providing a tool with informa-

tion about exhibitions as well as comments from visually impaired people. The second is to connect the worlds of the visually impaired and the sighted by providing a platform on which to exchange comments about the experience of being at the exhibition. Now in the prototype stage, the Sound Trace project is one of the activities of the Systems of Representations Research Group (<http://sysrep.uiah.fi>).

1.2 Conversational Map -Keskustelukartta

During four days in November, a participative design piece called “Conversational Map” was installed in Kunsthalle (an exhibition venue in Helsinki) [Salgado and Díaz-Kommonen].

Projected on the wall of the exhibition venue lobby, a visitor could see a map on which it was possible to add comments about one of the pieces exhibited or the whole exhibition. The exhibition venue staff and visitors wrote their comments at a stand in the venue or on their own computers from which they could access the map on-line. Comments left at the exhibition were available on-line, before or after the visit. Artists in the exhibition often navigated the map to look for new comments about their works. The map was only available during the four days that it was in the exhibition.

Conversational Map could be navigated with ImaNote, open-source software created by Media Lab (<http://imanote.uiah.fi/>) that facilitates adding comments. The form of these comments includes, among other things, text messages, links to multimedia resources on the Web, and tags (or keywords). The software provides a search facility to locate comments according to tags entered, and it is possible to load multiple images. The artifact the software displays might be a cartographic specimen or the contents of an exhibition in the form of a map, as is the case here. ImaNote was created as a research tool for image annotation [Salgado and Díaz-Kommonen].

The participative design piece consisted of the application (software and content) and the stand (a sign, a pile of leaflets, a computer (hidden), a keyboard, a mouse, a projector and a stand that held the keyboard and the mouse).

I made a map of the exhibition by taking pictures of the artwork exhibited and placing them on top of the exhibition hall’s floor plan. Although the floor plan could not be perceived immediately, the placement of the artworks reflected their relative positions in the exhibition. The scale of the pieces was also respected.

The aim of the project was, on the one hand, to test the software’s ability to collect and display visitor-generated content and, on the other, to analyze the challenges to motivating participation in the exhibition context.

1.3 Characteristics of these participative designs

Participative design pieces necessarily frame the perception of an interaction. In both these cases, the concept and the trials were co-designed with the visitors and, perhaps as a result, these pieces are a means for carrying out activities that people do at exhibitions anyway, such as criticizing, making comments, joking and interpreting. These are not new practices, but participative design pieces provide a new way to share them. Through text and other media, these participative design pieces propose computer-mediated speech communication between mainly anonymous visitors who are not at the exhibition at the same time. Although most of the comments were signed, most of the visitors did not know each other.

In both cases (Sound Trace and Conversational Map) the aim was to collect comments from casual visitors, as well as artists involved with the exhibition and the staff, and to make this content part of the exhibition’s message. Visitor-generated comments were personal, rich material. They were open-ended because the content, format, length and number of comments were not predetermined. They provided a glimpse into visitors’ visions and opinions.

2. Engagement with Nature vs. Engagement with these Participative Designs

Joseph Kupfer is a Professor of Philosophy who has written about the aesthetics of nature, virtue and philosophy in film. In his article “Engaging Nature Aesthetically” [Kupfer] he describes how different people connect to their natural surroundings. He points out that “We look for the picturesque because our aesthetic approach has been filtered through pictures.” But he goes beyond this, analyzing the active intercourse with nature in terms of participations, risky circumstances, and smooth (“dance-like”) partnerships. He summarizes interaction with nature in categories of “action of being in, into, against or with nature.” His approach provided a starting point for considering what an aesthetic experience actually is. A number of Kupfer’s concepts – surprise vs. saturation, attraction, improvisation, body involvement, ending – raise some key questions about the aesthetic experience in participative design pieces.

First, a participative design must have a point of *attraction*, something that makes people want to explore it. This point might be the piece’s theme, lighting, or appearance; it could be the piece’s sound or the atmosphere sur-

rounding it. It could even be a person inviting the target population to try it out. In any case, people first must have the will to go to the exhibition and then to use a specific piece. In the case of a visit to an exhibition, the time available is limited and visitors have to choose between attractions. Both cases analyzed here involve art exhibition venues, and hence these visitors are seeking originals, the “real” artworks in the exhibition. Therefore, if it is to be used, the participative piece must be particularly attractive. Prominently displayed on the wall, the Conversational Map attracted visitors. In addition to the map itself, there was always a person at the stand in the exhibition inviting people to try it out; showing interest in the comments was decisive to the quantity and quality of the comments gathered. A person inviting others to interact with the piece is one of the most efficient means of encouraging participation.

Second, Kupfer affirms that in our relationships with nature we are directly bringing about the change and, with it, the aesthetic experience that we sense. He says, “There are specific aesthetics features created for us by our physical activity – our bodily involvement beyond the most typical visual panorama.” When we move in an environment, we experience it differently. In the case of these pieces, hands, eyes and mind are engaged in the moment of interaction. Persons interacting with these pieces feel frustration or satisfaction depending on if they are able to achieve their goals (navigating or adding a comment, for instance). In the case of Sound Trace, one visitor commented that for her it was important to leave something meaningful, and that was not easy [Salgado and Salmi]. Visitors’ intellectual involvement depends on the ability to participate in the general message of the exhibition and the responsibility that that entails. As visitors are not often asked to give opinions that are later included in the exhibition, most tried to come up with something worthwhile. This is evident in the rich comments we gathered and the interviews with visitors [Salgado and Kellokoski, Salgado and Díaz-Kommonen]. In both participative design pieces, visitors left in-depth reflections that indicated intellectual involvement with the artwork exhibited through the participative piece.

The attitude the persons bring to a situation influences the aesthetic perception. Kupfer says that the “real practical danger of an encounter with a mountain or a river heightens the excitement of the experience.” Likewise, the challenge of mastering a participative design increases some people’s enthusiasm. Visitors’ opinions are challenged by being displayed as part of the exhibition’s overall message and by dialoguing with other anonymous comments. An additional challenge entails the use of the software.

Third, Kupfer speaks of the *saturation* of experience. If people are having a new experience, they tend to perceive it as exciting. Indeed, the extent to which an experience is considered new or surprising informs how an experience is sensed. In both the experience of being in nature and the experience of interacting with a piece in an exhibition, originality matters. Previous expectations, interests and abilities model reactions to and perceptions of pieces. The likelihood of being surprised and mastering a tool is also related to the familiarity of similar settings. For example, if a person is used to making comments on weblogs, then leaving a message on a map-interface, as in the case of the Conversational Map, is not difficult. Indeed, the participative piece’s degree of novelty might be particular appealing to those familiar with related situations: the comments here are displayed on an image (a map of the exhibition), rather than listed as they are in most weblogs.

Fourth, Kupfer deals with the problem of *improvisation*. In his words “We improvise in acting with nature,” just as we improvise in interacting with these design pieces. Usually, visitors do not have a specific plan but follow their intuition. When we were testing Sound Trace with visually impaired people, we asked one visitor why she touched a particular button, and what she expected to happen when touching it. She replied that she was trying things out, seeing what she could find. Visitors began to have more specific ideas of how they could do certain things after first interacting with the design piece intuitively.

The originality of the visit is tied to in-situ improvisation or improvisation after the visit. Along these lines, Dewey states that aesthetic experience entails the interaction of an artistic product and a person. Such experience is not, therefore, necessarily the same or even similar for different persons on the same day. [Dewey, Page 344]. In navigating the participative designs, a person perceives challenges and experiences feelings of surprise, inspiration, frustration or satisfaction. These feelings have to be taken into consideration in terms of the specific time and context of the visit. Indeed, the same person experiences a visit differently at different times.

Finally, we come to the issue of *ending*. In the case of nature, the consumption of the experience is ongoing, as the interaction unfolds and tapers off gradually, says Kupfer. In the case of Conversational Map and Sound Trace, the possibility of accessing the application on-line gives the visitor a sense of continuity, not only in the use of the piece, but also in enjoying the exhibition. Commenting from remote stations on-line is a way to engage with the exhibition for longer and pay attention to the moment after the visit.

3. Accessibility of the concept and the content

3.1 Coherence

In these participative designs, beauty means pleasant interaction thanks to a coherent design. A sense of coherence in perceiving the whole is what makes a participative piece understandable and appealing.

Understanding the piece does not mean being able to use all the software's features, but rather being able to grasp its concept: mainly, this is a participative design piece that gathers and displays visitor-generated content. Only after grasping the concept of the piece will it be possible to understand its features. For example, in Conversational Map, the designs of the webpage, the leaflet, the sign inviting visitors to participate, and the stand at the exhibition were not conceived as a whole. Nonetheless, the graphic elements (sign and leaflet) were designed so that they would be understood as a part of the exhibition system; they used the same style and typography as the exhibition. Hence, the stand fit easily into the exhibition space. When visitors wanted to add messages from a remote station, however, they noticed that the design of the leaflet and the webpage were completely different, leading to confusion. Visitors might even think that they were not at the right website and hence not leave a message. I believe that the coherence of all the elements would facilitate the comprehension of these complex pieces.

In a parallel between the work of an artist and the work of a designer, Dewey states that the work of an artist is to develop an experience that is coherent in terms of perception but that constantly evolves [Dewey, Page 53]. The role of the designer is challenged in participative design pieces that entail constant growth and change as people add comments. Their designers, then, must attempt to maintain coherence and clarity. For example, in the case of Conversational Map, keeping comments easy to find became more and more challenging as they grew in number.

3.2 Familiarity

As stands at exhibitions are mostly used for giving information or providing tools for navigating the building, participative stands can be misinterpreted. The stand where visitors leave comments must be differentiated from other previous stands that visitors have used for other purposes. In the case of the stand in Conversational Map, the person at the stand clarified the purpose and goal of the artefact. If such a person is not at the exhibition, there must be a sign or an original stand design that manifests this difference.

Another factor is the ability to assess visitors' prior experience with similar technology. "Although the public is becoming increasing computer-savvy, it is important not to assume too much about what visitors know about computers and other media options" [Dierking and Falk, Page 65]. Computer literacy is crucial for them to approach these participative designs. Visitors familiar with computers had no problem adding comments. Indeed, one person commented that, as there was a keyboard it was easier for her to write, and so she left a long message.

On the other hand, there is always a threshold when computers mediate visitor participation. Perhaps more people would approach if the input were not mediated by technology, which demands attention and implies a learning process. For example, visitors could be asked to leave post-it notes in the exhibition rather than writing on a keyboard. Writing on a small piece of paper is a much more familiar experience than using a keyboard interface to interact with an exhibition. But other possibilities open up thanks to using computers: navigating the map with comments, supporting comments with links that connect to other resources on the Web, making material available both on-site and on-line, and avoiding the later work of digitalizing the material gathered. On the other hand, a post-it note frames visitors' participation limiting it to a short comment and making it look informal and improvised. In the map, the fact that comments are framed in a square, for as long as the visitor wants and available on the Internet and at the museum or exhibition venue, gives them a respectable character. I believe that when visitors feel their comments are respected, the quality of the contribution is higher.

3.3 Multimodality and multilingualism

In the Conversational Map, we gathered comments in four different languages, thus allowing certain minority groups to leave messages on the exhibition. Furthermore, as both pieces are based on language, the different vocabularies in use in the comments make them accessible. It is not only the curator's voice that explains the exhibition but visitors as well. A comment left by a young person could help someone of the same age to understand a given piece, for example. Regarding this, Fushimi [Fushimi et al] says "the vocabulary of the viewer allows visitors to connect to the work in a different way."

¹ <http://taik.fi/imanote/>

ImaNote¹, the software we have used in Conversational Map, makes it possible to add links to external resources on the Internet. This is key to addressing visitors' special needs and skills. For example, a visitor that has a musical background can leave a link to a piece of music that is inspired by or related

to the artwork. A musical comment makes the artwork easier to engage with by other visitors with similar backgrounds. Multimodality encourages the inclusion of diverse audiences, especially those who have not had a formal education in visual art.

3.4 Co-experiencing

Forlizzi and Battarbee [Forlizzi and Battarbee] introduced the term co-experience to analyze experiences that take place in social contexts. Their interest is in experiences influenced by the use of design products. Co-experience is relevant to this analysis because the exhibition venue is a public space shared by many persons at the same time. The person we go with and the casual encounter in the exhibition space affect the visit.

From my observations of Conversational Map, people visiting the exhibition alone or with only one other person were more willing to spend time adding comments or looking at other visitors’ comments. Those coming in large groups did not spend time on the participative piece. It might be that the need to comment, criticize and reflect is already satisfied when people visit in groups but not when people come alone. Another explanation is that the stand, with its single-user settings, did not accommodate groups; it could have been set up to accommodate multiple users as the software itself is a multi-user application. Both interpretations require further observation.

People who had approached the stand encouraged others to use it later. Several couples were discussing the comment to add and their discussion was framed by the possibility of adding contributions to the Conversational Map.

Participative design pieces affect the social context in which they are installed and vice versa. The time at the exhibition might be seen as time alone or time spent interacting with others. Is the exhibition crowded? Is the visitor in a hurry or waiting for someone? The co-experience of these participative designs affects people’s appreciation of them.

4. Conclusions

Participative design pieces can offer visitors a more pluralistic vision. As I. Karp [Karp, Page 31] points out, “The tasks of museums involve questioning their own claims about identity and engaging in serious and systematic dialogue with other points of view.” For example, museum visitors are not likely to take part in the curatorial process or in decisions involving exhibition

design. One way to open this dialogue is through participative pieces that make visitor-generated content part of the exhibition. Through these participative pieces, the objects in exhibitions are taken off their pedestals and become topics to be discussed. Visitor participation in the co-creation of an exhibition’s vision creates new engagement.

Sound Trace and Conversational Map are tools for understanding how participative designs can turn a museum visit into an engaging activity, connecting the physical exhibition with the virtual spaces around it. The way that these pieces address the issues of attraction, saturation, challenge, improvisation, coherence, familiarity, multimodality and multilingualism, and co-experience modify visitors’ engagement. Only by paying attention to accessibility in a designerly way can we motivate participation.

Shusterman adds that there is something more to the interpreter than the simple desire to understand and enjoy. “He must make his mark by creating his own interpretations which will influence others” [Shusterman, Page 88]. In these experiments, visitors’ intellectual involvement took the shape of valuable comments. Participative design pieces are aesthetically appealing only when they respond to our intellectual needs to understand and interpret, as well as be challenged and participate in the making of the general message of the exhibition. The visitor renews his or her interest via the aesthetic materials that the design piece has gathered. Personal, responsible and open-ended comments help make these design pieces aesthetical appealing.

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Using On-line Maps for Community-Generated Content in Museums

Article 5

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Abstract

In this paper, we address what mechanisms are at play when using on-line maps in a museum context to trigger and expand visitors' involvement with an exhibition and its content. Our analysis is based on a comparison of two case studies carried out at Media Lab Helsinki in close cooperation with two museums in Finland: one with Kiasma, the Museum of Contemporary Art in Helsinki, and the other with Design Museum Helsinki. Both made use of Open Source software (Urban Mediator and ImaNote) allowing users to leave comments in text or audio-visual format. These comments are visualized through the map components of the systems.

To gain maximum value from user participation, museums need to design a coherent network of participatory activities that include on-line tools.

Keywords: user-generated content, open source, participation, on-line maps, co-design

1. Community-Generated Content in the Museum

Motivating the creation of visitor-generated content in museums and galleries is a new tendency. In the context of museums, User-Generated Content (UGC) has also been referred to as visitor authored content (Simon, 2007), visitor response (McLean & Pollock, 2007) and visitor contributed content (Fisher et al., 2008). Wakkary has highlighted the importance of including the voice of scientists working in the museum because their localized knowledge offers another view of the artifacts displayed (Wakkary, 2005). Kevin Walker has also observed the benefit of a system that links “curatorial

and user-generated content” (Walker, 2008, pp 114). As design-researchers working outside the museum context, we have witnessed this transition towards UGC, specifically the role that new media and exhibition designers have in motivating collaborations within the museum community that lead to this sort of production.

We propose to use the term “community-generated content” instead, because it is one way to break open the visitors/staff dichotomy. Community-generated content is used here to refer to content produced by visitors, staff (including guards, guides, curators, educators, marketing specialists, cleaning personnel, or volunteers), as well as external researchers, artists or designers.

In a previous project, we used an on-line map as an interface where comments about the works in an exhibition could be gathered, and this proved successful. Visitors could identify the artwork that they wished to comment on and place their comment on the map (Salgado & Díaz-Kommonen, 2006). In this paper, we analyze two additional case studies where the museum community was able to annotate and comment using on-line maps. The first case involved the use of the Urban Mediator (UM) software in the context of an exhibition at Kiasma, the Museum of Contemporary Art in Helsinki. Urban Mediator offers the possibility to put comments on a city map, in this case the map of Helsinki. The second case entailed the use of the ImaNote software at the Design Museum in Helsinki. Through ImaNote, it is possible to comment on a compiled image made out of the objects planned to be in the exhibition.

2. Presentation of the Case Studies

The two case studies were developed at Media Lab Helsinki in cooperation with the two museums. Both bring into play the use of Open Source software. Both softwares, Urban Mediator (<http://mlab.taik.fi/urbanmediator/>) and ImaNote (<http://taik.fi/imanote/>), enable users to leave comments in text or audio-visual format related to the themes or the artifacts in the exhibition. These comments are visualized through the map components of the systems.

	ImaNote at Design Museum	Urban Mediator (UM) at Kiasma
Name of the exhibition	The Secret Life of Objects, An Interactive Map of Finnish Design	Fluid Street – Alone, Together
Exhibition description	A selection of objects from the Museum’s collections dating from 1874 to 2008. Along with the exhibition, a series of workshops related to it were held.	The exhibition featured works of art related to streets and their different roles. Along with the exhibition, a series of performances, events and interventions at the Museum and in the surrounding urban areas was planned, as was a series of themed walking tours in the city.
Exhibition time	3/18 – 6/1, 2008	5/9 – 9/21, 2008
Time on-site	The stand was at the exhibition space during the entire exhibition period.	5/9– ? (exact date unknown)
Time online	The map was on-line during the entire exhibition period.	The map was on-line during the time of the exhibition and is still available at http://um.uiah.fi/hel (Kiasma topics)
Focus of the comments	Objects in the exhibition	Traces of nature, graffiti and art in the city streets

Table 1: Comparison of ImaNote and Urban Mediator

The work was led by two different teams, each with a different research agenda. The proposed strategies for collaboration between design-researchers from Media Lab and the museum staff were also different in each case. Whereas ImaNote was designed with the museum context in mind, UM was not, and hence its use here was more experimental. Moreover, the time and commitment to the project varied in each case. The ImaNote project at the Design Museum lasted for several months (from October 2007 to June 2008) and demanded more time and dedication than the Urban Mediator project at Kiasma (see Table 1).

2.1 Urban Mediator in Kiasma

Regardless of the differences in agendas and strategies, we chose to approach these two cases jointly in this paper precisely because of the important concerns they bring out with regard to designing digitally mediated participation in museums.

Urban Mediator was developed by the Arki research group as one of the activities carried out by the EU-funded ICING research project (Innovative Cities for the Next Generation, 2006-2008). Urban Mediator is a server-based software that provides a way for communities to mediate local location-based discussions, activities, and information. Urban Mediator uses a map-portrayal service as a means to represent location-based information and complements that information with a set of tools designed to allow users to process, share and organize it. Urban Mediator functions can also be embedded in Web sites using various Urban Mediator Web widgets. Since June 2008, UM has been available as an Open Source software package. Several Urban Mediators have been set up and are available on-line for public use, including UM Helsinki (<http://um.uiah.fi/hel>), which was used in the Kiasma case.

In developing UM, the goal was to experiment with solutions that would permit city administrations and citizens to share location-based information. The efforts were therefore focused on possibilities for city–citizen information sharing, and many of the study cases dealt with participatory projects defined in collaboration with planners from city administrations in Helsinki (Saad-Sulonen & Suzi, 2007; Botero & Saad-Sulonen, 2008; Saad-Sulonen & Botero, 2008).

The UM was in use in Spring 2008 in various projects engaging the general public (Saad-Sulonen & Botero, 2008). The Kiasma staff learned about UM and decided to see whether it could be used as a tool for public intervention in the upcoming exhibition Fluid Street. Along with the art exhibited at the Museum, they were going to organize a series of walks in the city, inviting the

public to take part in documenting various aspects of the city, such as art and artistic expression in the streets, and nature in the city. These walks were to be led by artists or experts, and the idea was for participants to document (with digital photos) or take notes and then place these on the map of Helsinki, available via UM, on a computer set up for that purpose in Kiasma. Moreover, anyone could also use UM on-line. For the UM designers, this case was interesting as it made it possible to test UM in a different context from urban planning, this time in the context of public participation in museums.

In order to introduce the Urban Mediator software as a tool for this project, a co-design session was organized for the designers and some of the museum staff. Paper and pen prototypes of the software were used to explore the key features and the customizable elements. Since the Kiasma Web master was at that session, it was easy to decide how the Urban Mediator Web widgets would be included on the Kiasma Web site, enabling the site's visitors to interact directly with the Urban Mediator topic created for the exhibition. Except for two short meetings and e-mail exchanges, after that initial session there was not much more collaboration between the Mlab and Kiasma teams.

This project did not elicit many contributions from museum visitors, tour participants or Web site visitors. The main reason might have been the lack of active collaborations in designing ways for inviting people to contribute. The reasons for this limited success will be further discussed in the following sections.

2.2 *ImaNote in the Design Museum*

The System of Representation Research Group (<http://sysrep.uiah.fi>) has been working on the development of ImaNote, an image map notebook annotation tool (<http://imanote.uiah.fi>). As a type of social software, ImaNote is a Web-based multi-user tool that allows users to display a high-resolution image or a collection of images on-line and add annotations and links to those images. It is possible to make annotations related to a certain point or area in the image. Using RSS (Really Simple Syndication), users can keep track of the annotations added to the image or make links to share the image with others. ImaNote is an Open Source and Free Software released under the GNU General Public Licence (GPL). It is a Zope product, written in Python. Zope (<http://www.zope.org>) and ImaNote run on almost all operating systems.

ImaNote was initially created to share cultural heritage content connected to two cartographic specimens: Carta Marina, and Map of Mexico 1550. Its development was a collaborative effort involving the Systems of Representation and the Learning Environments research groups of the Media Lab at the University of Art and Design, Helsinki.

“The Secret Life of Objects” was the name of the project in which ImaNote was used in the Design Museum to gather user-generated content. In 2005, the first trial in which ImaNote was implemented according to the same logic took place in Kunsthalle, Helsinki (Salgado & Díaz-Kommonen, 2006).

In the context of this project, the Design Museum in Helsinki offered two events and four workshops to the public. Additionally, through one seminar and several meetings the Museum staff and the Media Lab team framed and developed the project. Initially, the interactive map was presented and tested at a stand in the exhibition of the Museum’s permanent collection, which has been housed in the basement showroom for the past six years.

The material collected during these initial experiments served as the basis for engaging the Museum’s staff. The initiative to develop an exhibition in which an interactive map of comments played a principal role came from the staff. Indeed, the new exhibition took part of its name from our project: “The Secret Life of Objects, an Interactive Map of Finnish Design.”

A stand displaying the map was part of the exhibition that featured the Museum’s permanent collection (now out of the basement) held from March 18th to June 1st, 2008. For the opening, the map was furnished with prepared materials (videos, pictures, music, poems, historical information, etc.) collected at workshops and over the course of the weekend when a prototype was tested. Co-designing this exhibition and the prior workshops with the Museum’s education team provided a means to develop this prepared material and, thus, to influence the digital comments left by casual visitors (Salgado et al., 2008). Nobody encouraged visitors’ participation during the exhibition, and the exhibition itself was not supervised. Nonetheless, around one hundred comments were collected through the stand. Most of these comments were printed during the course of the exhibition and displayed near the objects they discussed.

Staff members, including guards and guides, left comments on the map and used it as part of the exhibition’s guided tours. As a way to enrich the discussion, we also tried to include comments by external designers whose pieces were on exhibition in the Design Museum even when these designers were not part of the Museum’s staff.

3. Mapping Multiple Design Options: Formats, Devices and Artistic Expressions

The content in these pieces are both the maps and the added digital comments. We use the term “digital comments” to refer to the audiovisual or

		ImaNote at Design Museum	Urban mediator at Kiasma
User research	Explorations	A prototype was tested in the permanent exhibition during one weekend and two events at the Museum. 15 days of observation at the Museum during the course of the exhibition itself.	No user research done in the context of the Museum
	Workshops and seminar	3 workshops and one seminar held in collaboration with the Museum staff at which we collected material for the map	One co-design workshop with the Museum staff
	Interviews	27 interviews with visitors and Museum staff	No interviews
Collaborations	Team in Mlab	1 student + 2 researchers + technical support and expert advisor	1 researcher + 1 software developer + 1 interface designer + 1 student assistant
	Team at the Museum	1 lecturer + 2 workshop guides	1 head of education and 1 museum lecturer (both from the Museum's education department) + 1 webmaster (+ 3 tour guides)

Table 2: Comparison, part 2.

textual material left on the map created in relation to the exhibition's materials before, during or after the visit. These comments deal with different museum practices and are displayed via an array of devices; in some cases, they themselves constitute creative expressions.

In some cases visitors were invited to contribute their personal objects. Examples of other projects that have used similar techniques are People's Show (2003) (<http://www.victoriagal.org.uk/index.cfm?UUID=2C53FAD3-9C8D-44AC-A3C13A18423CB49B>) and World Beach Project (ongoing) (http://www.vam.ac.uk/collections/textiles/lawty/world_beach/map_gallery/index.php) at The Victoria and Albert Museum, England; Live your life at Helina Rautavaara Museum (2008) (<http://www.helinamuseo.fi/#>), and the People's Portrait Project in the Art Gallery of Ontario, Canada (McIntyre, et al., 2008).

Digital comments as part of an exhibition experience take the form of audio (Ferris et al., 2004; Samis, 2008), video (Bernstein, 2008), text (Von Appen et al., 2006; Fushimi, 2006; Salgado et al., 2008), voting systems (McLean & Pollock, 2007), and photographs with audio (Fisher et al., 2008; Walker, 2008). Visitors could access/leave these comments on the gallery through stands, PDAs, iPods, mobile phones or embedded technology.

In the cases we describe in this paper, visitors could leave and access the comments from a stand at the exhibition or on-line. In the project at the Design Museum, text comments left on the map by the Museum community were printed and displayed throughout the exhibition. Visitors were allowed to leave open comments related to the exhibitions in question, and there were no limitations regarding the length of comments. We propose that there is a qualitative difference between this type of comment and other text-based interventions such as tagging and voting.

Visitor-created content can have a creative quality. For example, in The Art of Storytelling exhibition at the Delaware Art Museum, visitors personally engaged with the artworks through their own narratives (Fisher et al., 2008). Creative comments involving emotion, poetry, memory and bodily sensations were also collected in relation to the exhibition Take Your Time: Olafur Eliasson, at SFMOMA (Samis, 2008). In the case of our project at the Design Museum, visitors created not only comments in the form of text (poetry, opinion, and short story) but also improvisational music based on the objects in the exhibition. Our strategy geared towards eventual visitors was to use comments that had been previously created at the workshops. Such comments included improvisational music and poetry, and they served to trigger new digital comments from visitors (Salgado et al., 2008).

4. Navigating Community-Generated Content

The use of on-line maps for gathering and displaying rich media information is a concrete possibility in the context of museums; these maps offer a means to display both visitor and staff comments non-linearly. This non-linear navigation allows multiple access points for browsing the content and, thus, enhances the interplay between parallel dialogues and perspectives related to the exhibition content. Both Urban Mediator and ImaNote permit this type of navigation.

At the Design Museum the objects were points for discussion; visitors placed their comments and, with them, a rectangle or square on the map. Thus, the conversation had many threads, all based on the objects exhibited. At Kiasma, participants in the walking tours or on-line visitors needed to create the object under discussion, for example by taking a picture or commenting on a location. The participants had two themes to choose from, 'nature traces' and 'art and graffiti,' which were also the themes of the two series of walks.

The non-linearity of the discussion – as opposed to, for example, a weblog, where comments appear chronologically one after the other – allows for random exploration without clear hierarchies, and this was precisely what we wanted. In keeping with the multiplicity of voices and art/design works exhibited, this tool allowed us to open several discussion threads at the same time. In our opinion, the map as interface provides a democratic forum for displaying community-generated content. Museum staff and visitors' comments were displayed in parallel. Nevertheless, in the case of the Design Museum, we formulated a distinction between comments by creating an image with several places to locate comments. This made it possible to identify, for example, comments made by the staff about the design history of the objects displayed and comments collected during workshops.

Comments generated over the course of the exhibit opened up the delicate question of ownership. Who preserves and has the right to use the digital comments collected during the exhibition? In these particular cases, the comments are housed at the Media Lab servers, and the museum has not made any attempt to acquire a copy or to save them as digital documentation. Should this be interpreted as a lack of interest in community-generated content related to the exhibition?

At our stand at the Design Museum, we put up a sign stating that the exhibition was part of a research project and the material gathered was going to be used towards that research. Nobody contacted us to ask for further details about this, however. We asked for special permission when publishing pictures of participants in the workshops. Generally, though, it seems that

people are eager to contribute their opinions and feelings and are not overly concerned with how their contribution will later be used.

Many members of the museum staff left personal comments on the interactive map, but – with the exception of one guide – they did not identify themselves. Although most of the comments were personal stories, they were not signed by their authors. This seems to suggest that, in this context, authorship is not a relevant issue. In the future, if participatory practices such as those described here are implemented in every exhibition and the number of contributions increases, the issue of authorship could become important to the community.

In the case of Kiasma, the Museum staff and designer provided the first pictures and comments as a way to populate the themed topics on Urban Mediator. Some of the Museum staff used their full names, others only their initials. However, the initial number of contributions was not large, and no one took the role of "owner" or "guardian" of the collections of information; therefore, there was no one actively encouraging others to contribute.

Furthermore, the experts who guided the walks were not deeply involved with this project either. They were quickly shown how to use the software, but they did not end up providing material to populate the UM topics related to the walks they were leading.

5. "Don't Leave Me Alone!" Said the Software

While in this article we concentrate on the possibilities offered by these two annotation tools for displaying community-generated content, we also believe that in the museum context a key issue is not only how to design friendly software, but also how to integrate it into the exhibition design, the Website, and the museum's practices. Only by conceiving these elements as part of a single ecology is it possible to effect design geared towards the holistic visit experience.

One of the topics we highlight is the need for dialogue between the on-site and on-line components of the exhibition. The on-site experience, that is, the experience within the physical context of the museum, can introduce museum visitors to the on-line extension of an exhibition. As well, the on-line experience can attract on-line visitors to the galleries.

5.1 Integration with exhibition design

In user studies conducted at the Design Museum, we realized that the stand was mainly understood as a point of information. Its participative and inno-

vative characteristics went largely unnoticed because desktop configurations are widely used at information points in museums. Therefore, we printed an oversize sign clearly stating the use of the stand: "Interactive map. Find videos, music, opinions. Leave your comment." Although this led to a certain increase in participation, it is clear that in order to better communicate the participative characteristics of the stand, the design needs to emphasize its participative qualities.

Other communication materials at the exhibition were flyers, a letter, a booklet, visitors' comments, and a sign with the credits for the exhibition participants. Flyers gave the visitors information about the project, the URL of the Web log, and a reminder to visit the map on-line after the visit. Signed by the objects, the letter asked visitors to leave stories, memories and opinions that connected them with the objects in the exhibition. The staff wrote the booklet explaining the objects at the exhibition. Visitors' comments were printed and placed throughout the Museum, near the exhibited objects. Nonetheless, the small number of comments left during the first month of the exhibition made it clear that the exhibition concept was not properly perceived. When we printed most of the comments collected, their presence was perceived and, in many cases, appreciated.

Integration with the exhibition design was less successful at Kiasma. The exhibition, the walk tours and the on-line interaction possibilities had not been sufficiently interwoven. The exhibition was large (it included all the Museum premises' floors). The tours were simply an extra activity offered by the Museum for those interested in participating, and the on-line map was seen as an extension of the tours. The initial idea of the head of the Museum's education department was that, after each tour, the participants would add their impressions or documentations to the on-line map. The museum had also placed a large paper map on a wall where people could place sticky notes with comments. There was no clear connection between the paper map and the on-line map; indeed, the map of the city shown in each was different (the on-line map was the official map from the City of Helsinki, the one on the wall a stylized version of another map). Both the large paper map and the computer stand were in the same space, but there was no visual connection between them nor any written explanation indicating that they served a common purpose. It was easier for visitors and tour participants to write comments on the sticky notes and paste them on the wall map than to use the on-line map. Nonetheless, many of the messages written on the sticky notes had no relation whatsoever with the theme of the exhibition or the mapping exercise. Moreover, the setting of the computer stand was not inviting, and there were no explanatory texts or diagrams next to it except a sign saying, "Report your observations from the walk tours – <http://um.uiah.fi/hel> (Urban Mediator Helsinki)".

5.2 Integration with the museum Web site

Though some members of the staff can add minor changes, the Design Museum outsources its Web site design. During the time of the exhibition, it was possible to access the interactive map through a link from their homepage.

The visibility of the link was an issue since an on-line visitor would need to scroll the page to get to it. Although we do not have direct evidence, we believe that most of the visitors trying to reach the map were first visitors to the exhibition. We believe that better integration with the Web site, not only in terms of the link, would have enhanced the collaboration between on-line and on-site resources.

One of the main features of Urban Mediator is the possibility to create Web widgets that can be embedded into any Web site, making it possible for users to use the tool's functions directly from the Web site. As Kiasma has only one Web master to edit its Web site and to embed the widgets as needed, and because this person was on sick leave at that time, the Web pages were never finished. Some required widgets were left missing from the Kiasma pages, and others were not placed on the site in a clear fashion. It was therefore difficult to understand how the widgets should be used. Moreover, instructions had not been added to pages. Finally, because the pages were not ready, they could not be shown on the computer located in Kiasma. The page showing on the computer screen was, therefore, the homepage of UM Helsinki, making it more difficult for the visitors to understand what to do (this main page displays other topics concerning UM Helsinki, such as a traffic safety public participation project). While the widget idea has been successfully tested in other cases (Botero & Saad-Sulonen, 2008; Saad-Sulonen & Botero, 2008), it requires the full collaboration of those responsible for a museum Web site.

5.3 Integration with museum's practices

With the software used in these projects, it is possible to add links to external resources and to browse for images to add to a comment. We encouraged visitors to leave comments in an array of formats, not only text but also audiovisual data.

In the case of the Design Museum, we used the audiovisual material created as part of the project to encourage creative audiovisual comments. Since the Museum guides collaborated so fully with the project, they explained the possibilities for contributions on-line and on-site in their guided tours. These guides were part of our project from the very beginning; they conducted workshops at the Museum and added comments to the map, encouraging visitors to do the same. Since working at a small museum often entails

performing multiple tasks, the guides also worked at the Museum's information desk and as guards. Guides communicated the possibilities of the participative piece to teachers who came with their students, for example, or to casual visitors to the museum. This type of collaboration with different members of the staff is crucial to external researchers who often have little direct contact with everyday visitors.

In the case of Kiasma, the designers made little effort to involve the 'ground staff' such as guides and guards. This could have been important because they are the ones that can, during their rounds, pass by the space where the computer is located and offer assistance. Moreover, the collaboration between the designers and the experts invited to lead the walks in the city was not fully developed. There was no clear strategy decided on how participants in the walks should be guided to contribute to the UM map, even though the walks did end in the space where the computer was situated. As a result, participants in the walks were not active in providing what should have constituted the base material on UM, which in turn, might have triggered more interest from Web site visitors and prompted them to contribute.

We believe that integrating community-generated content projects with other museum practices such as publications and marketing campaigns would also benefit participation.

Conclusions

It is not enough to present a tool and place it in the museum space. Particularly in the case of Kiasma, the shortcomings of the use of UM point to the need for a holistic approach to designing participation in museums.

Our strategies/recommendations for engaging the museum community in commenting on exhibitions and using on-line maps stress the need for:

- Integration of resources and practices: pooling digital and analog methods
- Time and dedication for including museum staff members and external contributors
- Special invitations for groups of key contributors
- Prepared materials for triggering creative digital comments.

On the basis of these experiences, we suggest the need to closely examine the strategies used to motivate participation on the part of visitors, staff and external collaborators. Adequate strategies are key to making these projects

into real participative experiences. In this paper, we have discussed lessons learned from both unsuccessful approaches and more successful ones. Long-term collaboration could benefit the mutual understanding of all the actors involved in the museum ecology: visitors, external researchers and museum staff. Finally, we highlight the need to plan a coherent network of participatory activities, one that integrates on-line tools into the holistic museum experience.

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Re-Thinking an Annotation Tool for Museum Community-Created Content

Article 6

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The key question of this paper is how to re-design a tool for deploying museum community content as a means to enhance the visit experience. During two exhibitions an annotation tool, ImaNote, was used to gather and share comments in the exhibition space. This user-centred study of ImaNote gives us the opportunity to understand the challenges and possibilities that map annotation tools can have for the museum community in the specific context of an exhibition.

Along with developing an instance of ImaNote that would be easier for visitors to use, we created two “maps”, as we called the compiled images based on the layout of the exhibition spaces. These maps worked as an interface between visitors, staff, designers and artists, and the displayed objects. The design of these images was developed according to the possibilities of the instance of ImaNote with which we were working.

User studies performed at the museum reaffirm that the concept of the map as interface was useful; these studies also raised other issues (questions related to the software, the maps and the installation at the museum or exhibition venue) that constitute the core material of this paper.

Although this article emphasises identifying opportunities for the development of software, in the context of the museum many other issues influence the use and perception of software. In this study, the concept of the ecology of participation is a way to speak of software, installation and the exhibitions’ maps in their relation to the collaborative design process within the museum community in which they were conceived. We aim to design user-centred software that can motivate visitors and staff participation while acknowledging that ImaNote is only one piece of the ecology of participation.

1. Introduction

The Systems of Representations Research Group (<http://sysrep.uiah.fi>) is undertaking a project related to the design and development of an annotation tool: ImaNote (<http://imanote.uiah.fi>). In 2005, Salgado proposed that the tool could be used to collect and display visitor-created content in museums. The first trial, “Conversational Map”, made it possible to test the hypothesis that visitors’ content could be shared in the gallery and online to enrich the visit experience and to compile information about the changes that the software required in order to be used to share visitors’ comments at museums. The experience proved that the map was a meaningful interface by which to comment on the works in an exhibition (Salgado, M. and Díaz-Kommonen, L. 2006). The concept of a digital board with a map tool as an interface, such as ImaNote, was further developed in the framework of co-design practices (Salgado et al., 2008). Through these practices, we understood that other members of the museum community such as artists, designers and external researchers have rich material about a given exhibition and, therefore, should be encouraged to add to this board. Kevin Walker has also observed the benefit of a system that links “curatorial and user-generated content” (Walker, K. 2008, p. 114) like these maps, which serve as an interface between the objects, the visitors and the staff.

There were many reasons for choosing ImaNote. First it was being designed by our research group; therefore it was possible to contribute to its development. The second reason for choosing ImaNote was that it is flexible in

terms of changing pictures (personalised images can be uploaded). The third reason was that changing images does not provoke losing annotations.

1.1 The Tool

ImaNote (Image and Map Annotation Notebook) is a web-based multi-user tool that allows users to display a high-resolution image or a collection of images online and add annotations and links to them (Díaz, L., Timonen, A. and Reunanen, M. Forthcoming). It is possible to write annotations related to a certain point or area in the image. Using RSS (Really Simple Syndication), users can keep track of the annotations added to the image or make links to share the image with others.

ImaNote is an Open Source and Free Software released under the GNU General Public Licence (GPL) (Raïke et al., 2008). It is a Zope product, written in Python. Zope¹ and ImaNote run on almost all operating systems.

¹ www.zope.org

ImaNote was initially created to share cultural heritage content connected to two cartographic specimens: Carta Marina and Map of Mexico 1550 (Salgado, M. and Díaz-Kommonen, L. 2006). Its development was a collaborative effort involving the Systems of Representation and the Learning Environments research groups of the Media Lab at the University of Art and Design Helsinki.

1.2. The Context: Two Projects in Two Museums in Helsinki

“Conversational Map” (Keskustelukartta) and “The Secret Life of Objects” (Esineiden Salatut Elämät) were two projects in which visitors’ comments were gathered and displayed in the museum exhibition and online through ImaNote. In both cases, Salgado designed a compiled image following the floor plan of the building and layout of the exhibition – that is, a map – that visitors could navigate and annotate. The map concept was chosen to identify and annotate the objects exhibited. The objects were points for discussion; visitors added their comments and, with them, a rectangle or square to the map. Thus, the conversation had many threads, all based on the objects exhibited.

The non-linearity of the discussion – in comparison with, for example, a weblog, where comments appear one after the other – allows for a random exploration without clear hierarchies, and this was precisely what was desired: the aim was to open several discussion threads at the same time through the multiplicity of visitors’ voices and about the art/design works exhibited. The objects under discussion could be video installations, sculptures, design pieces, paintings, drawings, etc.

“Conversational Map” was installed for four days in November 2005 as part of the “Young Artists’ Biennale: Small Heaven in Kunsthalle.” During those days, a number of Biennale-related events and workshops were held at the museum. The map was placed in the exhibition without comments previously added, and a design-researcher was there almost the whole time that the stand was open. The participative piece was presented as a digital guestbook where visitors could leave comments. The presence of the design researcher who told visitors about the project was key to encouraging participation. Forty-four comments were collected, all of them from casual visitors to the museum, except one from a museum staff member. (Salgado, M. and Díaz-Kommonen, L. 2006)

“The Secret Life of Objects, An Interactive Map of Finnish Design” was an exhibition at the Design Museum Helsinki. A stand displaying the map was part of this temporary exhibition (March 18th to June 1st, 2008) based on the museum’s permanent collection. At the opening, the map contained pre-prepared materials (videos, pictures, music, poems, text comments, etc) collected at workshops and over the course of a weekend when a prototype was tested. There were also texts by the museum’s education team that added historical context to the design objects. Co-designing this exhibition and the workshops with the museum’s education team was a means to develop this prepared material and to influence digital comments left by casual visitors (Salgado et al., 2008). Nobody encouraged the visitors to participate during the exhibition, and the stand itself was not supervised. Nonetheless, about one hundred comments were collected through the stand. These comments were printed during the course of the exhibition and displayed near the objects being discussed. Staff members, including guards and guides, also left comments on the participatory piece and used it as part of the exhibition’s guided tours. The comments gathered were of a wide variety in terms of the tone, content, and topics that they presented. This is an example of a comment left by a visitor in the interactive map near an art object, “Spider”, in the exhibition in Design Museum Helsinki.

“ Spiders horror.
Spiders give me the creeps but they also fascinate me... so strange that
I fear them but at the same time I want to look at them closely...
I guess fear and admiration go hand in hand?!

1.3 Participatory Content: Comments From The Museum Community

There are many ways to participate in a museum visit experience. In the case of these projects, the participation takes the form of a digital comment left

on the map through ImaNote. We decided to call these comments “museum community-generated content” because we wanted to emphasise that this content is created not only by visitors and museum staff in a broad sense, but also by designers, artists and external researchers (Salgado, M. Saad-Sulonen, J. and Díaz, L. 2009) In this paper we will call the comments gathered “community-created content” to emphasise their creative aspects.

Different strategies and media are used to encourage visitors’ participation in museums nowadays. The multimodality of visitors’ comments (drawings, poems, music, videos, short stories, etc.) shapes the content and the ways to share it in the gallery space and the Internet. Developers of the “Science Buzz” project at the Science Museum of Minnesota, (Von Appen, K. Kennedy, B. and Spadaccini, J. 2006) embodied the scientific person that answers visitors’ questions. Visitors could leave a comment or question on-site at the exhibition or online at a website. The scientist in question was no longer an anonymous respondent but a specific person with a personality.

The Brooklyn Museum in New York (Bernstein, S. 2008) has explored many alternatives; one that has been particularly successful was organising a video competition using YouTube as the forum. Visitors made and uploaded videos based on the content of their exhibitions.

Another related example is “The World Beach Project,” developed by the Victoria and Albert Museum in London. Here, visitors are invited to leave photographs of artwork they themselves have made with stones at the beach. To encourage participation, clear instructions about what materials to send are provided, and an artist curates the online exhibition. The exhibition is impressive both in terms of the variety and the quality of materials. The project also uses Google maps to navigate a map of the world so that visitors can choose the beach where their work belonged. Visitors’ voices in this case take the shape of photographs and comments about their own work, now virtually placed on different beaches around the world. (The project is online: http://www.vam.ac.uk/collections/textiles/lawty/world_beach/map_gallery/index.php Consulted on 31.01.09).

Currently, there is increasing discussion of the role of participatory content in the museum experience (Bernstein, S. 2008; Fisher M., Twist-Garritty, B. and Sastre, A. 2008; McLean, K. 2007; Samis, P. 2008; Salgado et al, 2008; Simon, N. 2007; Von Appen, Kennedy, B. and Spadaccini, J. 2006; Walker, 2008). Some museums are courageous enough to open up an exhibition’s overall message by giving a voice to other members of the community. In these museums, community participation in the form of digital comments is desired, encouraged and then displayed as part of the exhibition. Participation is something that can be designed and a new practice that challenges the roles within the community. This is why in our opinion it is worthy to observe.

2. Maps of Exhibitions

During this process we developed two maps as devices to collect visitors’, staff’s and external collaborators’ stories, opinions or/and questions related to the objects on display and to disseminate knowledge about the exhibited work. The images created were informed by the opportunity that the software offers and the framework for collaboration proposed by each project as developed in conjunction with the museum staff.

2.1 First Trial: *Conversational Map*

In the case of Conversational Map, the map was developed after the opening of the exhibition. The complete freedom to take pictures of the artworks, select them and document them in order to produce the map made production easier and quicker. In one day, the photographs were collected and selected. By the following day, the design of the compiled image based on the layout of the exhibition space had been completed as well, though without the collaboration of the exhibition designers. The gallery’s two-floor space was restricted to a two-dimensional image. All the pieces in the exhibition were part of the map. (Figure 2: The Map (Conversational Map)).

The position of the pieces on the map reflected the real space of the gallery. The fact that the exhibition included a good deal of video art installations posed a challenge to representation on a static image. The typography of the map image was the same as the typography of the exhibition.

The map resulting from the design was useful for visualising problems and developing the concept of a digital board of comments: it was simple to find a certain artwork upon which to comment and to identify the correspondence between a given artwork and set of comments. In some cases, it was difficult to understand where to place the comment. Sometimes there were many comments about a single piece and too many rectangles to allow the viewer to see the artwork underneath. Prior collaboration with the artists in the exhibition and with the museum staff on map content would have benefited the quality of the comments. As it was a first trial, we were not sure how the project should be introduced and, hence, did not propose such prior collaboration. Indeed, only when talking to artists and staff at the exhibition itself did the possibility of collaborating arise. At that moment, we encouraged artists to leave comments but they were too busy with the events at the museum.

2.2 Second Trial: The Secret Life of Objects

In the case of “The Secret Life of Objects, An Interactive Map of Finnish Design,” the map was designed as the exhibition was being developed. On the day of the opening, the two artifacts (exhibition and map) came together for the first time. During the prototype stage, designers on the team and the museum staff produced previous versions of the map that were tested on another exhibition at the museum that included some of the objects in this second exhibition. The development of the prototype was crucial to reaching a common understanding between the team members (people from Media Lab Helsinki and from the museum). There were a total of fifty objects in the exhibition and forty were on the map. The team choosing the objects for the exhibition and the map consisted of five persons from the museum staff including a lecturer, a curator, an architect, a workshop guide and the museum director. The criteria for choosing objects was how well they represented a certain moment in the history of Finnish design, the qualities of the museum’s collection, the particularity of Finnish design in terms of gender (Finland has had both men and women designers from the very beginning of the profession) and the multiplicity of designers’ working skills (Finnish designers have worked in industrial and artistic projects), as well as the materials and production process used.

The criteria for choosing the pictures for the map were the availability of permissions and copyrights, the quality of the picture and its ability to display features of the object not evident in the exhibition (for example, its storability or different colours). Different places were allocated on the map for rectangles (comments) coming from workshop participants (“Workshops”), from educators (“Design History”) and from casual visitors (this section did not have a title but contained prior comments from visitors, so it was easy to identify). The aim was to clarify where visitors’ comments on a certain object would be placed. A series of three maps with texts in three languages (one for each of the museum’s official languages) was proposed. Hence, visitors could navigate the map in Swedish, Finnish or English. The piece was immensely valuable thanks to the museum staff’s effort in terms of selecting objects and creating texts posted on the interactive map. The creation of the interactive map led to major debates and conversations between the project’s participants. In the final version, the interactive map showed simultaneously materials created by the museum’s staff, workshop participants and casual visitors. (Figure 3: The Map (The Secret Life of Objects)).

3. Developing ImaNote

The goal of the user studies conducted at the museum was to observe the interaction with the software and to analyse the museum community’s response to the concept of a digital board of comments. This section is written on the basis of observations made and interviews held over the course of four days in Kunsthalle and fifteen days in the Design Museum Helsinki. Videos, audio tracks, photos and notes related to the interviews and observations were collected and later analysed. In the case of Conversational Map in Kunsthalle, the researcher was at the stand working as a facilitator, helping visitors to login, introducing the project and observing the difficulties in its use. Several modifications to the use of ImaNote were implemented after these observations.

Some persons from the museum staff used ImaNote as a tool for long periods and, therefore, spent more time learning how to use it than a casual museum visitor would. Interviews with them were relevant to this study. Several features of ImaNote had to be simplified or disabled for museum visitors in order to highlight meaningful actions. The instance of ImaNote deployed at the Design Museum Helsinki had undergone several changes.

3.1 New Instance

Categories were re-named (“Image” was replaced by “Language” since that category was used to place the map in three languages). All the titles of the categories were translated into their respective languages. The titles for the “Language” button were “English”, “Svenska” (Swedish) and “Suomi” (Finnish).

The vocabulary was changed in order to be more accessible and coherent with the rest of the exhibition’s communication material. For example, the button “Annotate” was replaced by “Comment!”. “Icon” was replaced by “Image”. Similarly, “New Annotation Here” became “New Comment Here.”

In the previous instance, it was possible to resize squares. This action was perceived as difficult, and the resulting image was not clear because of the quantity of contributions and different sizes of the rectangles on the main map. In the new instance, the size of the squares was preset.

In the new instance, though casual visitors did not need to login to add or move a comment, they could not edit their own comments afterwards. It was, however, possible to add breaks within a sentence. In this instance, we also included a general help text written in three languages. We changed

the typography used for comments and titles to fit with the rest of the communication material in the exhibition and to be easier to read on a vertical screen.

When visitors did not login, leaving a comment was easier. In the first version, the form had the following items: “Title”, “Annotation text”, “URL”, “URL name”, “URL description”, “URL author”, “Tags”, “Icon”, “Visible for all” and “Publish to group”. In the second version, the form had only: “Title”, “Your comment”, “Address of your link”, “Name of your link” and “Image”.

3.2 Installation at the Design Museum Helsinki

The kiosk mode² for installing ImaNote at a museum must contemplate the possibility of visiting other URL addresses, allowing visitors to input data as well as ways to avoid upgrade notes coming from the browser and other software installed in the computer.

Because of different problems we decided to restrict the navigation to Firefox. The plasma screens used in the exhibition did not have VGA or DVI connectors, so analog video connectors had to be used. Due to this connection, the resolution was poor and, hence, long comments from the education staff, including links and pictures, were edited so that they could be displayed. This problem was noticed only two days before the exhibition opening, when the plasma screens were installed in the gallery. The aspect ratios of the two screens (computer and plasma screen) were different. The plasma screen was wide screen and the computer was 4:3. The iMac G5 had only clone mode for displaying, which made things difficult. Proper information about screen resolution and connections is crucial before installing the software in the gallery. A high-resolution display with a DVI or VGA connection is recommended.

The two-button mouse created problems as the right button opened the browser’s contextual menu which was not needed for the installation itself. If possible, it would be less confusing to install ImaNote with a one-button mouse, since ImaNote requires only one button.

In the Design Museum Helsinki, the pre-existing Internet connection was upgraded to achieve better performance, since the ImaNote server was situated in Media Lab. In order for the software to run optimally with the used map a dedicated connection to the internet is needed which is at least 2000 kbps in speed.

3.3 Observing and Interviewing in the Design Museum Helsinki

There was no selection criterion regarding which visitors to be interviewed, since there were not so many visitors at the time. Visitors who approached

² Kiosk mode is a software and user interface software designed for a kiosk or Internet kiosk. It locks down the application in order to protect the kiosk from others uses than desired.

the stand were interviewed, as were some who did not approach it but read the comments on the walls. The interviews took place mainly on weekdays. When there were many visitors, the ones that had engaged with the interactive map were prioritised. Most of the interviews were short, so as not to disturb visitors’ museum experience, and they were debriefed immediately after they had been documented in a diary. In most cases, the researcher explained that she was evaluating the exhibition and specifically the interactive map.

Straightforward, simple, casual questions were posed to open the conversation. When the visitors had not used the stand, the questions were: “Do you like the exhibition?” “What do you think of the wall texts?” “Who do you think has written them?” When they had used the interactive map, the questions were: “What could you do with the map?” “What do you think of it?” “Was it difficult to use?” After using the map, visitors were eager to talk about the experience. Of the visitors interviewed, twenty-nine were women and nineteen men.

3.4 Positive Experience at the Design Museum Helsinki

The team involved in the installation of the software at the museum consisted of three persons: a programmer who implemented the modifications to the previous version and assisted in the installation, a technical assistant who installed the software, and the project’s design-researcher. No major problems arose in the use and implementation of the tool, probably due to the fact that the group was already familiar with it from the Conversational Map project. It was a pleasant surprise to learn that ImaNote could be used to post visitors’ commenting for two and a half months without encountering major problems or needing maintenance work. We considered it positive to have the project’s weblog on a different server from the map. This meant that while the day servers were being updated at the University, the stand displayed the project’s weblog.

The museum’s education team, designers and some visitors appreciated the possibility of collecting and displaying the material from workshops as well as visitors’ comments and making them part of the exhibition’s message.

Visitors who had a positive experience with the tool described it as “intuitive,” “instinctive,” “simple,” and “easy.” In some cases, their positive experience was also quick: navigating, reading, visiting a link and walking away from the stand all in less than three minutes. In other cases, they spent more time reading comments and navigating the links. Overcoming mishaps was relatively easy, and visitors could get back to the map navigation when they

opened the form for leaving comments by mistake. Visitors were able to understand the overall logic of the maps and to navigate it and find material that captured their interest. They noticed a difference between comments from the museum staff and those from other casual visitors, though in most cases they could not explain what that difference consisted of. Visitors did not use the map for playing around. Only in two cases, when children used the tool, were irrelevant messages left. As visitors were not encouraged to search for an external link and add it to the comment, they did not do so. In Conversational Map, the facilitator encouraged visitors to add a link to support their comment, and they did. Only once did a visitor leave the map site to check his e-mail.

Visitors deemed real-time publication as important. Most of them checked to make sure their comment was on the map after they had left it. For some of the visitors interviewed, this was the first time that they had posted something on the Internet and they were pleasantly surprised by how easy it was and by the possibility of accessing their comment from home. Museum staff trusted that advertising and other undesired comments would be identified and deleted quickly, and there was no in-depth discussion about this problem. Only two advertising comments were posted during the two and a half months of the exhibition, and they were deleted (one was a link to a site that sells prohibited herbs and the other was a commercial added by a group of children in the interviewer's presence).

3.5 Identifying Opportunities: Corrections and Additions

Museum staff added the comments made by the education team to the category "Design History" and, along with the researcher, worked at the stand during the weekend the prototype was tested. This collaboration created dialogue and provided constructive criticism about the software.

Visitors who approached the stand and tried it out were most likely computer literate; otherwise, they would not have come near a computer in a space like a museum. Some visitors who did not approach the stand referred to the installation as "the computer," suggesting that the presence of a desktop computer was perceived as a threshold.

While implementing this tool, we realised the importance of being careful with language. For example, when we used "New Comment Here," it was not clear to visitors what they would find when they selected it: would it be a form for leaving a comment or a comment to read? Similarly, in the section entitled "The name for your link," some visitors left their own name.

Other issues are cause for further discussion. On the one hand, the fact that the software used text instead of "buttons" made it easier to modify the

categories, making the tool more flexible (one example is replacing "Images" with "Language"). On the other hand, the map created for "The Secret Life of Objects" exhibition integrated text and images of the exhibition's objects in order to clarify the source of the comments. Visitors confused these texts created with the text of the buttons and clicked on the text in the map, trying to find further information about it.

Visitors leaving a comment must be able to replace and move their own published comments. Some comments had been placed in the wrong location; they were clearly addressing one object but they were placed in the area dedicated to another. This happened because the visitor was not able to find his or her comment after writing it or, if they managed to find it, they could not move it.

Although generally speaking visitors perceived the tool as intuitive, there were some complaints about counterintuitive panning options. "You have to move your hand up when you really want to go down," one of the museum guides noticed. Visitors and staff did not use the search engine, but the researcher did. As this feature did not distract from normal navigation or the use of the tool, we suggest leaving it as potentially useful for the community.

4. Future Steps

In this section, we propose some modifications that would improve the software when it is used as an annotation tool for a museum community. After implementing the modifications suggested, it would be good to perform usability studies.

At the moment, in this instance, new comments are connected to previous comments which are seen in the back. Visitors could not easily find these prior comments after adding their own, and this created frustration. While the discussion does not need to be based on a specific prior comment, it should make reference to the area in which the comment is placed. In this way, the comments form a two-dimensional space for navigation, rather than a straight line.

There is one feature that serves to identify the place of a comment on the map: clicking on the title. For example, a visitor might search for a comment using the search engine and then, from its title, the visitor can find the comment and its position on the map. Some visitors confused the title with an external link. We recommend that external links be visually distinguished from links that identify comments on the map.

We should also explore ways to more efficiently communicate the possibilities that the software offers to users. For some visitors, it was difficult to identify what to do and how to do it. The computer might offer a quick guide to how to use ImaNote through, for example, a video screensaver that is interrupted the moment someone approaches the stand. One of the problems identified was that some visitors did not move the map but only navigated the available comments at the preset zoom level.

Prioritising comments with external links such as videos could be a strategy to attract teens, for example. This would make it clear to visitors that they can offer materials other than text. Young visitors became much more involved when they noticed the presence of multimedia resources. In only a few cases did visitors find the videos and music on the map; most went directly to the written comments as they constituted the bulk of the material.

It would be advisable to optimise and quicken performance because visitors to museums or exhibition venues often come from faraway regions and later access the tool from other countries. Another reason is because if visitors cannot see results quickly, they click everywhere, making the tool behave awkwardly. Museum staff has also reported disappointment related to performance: “It was too slow.” Speed could be increased by delegating more tasks from the server to the museum’s computer. Another issue is enhancing the tool’s ability to respond to quick and unexpected movements. When panning quickly, the map lags considerably.

4.1 New Features or Actions

New functions worth including are an archive of all the comments, even the ones that have been deleted, with the date in which they were deleted as well as the coordinates of their locations on the map. This way, researchers could track the comments’ movements. We also recommend including an analytic tool that tracks where visitors come from and where comments are left, how often and for how long they visit the page, etc. These materials could later be of use in audience research.

In the future, we would like to integrate a tool for online audiovisual editing that would make it possible to include other types of ad hoc comments made at the gallery into the map. Visitors could thereby add video or audio input as a way to enter audiovisual comments. In addition, the possibility of using handheld devices to add a digital comment to the map needs to be further explored.

Should the museum be interested in displaying the comments left in ImaNote at the exhibition, it would be beneficial to be able to select and print

some of these comments. Printing and screenshot could be integrated into ImaNote.

For the team involved in implementation at a museum’s gallery, it would be important to change some features from source code to a web interface (size of the comment, background, colour or printing sizes, etc.). For the manager of ImaNote, it would be valuable to be able to select and move several notes at one time. Screenshots in which several comments are visible would make presentations based on the map’s content easier.

Integration with other language dictionaries would also be useful (for example, the use of a language recognition system that could re-place a comment according to language). Visitors did not always realise that there were other languages available and placed their comment on the wrong map. Some settings might allow recognition in three predefined languages. In future trials with several languages, we would like to encourage visitors to translate other visitors’ comments. For example, the lower part of a comment might read: “Leave a comment here” or “Translate this comment.”

Another feature to add would be a register of visitors’ history viewing the artefact in order to facilitate navigation (marking as seen the comments that have already been seen, for example). At the moment, all casual museum visitors are seen as only one user, because we are not required to login. This new feature could be partly implemented by including time as a factor. Another issue is that visitors would also appreciate a positive feedback message after leaving their comment, for example, “You have successfully left a comment. Thank you.”

5. Ecology of Participation

Although in this article the emphasis is on identifying opportunities for the further development and use of ImaNote, in the museum context there are many other issues that might influence the practice itself. In this study, the concept of an ecology of participation is a way to understand the specific mechanisms at play in designing for participation in museum communities. The groups involved in an ecology of participation are the community, the interactive piece (which includes in these cases the software, the communication material in the gallery, the maps, the digital comments and the stand), the place and the practices (such as visiting, shopping, publishing, commenting, etc). For the ecology to come to life, all of the members of those groups need to work as an entity. The concept of ecology makes it possible to consider the design proc-

ess in relation to the resulting design, since ecology necessarily means something that is modified over time.

The term “ecology of participation” comes from the definition of information ecologies proposed by Nardi and O’Day (Nardi, B. and O’Day, V. 1999). We found this concept interesting because it implies diversity, evolution and a locality, yet it has mostly been used to analyse larger scale ecologies such as libraries, hospitals or schools. We proposed the use of the term “ecology of participation” because focus can be maintained on the constituent groups of an ecology that relate to the practice of making and publishing digital comments.

People in an ecology of participation can be described according to their role in the team (designer, educator, exhibition architect, etc) or according to their relation to the project in question. Of course, the two parameters are related: in designing for museum audience participation, educators would likely be more eager to explore this area than others whose job description has not historically included the relationship to and inclusion of the visitor. The more actors engaged in the ecology of participation, the richer and more varied the content material gathered.

After the experience of co-designing with the education team at the Design Museum Helsinki (Salgado et al., 2008), we recognised the importance of the staff as an active co-author of the design process. In order to create design geared towards visitors’ active participation, it was necessary to pay special attention to the time and spaces that facilitated the inclusion of the museum’s staff members, artists and designers. The development of a workshop that entailed the possibility of displaying the material created in the gallery as part of an exhibition was crucial to motivating the participation of casual visitors and staff members. For example, guides who conducted workshops in the museum were actively adding comments to the map and encouraging visitors to do so as well. Due to the performance of multiple tasks that working at a small museum often entails, the guides also worked at the museum’s information desk and as guards. These guides were part of the project from the beginning, and they enjoyed seeing that the results of their workshops were displayed in the exhibition space. Guides communicated the possibilities of the participative piece to teachers that came with their students, for example, or to casual visitors to the museum. This type of collaboration with different members of the staff is crucial to external researchers who often have little direct contact with everyday visitors. (Salgado, M. Saad-Sulonen, J. and Díaz, L. 2009)

6. Discussion

In both of the case studies analysed in this paper, there were comments that did not belong on any pre-defined place on the map, since contributions from visitor and staff cannot be anticipated beforehand. How could ImaNote be designed to include “out of place” contributions?

Comment management is key to making an installation visible at an exhibition and as part of a museum’s web resources. Our experience was positive, as visitors did not add much content that was not related to the exhibition. All the content related to the exhibition was displayed on the map.

We have identified some opportunities that relate to the settings in the museum. Communication strategies in the gallery could improve visitors’ engagement with the map. For example, attractive cards that give more information about the project and promote online use after the museum visit might work better than fliers. Friendly stands with cozy corners that are embedded smoothly in the space are a way to engage new visitors who might not be eager to approach computers. In the future, immersive technology will allow these explorations. Although we initially proposed an installation that would not involve a desktop computer configuration, the solution presented was due to the problems faced during the installation process.

Although neither ImaNote nor the stand was intentionally designed for children or group use, this ended up happening. Children eagerly approach new technology, and they bring adults with them. Children also dictated comments that adults typed into the map. Groups of different configurations and sizes approached the stand and discussed what to add to the map, or how to navigate it. Neither of the stands facilitated group work. Having only one keyboard to enter text or to access the computer did not encourage group exploration. This is unfortunate, especially considering that ImaNote can be used by many users at a time. Lehn, Heath and Hindmarsh have also suggested that social interaction should inform design as the museum visit is essentially a social activity (Lehn, D., Heath, C. and Hindmarsh, J. 2001). According to our observations, though these museums are not geared towards children, their presence should also be taken into consideration in designing the software, the stand and the content material. We believe that there is a valuable niche to explore through participatory pieces that facilitate intergenerational dialogue.

Based on the experience in these two cases, we recommend collaborating with the museum or staff in building the artifact, in these cases, the map. The image used to display the multiplicity of visitors’ voices should be the result of the range of voices that coexist at the museum. In our case,

the collaboration with guides, curators, the education team and guards was key to obtaining content material, inspiration and feedback. These projects proposed a choir of voices: the art/design objects, casual visitors, workshop participants, museum staff, designers/artists and researchers involved in the exhibition. Distinguishing these voices and giving each a role and “place” on the map was part of this work.

There is a limitation inherent to representing a three-dimensional exhibition on a two-dimensional map. It would be useful to assess the need for an annotation tool that would contemplate three-dimensional interfaces. We believe that exploration in two-dimensional maps could inform further research in 3D environments in order to gather and display museum community-created content.

In the early 70s, Wittlin identified the need for a change in the museum “from an emphasis on hardware to an emphasis on software.” (Wittlin, A. 1970) In our opinion, both have to be taken into account, as does the ecology of participation. User studies conducted on these two projects helped us to understand the participative pieces in terms of their situation and context, reconsidering the whole ecology. We aim to design software that motivates community participation while acknowledging that ImaNote is only one piece of that ecology. Therefore, in designing a tool for deploying community-created content it is necessary to focus on the whole ecology of participation, a concept that clarifies the scale and the relations of the groups involved. While trying to listen to and learn from the collaboration with visitors, staff, artists and designers, the question becomes how to design this ecology.

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