Generating experience from ordinary activity:
new technology and the museum experience

Dirk vom Lehn
King's College London

Contact
Department of Management
King's College London
Franklin-Wilkins Building
150 Stamford Street
London SE1 9NH
Tel. +44 20 78484314
Dirk.vom_lehn@kcl.ac.uk
http://www.vom-lehn.net

Generating aesthetic experiences from ordinary activity: new technology and the museum experience

'The mark of our time is its revulsion against

imposed patterns.' (McLuhan 2001: 6)

Introduction

Museums, galleries and science centers are experiential environments. They provide people with resources to have memorable experiences. These resources include works of art like paintings and sculptures as well as hands-on and computer-based interactives and highly advanced installations. It is largely assumed that these resources form the basis for the 'museum experience' (Falk and Dierking 1992). Research in this area often considers the museum experience as being a response to a prearranged setup of objects and information resources. It is designed to provide managers, curators and designers with information to enhance the effectiveness of exhibits in attracting and holding people's attention and in communicating to them. In recent years, this information has been used to inform the development and deployment of new technology designed to influence and enhance people's experience of exhibits and exhibitions.

Curiously maybe, museum marketing research often focuses its efforts on understanding the socio-demographic structure of the museum audience and on people's reported museum experience whilst ignoring 'the point of experience' (vom

Lehn 2006), that is the actual situation in which people encounter, examine and make sense of exhibits. This area of research has largely been left to the educational and learning sciences although it would seem that marketing can make substantial and conceptual contributions to the understanding of people's experience of exhibitions. Whilst people may visit museums to learn from exhibits they also come for many other reasons than to have learning experiences. With its interest in consumer behavior marketing research can provide research methods as well as conceptual distinctions derived from studies in retail settings and other areas to inform the design of museums and research on visitor behavior. Experiential marketing with its interest in the creation of memorable and extraordinary experiences could offer museum managers and designers insights from experiential shopping and entertainment environments. Yet, save for a few exceptions (Goulding 1999a), these avenues have rarely been explored.

This chapter attempts to link recent developments in visitor research, exhibition design and marketing research. It uses video-recordings of conduct and interaction in museums to explore how visitors orient to, use and make sense of exhibits and interpretation resources provided by museums. The analysis particularly focuses on how the experience of exhibits is produced in social interaction between visitors. It examines how people embed interpretation resources and systems like conventional text, Personal Digital Assistants, information kiosks and more advanced sensor-based systems in their interaction at exhibits. The data have been gathered in various museums in the United Kingdom.

Museum Visitors and Museum Experience

Marketing research has shown relatively little interest in people's experience of museums. Only fairly recently have arts and museum marketing emerged as distinct fields of research that investigate the relationship between cultural institutions like museums and their audience. Studies differentiate visitors and non-visitors by applying concepts like social structure and life-style (Kirchberg 1996, 1999; Slater 2007) and by investigating the relationship between museums and audiences with specialised interests like tennis and rock music (Kellett 2007; O'Reilly 2007). Marketing research, however, often stops at the museum door and rarely examines the experience of exhibits and exhibitions. The little research that is concerned with people's museum experience is largely based on interviews (Goulding 1999a, 2001) and neglects the study of visitors' action and interaction on the museum floor.

Studies of visitor behavior have largely been left to evaluators and museum consultants. These studies primarily measures people's behavioral and cognitive response to exhibits. They use quantitative measure or indices to assess the effectiveness of exhibits in attracting and holding people's attention and in communicating information to them (Shettel 1968, 2001; Serrell 1998). In recent years, visitor research has increasingly pointed to the importance of social interaction and talk for people's experience and understanding of exhibits. It suggests that people's learning from exhibits largely arises in and is 'scaffolded' by their interaction with others (Leinhardt, Crowley, and Knutson 2002; Paris 2002; Leinhardt and Knutson 2004). They also have begun to explore the impact of computer systems on people's experience of exhibitions. They argue that computer systems increase the 'attraction' and 'holding' power of exhibits and contribute to people's learning from museums (Shettel 1976; Screven 1976; Serrell 1992, 1998; Schulze 2001; Yalowitz

and Bronnenkant 2009). The focus on behavioral and cognitive aspects of the museum experience has informed experiments with the deployment of novel systems to enhance people's experience. One important example in this regard is the deployment of 'video-tracing' systems in science and art museums by Stevens and colleagues. The 'video-traces' are shown to visitors in a video-booth to encourage them to revisit and comment on their experience of the exhibit. The system has been quite successful not only in engaging people with exhibits but also in encouraging people to reflect on their experience of exhibits in interaction and discussion with others (Stevens and Hall 1997; Stevens and Toro-Martell 2003).

Over the past few years, a small body of video-based ethnographies has arisen that explores people's conduct and interaction in museums. These studies investigate how social interaction influences the ways in which people use and make sense of exhibits and interpretation resources. Whilst some of these studies are primarily interested in the content of visitors' talk at exhibits (Leinhardt et al. 2002; Paris 2002; Leinhardt and Knutson 2004) a growing body of research explores how people examine exhibits like works of art, hands on interactives or funny mirrors to create experiences for each other (Katz 1996; Hemmings et al. 1997; Heath and vom Lehn 2004; vom Lehn 2006). This chapter wishes to contribute to this body of work and complement ongoing research in museum marketing, cultural consumption and visitor research by focusing on the ways in which interpretation resources feature in their collaborative examination of exhibits. Before I turn to the analysis of a few video fragments I will briefly discuss the method of data collection and analysis.

Data Collection and Analysis

In marketing and consumer research there is a longstanding tradition of using interpretative methods to study consumer behavior and the shopping experience (Goulding 1999b; Beckmann and Elliot 2000; Carson et al. 2001). It also increasingly deploys videography and other forms of video-analysis to study people's behavior at the point of sale (Belk, Sherry, and Wallendorf 1988; Belk, Wallendorf, and Sherry 1989; O'Guinn and Belk 1989; Underhill 1999; O'Reilly and Larsen 2005). They reveal the potential of video-recordings as a technique to understand people's conduct on the shop floor and unpack the activities that constitute shopping, such as walking through shopping isles, glancing at products, inspecting objects, looking back and forth, etc. By subjecting video-data of people's conduct to scrutiny, the researcher can unravel these packages of activities and uncover how the design and layout of shops may influence people's behavior at the 'point of sale' (Phillips and Bradshaw 1993).

This chapter contributes to this body of research by using video-recordings for the study of cultural consumption in museums. It analyses video-taped fragments gathered in science centers, museums and galleries in London and elsewhere in the UK. The recordings have been produced as part of a small programme of research concerned with new technology in museums. For the purpose of data collection conventional stationary camcorders were set up on tripods near the exhibits but in a way that people were not drawn to them. The researcher did not stand behind the camera but observed the events in the galleries, took field notes, drew sketches of the exhibition and gathered other material such as the content of exhibit labels.

Altogether the body of data is comprised of approximately 600 hours of video-data and numerous days of fieldwork. It involves several hundreds of visitors including people of different age groups, gender and educational background, individuals as

well as pairs, groups and families and people with various degrees of technical knowledge and understanding. The analysis employs qualitative social scientific methods including ethnography coupled with a detailed analysis of the video-data (Silverman 1997; Heath et al. 2009). It uses an analytic and methodological framework developed in Ethnomethodology (Garfinkel 1967) and Conversation Analysis (Sacks 1992). This framework is designed to help reveal the social and sequential organization of people's vocal, bodily and material action. It draws attention to the situated and interactional production of the sense and meaning of objects and artefacts. Whilst, in the past, the analysis of video-data has primarily focused on interaction and collaboration at the workplace (Heath and Luff 2000; Luff, Hindmarsh, and Heath 2000), more recently it has begun to explore conduct and interaction in public places, auctions and museums (Hemmings et al. 1997; Katz 1999; Hemmings et al. 2000; vom Lehn, Heath, and Hindmarsh 2001; Heath and Luff 2007; Llewellyn and Burrow 2008).

Video-based studies of conduct and interaction in museums have begun to investigate how people look at, examine and make sense of exhibits, including paintings and sculptures and mechanical 'hands-on' interactives as well as computer exhibits and novel, computer-based information systems (Meisner et al. 2007; Heath and vom Lehn 2008). The analysis principally is concerned with visitors' conduct and interaction at exhibits, including their talk, visual and tactile actions. It draws on the growing body of research concerned with the social and interactional organization of human conduct. Its analytic attention is with the resources, the practices and reasoning participants rely on in the production of social actions and activities and in making sense of the conduct of others. The analysis proceeds 'case-by-case' and involves the

transcription of participants' talk and bodily action and the detailed examination of the interactional character of particular actions and activities. By comparing and contrasting actions and activities between various fragments, the analysis identifies patterns of conduct and interaction (Heath, Hindmarsh, and Luff 2009; vom Lehn 2009).

Revealing Exhibit Features

Studies of visitor behavior often consider 'the museum experience' as consisting 'of a series of encounters with individual exhibits' and ignore the social and contingent organization of museum visiting (Lawrence 1993: 121). They are primarily concerned with the 'learning outcome' of the encounter with an exhibit whilst ignoring the actions and activities through which the experience of an exhibit is produced. The little research that is concerned with social interaction and talk principally focuses on the relationship between the content of talk and exhibits whilst ignoring the circumstances in which talk and interaction arise at exhibits. It considers exhibits and the material environment as external and independent from people's action and interaction. And it suggests that exhibits are environmental factors stimulating actions that provide the basis for cognitive development and learning.

Video-based research in exhibitions however argues that the relationship between exhibits and action is far more complex and dynamic than can be uncovered by conventional methods used in visitor research. It suggests that people systematically embed aspects of exhibits in the social organization of their actions. For example, Anne and Joseph have arrived at a large glass-tank in the entrance area of the 'Challenge of Materials' gallery at London's Science Museum. The exhibit is designed

to introduce visitors to the notion that 'materials' are not only solids, such as fabrics, but also liquids and gases. Four pillars equipped with buttons stand around the tank; by pressing a button air and fluids move within cones and pipes within the tank.
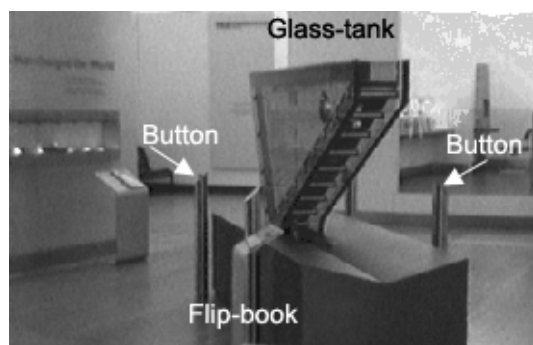

Figure 1: Glass-tank at 'Challenge of Materials' gallery

The pair look at different parts of the tank when Anne notices the writing along the glass surface. She leans over and reads the text aloud, 'can be solid liquid or gaseous...babyoil water and air'. As Anne voices the word 'water' she lifts her body up and turns to her companion while she points with her right hand to the corresponding words printed onto the tank (line 3 – 4). Her utterance coupled with the bodily orientation and gesture displays the progressive discovery of the text printed on the tank. Her bodily and visual turn to the left occasions Joseph who has observed his partner's actions on the tank to turn to the exhibit and a moment later voice the noticing of an object in the tank that looks like 'mercury' (line 6 – 8). The sequence through which the two participants progressively notice and reveal for each other features of the exhibit arises after Anne and Joseph have looked at the tank for a short while. Anne walks from the left to the right alongside of the tank and reads aloud 'babyoil water and ai:r' followed by two gestures at different locations on the tank, 'there there' (line 1). Her discovery and reading of the text encourage Joseph to voice his discovery of bubbles that look like 'quicksilver' and another object that might be

9

'babyoil' (line 2). His uncertainty about the nature of the liquid inside the tank

encourages Anne to return to the text printed on the glass-tank. She reads it out to

obtain and provide information that might be helpful to attend to Joseph's question

(Figure 2).


```
1 A: babyoil water and ai:r (.) there and there
```

```
2 J: ah: quicksilver (that) (.) is that babyoil?
3 A: can be solid liquid or gaseous here you can see glass (.)
4    babyoil water and air
5 (1.3)
```

```
6 J: yah (1.3) look thats (         then)
7 (.3)
8    like mercury innt it
```

Figure 2: Joseph and Anne at glass-tank ('Challenge of Materials')

Exhibit features are noticed and experienced in and through social interaction. As

participants examine exhibit they use visual and bodily actions coupled with talk to

share their experience of exhibits with others (vom Lehn 2006). Thereby, participants

draw on material and information resources they find in the environment. For

example, Anne and Joseph use the material and informal resources provided by the museum to explore the exhibit. What they look at, for how long and how they see it is not defined or even prefigured by the museum managers and designers but it contingently emerges as the pair act and interact at, and around, the exhibit. The couple approach the tank without having read the small booklet placed on a stand nearby and inspect and notice some of its features as they glance across it. They use the information printed on the tank as well as knowledge about the properties of materials to support their examination of the exhibit. Anne's reading of the text as well as Joseph's description of the silvery bubbles rising up a set of thin pipes as 'mercury' informs the participants looking at the different aspects of the tank. Features of the exhibit depicted in the booklet such as the function of the pillars equipped with buttons standing around the tank as well as the fact that the silvery bubbles are not mercury, remain unnoticed.

Enhancing Interpretation

We can begin to see the dynamics and complexity of the relationship between the design and production of exhibitions and their consumption by people who encounter and examine them in situations that contingently emerge and are not planned for by museum managers and curators. Museum managers and designers are often surprised and disappointed to learn about the idiosyncratic ways in which visitors examine and make sense of exhibits; visitors being guided by their personal needs, associations, biases, and fantasies rather than by institutional recommendations (Baker 1998). New technology like mobile devices and stationary touch-screen systems is being deployed to address some of these issues. It is hoped these devices and systems draw and hold

visitors' attention with particular exhibit features and communicate curatorial information to them (Bloom and Mintz 1992; Thomas and Mintz 1998).

In recent years, museums have begun to experiment with Personal Digital Assistants (PDAs) and mobile phones as interpretation devices (Exploratorium 2001; Phipps, Rowe, and Cone 2008; Wilson 2004). These devices are personal technologies designed for the use and information retrieval by individuals. Information is delivered through a small screen and one- or two-eared headphones making the sharing of information difficult. People however often visit and explore museums with companions. For example,

> Mia and Hans, both from the Netherlands, walk together through a contemporary art exhibition. They both use a PDA and wear two-eared headphones. As they progress through the gallery they find it increasingly difficult to talk. Hans removes his headset and discontinues the use of the PDA while following his partner through the exhibition. As they arrive at a text-panel Mia stops the device that delivers information about the piece and discusses the content of the text-panel with Hans. A few moments later they jointly move on. Later in their visit Mia uses the information she obtains from the device to talk with her friend by providing him with snippets of information she has just heard over the headphones. She not only voices what she hears but translates it into Dutch for him (Figure 3 & 4).

Figure 3, 4: Mia and Hans with PDA

The design of PDAs, their small, reflective screens and the need for headphones undermines opportunities for talk. The abandoning of one device by a pair of visitors and the voicing and translating of information delivered by the device are examples that illustrate people's difficulties to combine the use PDAs and their interaction with others (cf. vom Lehn and Heath 2005). In recent years, mobile devices have been further developed and experimented with to develop ways for the sharing of information between visitors. The Sotto Voce system is a prominent example in this regard. The PDAs are networked allowing individuals to see what their companion is currently looking at on her/his device. This system proved promising in delivering information to visitors and encouraging them to talk and share information with each other (Aoki et al. 2002). Whilst in light of the arrival of the iPhone and other WiFi capable devices mobile system have become increasingly popular with museum managers information kiosks still pervade many contemporary exhibitions. They are deployed to provide visitors with multi-media information about stationary exhibits.

They often encourage visitors to engage in a quiz or a game, or they offer them information that the exhibit itself cannot offer.

Consider for example the information kiosk deployed in the Victoria and Albert Museum near a washstand designed by William Burges. When James and his mother, Gaby, arrive at the kiosk she touches the screen and they both watch the video-clip showing the nineteenth century washstand at work. As the clip runs Gaby provides additional information about the working of the washstand not contained in the video. Some of the information is provided in response to James' questions, 'is it boiling hot?' (line 7) or '(there) in the bottom' (line 10). After a short while, Gaby steps forward and looks into the porcelain bowl that is illustrated with blue carp. She says, 'yes there are' (line 17) in response to James's statement, 'there are fish (.) in the bowl?'. The boy's question has encouraged her to leave the kiosk and step close to the washstand to have a look into the bowl. A moment later, as she looks into the bowl she confirms the existence of fish occasioning James to also leave the kiosk and step forward. They both briefly stand side-by side and look into the bowl. As Gaby moves back to the kiosk a man who has been standing behind the pair possibly overhearing their noticing of the fish in the bowl, steps forward and glances into the bowl. Gaby then returns to the kiosk followed by James, and they both continue to watch the video. James now stands to Gaby's left and they both continue to watch the video-clip to the end (Figure 5).

```
 1  G: the sistern on the top (.) filled with water=so a maid will
 2     come and fill that up (.) cause theres no running water then
 3     yah (.) (let) in wa:ter yes? Look >look< (.) then you turned
 4     on that
 5  (.3)
 6     yah? Look
 7  J: mhm (.6) is that boiling hot?
 8  G: no just one temperature whatever is in the top of the tank
 9     there yah
10  J: (there) in the bottom?
11  G: no in the tank [in the top there where it was sto:red
12  J:               [oh yah                        I see:
13  (1.3)
14  J: look there are fishes (.) in the bowl?
15  G: mhm:
```



```
16  (1.3)
```

```
17     oh yes there ar:e
```

```
18        (1)
19  J: mhm
```

Figure 5: Gaby and James at Burges' 'Washstand' in the V & A

People rarely watch the clip that lasts only three minutes, from start to finish. They often leave the kiosk to inspect some aspects of the washstand in detail or go elsewhere in the gallery. As people leave the kiosk to view the exhibit they unavoidably miss parts of the video. The location of the kiosk and the linear structure of the video-clip do not permit a simultaneous information retrieval from the kiosk and an inspection of the washstand.

The leaving of the kiosk is often occasioned by aspects of the washstand highlighted in the clip. A pair of visitors rarely leave the kiosk together to examine the washstand but a member of the pair turns away from the screen and moves to the washstand whilst her/his companion continues to watch the clip. Standing at the washstand participants often call companions over to see for themselves or their display of interest in the original piece occasions companions to step forward and have a look for themselves.

Whilst people have an interest in the original piece they spend more time with the kiosk than with the washstand. The video shows the washstand at work revealing aspects of the piece that are not accessible by viewing the exhibit alone. For example, the relationships between different parts of the washstand, such as the cistern and the bowl cannot be retrieved from viewing the exhibit. It therefore does not come as a surprise that occasionally people touch parts of the washstand and try to move them (Heath and vom Lehn 2004).

Stationary systems like information kiosks are very powerful media to convey multimedia content to visitors. The position of the system with regard to an exhibit determines where people stand to engage with the original object and how much they can see of the original piece while interacting with the system. The structure of the content influences what people look at while they are engaged with the kiosk. For example, when the system at the washstand shows water flowing from the cistern into the bowl, visitors look up from the screen to the exhibit; and when the fish in the bowl are mentioned they show an interest in the exhibit, whilst however being resistant to leave the ongoing streaming of the video to look at the bowl. Mobile systems like PDAs or mobile phones are increasingly deployed to deal with some of the problems

of stationary systems. In particular, people can use them at different locations close by the original exhibit. This makes it easier for them to interweave the information retrieval from the system and the viewing of the original piece. Yet, the content delivered by the device is still largely delivered in a linear way; its tight structure contrasts with the social and contingent organization of the interaction through which visitors examine the exhibit. When using mobile devices, people consider their visit as a museum tour guided by the information delivered by the system, looking only at exhibits and exhibit features mentioned by the device. Because the design of the systems undermines the emergence of social interaction and talk, visitors rarely interfere with the linear retrieval of information from the system. However, in some instances people show their frustration with the tight organization of the information delivery and abandon the use of the device.

De-linearising Participation

In recent years, museums have begun to deploy large projections coupled with sensor systems that capture people's movements in their exhibitions. These exhibits display images or text that can be manipulated by moving the body in front of the picture, the body movements making up the interaction with the system. One such exhibit was displayed at an exhibition entitled 'John Constable: The Great Landscapes' at Tate Britain in summer 2006. The exhibition was the first occasion to see Constable's six-foot landscape paintings together. They include such famous works as 'The Hay Wain' (1820-1), 'Hadleigh Castle' (1829) and 'A View on the Stour Near Dedham' (1822). Alongside the 'six-footers' the exhibition provided access to the preliminary full-scale compositional sketches that Constable produced when planning the

exhibition pictures. The display of the finished exhibition paintings besides the preliminary sketches allows visitors to obtain an understanding of Constable's working practice and techniques.

The curator responsible for the interpretation of the exhibition commissioned an interactive installation called the 'X-Ray Examination'. The installation was deployed in the final room of the exhibition. It was a life-size projection of Constable's sketch of 'Salisbury Cathedral from the Meadows' (1831). The projection of the sketch can be video-mixed with the X-ray of the painting to analyze the artist's *pentimenti* (the underlying images beneath overpainted alterations). It is connected to a conventional Pentium PC and a basic black and white CCTV camera located underneath the projection screen (Figure 6). As the camera captures people's movement in front of the projection, bespoke software translates people's movements into changes in the picture. The curator hopes the X-Ray Examination 'allows for exciting and intuitive exploration of the changes that Constable made in the sketch' (quoted from Design Brief).

Figure 6: The X-Ray Examination

People explore the exhibit by moving in front of the projection and gradually learn about its functionality. The discovery of the functionality of the exhibit encourages

them to further examine the relationship between the sketch and the underlying X-Ray image. They move their bodies in different ways in front of the projection and wave their arms to make visible different aspects of the X-Ray image. Thus, they gradually discover differences between the finished sketch of the painting and the black and white X-Ray picture. As people examine the exhibit, other people, companions and strangers, are in the same space and also view and examine the projection. In many cases, differences between the sketch and the X-Ray are discovered when a companion's or another person's movement reveal a feature in the X-Ray that is not visible in the sketch. For example, after having viewed the projection with her mother for some time a girl makes a step forward triggering a visible change to the projection. A boy sitting on the river bank appears where in the sketch there is a bush. She stands still for a few moments and looks at the picture when her mother points out a figure sitting by the riverbank. The girl looks to the projection and then again steps forward causing other parts of the projection to change. Having discovered the effects their actions have on the projection the mother encourages her daughter to move with her in front of the projection to examine the picture (Figure 7 to 9).
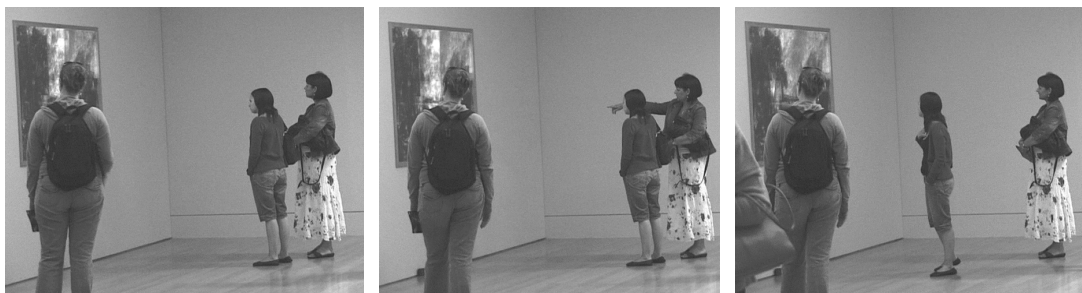

Figure 7, 8 and 9: Mother and girl at X-Ray Examination

The analysis of the video-recordings and observations reveals that people often arrive near, examine and make sense of the installation with others. The interaction with the system is made up of a two-part sequence of user-action and system-response; actions

in front of the projection trigger changes in the picture and may encourage the user to produce further actions to further explore the installation. In contrast to conventional touch-screen systems and such like, however, this system provides resources for more flexible ways of participation. The system does not prefigure what people look at, for how long and in what sequence, but it allows for contingent forms of exploration and enquiry;- not dissimilar to the way in which people examine 'conventional' paintings (Heath and vom Lehn 2004). People's actions arise in light of the appearance of exhibit features in the projection in front that may have been triggered by their own body movements or those of others. The visibility of actions and their relationship to changes in the projection makes it possible to experience the exhibit not only by interacting with the system but also by observing the interaction of others.

The events around the projection attract large numbers of people to stop and participate. Whilst some people stand in some distance to the projection observing the events others move close up and try to become involved themselves. As the space in front of the projection fills up with people it becomes increasingly difficult to differentiate whose actions affect the picture in front. Indeed, people themselves find it more and more difficult to identify the effects their actions have on the projection. Because the system is sensitive to all kinds of movements in front of the projection various parts of the image are ongoingly changing. To differentiate how their actions are related to changes in the image people elaborate or embellish them. For example, they stretch their arms up in the air or wave with paper-cards to evoke visible changes in the projection.

Figure 10, 11: Embellishing Actions at X-Ray Examination

The embellishment of their actions enables people to differentiate the impact of their actions on the projection from those of other people interacting in the space in front of the projection at the same time; interaction in front of the projection that is visible to others and can gain relevance for their experience of the exhibit. Thus, actions produced by an individual at the exhibit to generate an experience of the projection become critical resources for the ways in which other people who happen to be in the same space make sense of the installation. And indeed, people often design their actions at the projection in a way that they create opportunities for discovery and surprise. For example, after having noticed a hidden feature in the X-Ray a visitor draws a companion to a particular area of the screen before producing an action that reveals that feature to her/him (Figure 10 & 11).

Exhibits and installations that involve large projections operated by unobtrusive sensor interfaces like the X-Ray examination provide multiple visitors with resources to simultaneously examine their features. The installations are operated by virtue of bodily movements produced in range of the interface. These movements can be designed in ways that are noticeable for others and that may raise others' interest in,

both the action and the corresponding events on the screen. Thus, the experience of such installations arises in and through people's actions and interactions at and with the exhibit. The action and interaction at the installation use the features of the exhibit to generate resources that serve as the basis for co-participants' experience of it.

Discussion

The chapter makes substantial and methodological contributions to new developments in arts marketing. The analysis points to the relationship between museum visitors' verbal and bodily actions and the material and informational environment. It highlights that the practical work of curators and designers as well as that of system designers and programmers does not prefigure people's actions and experience of the systems and the museum. Actions and experiences arise in dynamic and contingent circumstances not designed for by managers and curators.

Computer systems and devices are designed and deployed to address museum managers' and designers' dissatisfaction with people's response to exhibitions. They provide dynamic multimedia content and involve visitors in long-lasting sequences of action that, designers hope, are pre-structured by the design of the system. The analysis begins to illuminate that people encounter and use these systems with others and embed information they retrieve from the system into their interaction with others. Thus, information resources provided by the museum are used to move forward the conversation with others, often not in the way anticipated by managers and curators.

The emergence of people's experience of the X-Ray examination contrasts with the way in which people's experience of touch-screen systems arises. Many mobile and

stationary touch-screen systems try to pre-figure or even pre-structure people's actions and experience by involving them in tightly organized two-part sequences of user-action and system-response. We have seen that the linear structure that the designers of these systems try to impose on people rarely coincides with the contingent organization of social interaction. The designers of the system have little influence on the information that participants draw from the system and bring into the interaction with others (cf. Heath et al. 2002; Heath and vom Lehn 2008).

Video-data allow researchers access to the processes of actions and interactions through which people experience and make sense of systems and devices in museums. However, a suitable analytic and methodological framework is required to deal with the complexity of audio-visual recordings. The chapter explicates the analytic opportunities offered by video-recordings when they are coupled with a suitable analytic and methodological framework (cf. Heath et al. 2009). Whilst initially providing a detailed account of the sequential organization of people's examination of a sculpture displayed in a science museum the analysis later used video-recordings to support ethnographic observations of people's use of technologically advanced systems and installations in art museums.

Aside from these substantial and methodological contributions the chapter also makes a small conceptual contribution to debates in marketing about the co-creation of experience and value (Battarbee and Koskinen 2005; Lusch and Vargo 2006). These debates often start from differentiating the positions of producer and consumer whose perspectives converge in the act of consumption. The present analysis suggests that the experience of exhibitions arises in interaction between visitors who make use of the resources provided by museum managers, curators and designers. The

experience is not generated in and through a co-production between producer and

consumer but through processes of interaction between visitors with and around

exhibits and interpretation resources; processes exhibition designers and managers

have no or little influence on. Further research is required to illuminate the

systematics of the interactive relationship between the material and informational

organization of exhibitions and the social organization of people's action and

interaction. Here, I have only begun to explicate some of the conceptual and

methodological problems.

Bibliography

Aoki, P.M., Grinter, R.E., Hurst, A., Szymaniski, M.H., Thornton, J.D. and Woodruff,

    A. (2002) 'Sotto Voce: Exploring the Interplay of Conversation and Mobile

    Audio Spaces', Proceedings of the Conference for Human Factors in

    Computing Systems (CHI'02), Minneapolis: ACM-Press: 431-438.

Baker, M. (1998). *Museums, Collections and Their Histories*, New York: Harry N.

    Abrams.

Battarbee, K. and Koskinen, I. (2005) 'Co-experience: user experience as interaction',

    CoDesign 1: 5-18.

Beckmann, Suzanne and Richard Elliot (2000). *Interpretive Consumer Research. Paradigms, Methodologies and Applications*, Copenhagen: Copenhagen Business School Press.

Belk, R., Sherry, J.F. and Wallendorf, M. (1988) 'A naturalistic inquiry into buyer and seller behavior at a swap meet', *Journal of Consumer Research* 14: 449-470.

Belk, R., Wallendorf, M. and Sherry, J.F. (1989) 'The Sacred and the Profane in Consumer Behaviour: Theodicy on the Odyssey', *Journal of Consumer Research* 16: 1-38.

Bloom, J.N. and Mintz, A. (1992) 'Museums and the future of education' in S.K. Nichols, *Patterns in Practice: Selections from the Journal of Museum Education,* Washington, DC: Museum Education Roundtable: 71-78.

Carson, D., Gilmore, A., Gronhaug, K. and Perry, C. (2001) *Qualitative Marketing Research*, London et al.: Sage.

Exploratorium. 2001. 'Electronic Guidebook Forum', San Francisco: Exploratorium Available HTPP: <http://www.exploratorium.edu/guidebook/forum/>

Falk, J. and Dierking, L. (1992) *The Museum Experience,* Washington: AltaMira Press.

Garfinkel, H. (2002) *Ethnomethodology's Program. Working Out Durkheim's Aphorism,* Lanham et al.: Rowman & Lenfield Publishers Inc.

Garfinkel, H. (1967) *Studies in Ethnomethodology*, Oxford: Blackwell.

Goulding, C. (1999a) 'Contemporary Museum Culture and Consumer Behaviour.' *Journal of Marketing Management* 15: 647-671.

Goulding, C. (1999b) 'Consumer research, interpretive paradigms and methodological ambiguities', *European Journal of Marketing* 33: 859-873.

Goulding, C. (2001) 'Romancing the past: Heritage visiting and the nostalgic consumer', *Psychology and Marketing* 18:565-592.

Heath, C., Hindmarsh, J. and Luff, P. (2009) *Using Video in Qualitative Research: analyzing social interaction in everyday life*, London et al.: Sage Publications Ltd.

Heath, C. and vom Lehn, D. (2004) 'Configuring Reception: (Dis-)Regarding the "Spectator" in Museums and Galleries', *Theory, Culture & Society* 21: 43-65.

Heath, C. vom Lehn, D. (2008) 'Construing interactivity: enhancing engagement and new technologies in science centres and museums', *Social Studies of Science* 38: 63-91.

Heath, C. and Luff, P. (2007) 'Ordering competition: the interactional accomplishment of the sale of fine art and antiques at auction', *British Journal of Sociology* 58: 63-85.

Heath, C., Luff, P., vom Lehn, D., Hindmarsh, J. and Cleverly, J. (2002) 'Crafting Participation: designing ecologies, configuring experience', Visual Communication 1: 9-34.

Heath, C. and Luff, P. (2000) *Technology in Action,* Cambridge: Cambridge University Press.

Hemmings, T., Randall, D., Francis, D., Marr, L., Divall, C. and Porter, G. (1997) 'Situated Knowledge and the Virtual Science and Industry Museum: Problems

in the Social-Technical Interface', *Archives and Museum Informatics* 11: 147-164.

Hemmings, T., Randall, D., Marr, L. and Francis, D. (2000) 'Task, Talk and Closure: Situated Learning and the Use of an 'Interactive' Museum Artefact' in S.K. Hester and D. Francis (eds.) *Local Educational Order. Ethnomethodological studies of knowledge in action,* Amsterdam and Philadelphia: John Benjamins: 223-244.

Katz, J. (1996) 'Families and Funny Mirrors: A Study of the Social Construction and Personal Embodiment of Humour', *American Journal of Sociology* 101: 1194-1237.

Katz, J. (1999) *How Emotions Work*, Chicago: The University of Chicago Press.

Kellett, P. (2007) 'Tennis Australia - what to do with a heritage collection of great significance', in R. Rentschler and A.-M. Hede (eds) *Museum Marketing: Competing in the Global Marketplace*, Amsterdam et al.: Butterworth & Heinemann: 125-130.

Kirchberg, V. (1999) 'Boom, Bust and Recovery? A Comparative Analysis of Arts Audience Development in Germany between 1980 and 1996', *International Journal of Cultural Policy* 5: 219-254.

Kirchberg, V. (1996) 'Museum visitors and non-visitors in Germany: A representative survey', *Poetics* 24: 239-258.

Leinhardt, G., Crowley, K. and Knutson, K. (2002) *Learning Conversations in Museums*, Mahwah, NJ: LEA.

Leinhardt, G. and Knutson, K. (2004) *Listening in on Museum Conversations,* Walnut Creek: Altamira Press.

Llewellyn, N. and Burrow, R. (2008) 'Streetwise sales and the social order of city streets', *British Journal of Sociology* 59:561-583.

Luff, P., Hindmarsh, J. and Heath, C. (2000) *Workplace Studies. Recovering Work Practice and Informing System Design,* Cambridge: Cambridge University Press.

Lusch, R.F. and Vargo, S.L. (2006) *The service-dominant logic of marketing: Dialog, Debate and Directions,* Armonk, N.Y.: M.E. Sharp.

Macdonald, S. (2007) 'Interconnecting: museum visiting and exhibition design', *CoDesign* 3: 149-162.

McLuhan, M (2001) *Understanding Media, London et al.:* Routledge.

Meisner, R., vom Lehn, D., Heath, C., Burch, A., Gammon, B. and Reisman, M. (2007) 'Exhibiting Performance: Co-participation in Science Centres and Museums', *International Journal of Science Education* 29: 1531-1555.

O'Guinn, T. and Belk, R.W. (1989) 'Heaven on Earth: consumption at Heritage Village, USA', *Journal of Consumer Research* 16: 227-238.

O'Reilly, D. (2007) 'By the community, for the community: exhibiting New Model Army's 25 years of rock visual heritage', R. Rentschler and A.-M.Hede (eds.) *Museum Marketing: Competing in the Global Marketplace*, Amsterdam et al.: Butterworth & Heinemann: 114-124.

O'Reilly, D. and Larsen, G. (2005) 'Adventures in Rock Music Videography: Reflections on Research Practice', 3rd Workshop on Interpretive Consumer Research, EIASM, Copenhagen, Denmark.

Paris, S. (2002) *Perspectives on Object-Centered Learning in Museums,* Mahwah, NJ and London: Lawrence Earlbaum Associates.

Phillips, H. and Bradshaw, R. (1993) 'How Customers Actually Shop - Customer Interaction with the Point-of-Sale', *Journal of the Market Research Society* 35: 51-62.

Phipps, M., Rowe, S. and Cone, J. (2008) 'Incorporating Handheld Computers into a Public Science Center: A Design Research Study', *Visitor Studies* 11: 123-138.

Sacks, H. (1992) *Lectures on Conversation,* Oxford: Blackwell.

Schulze, C. (2001) *Multimedia in Museen. Standpunkte und Aspekte interaktiver digitaler Systeme im Ausstellungsbereich,* Opladen: Deutscher Universitäts-Verlag.

Screven, C.G. (1976) 'Exhibit Evaluation: A goal-referenced approach', *Curator* 52:271-290.

Serrell, B. (1998) *Paying Attention: Visitors and Museum Exhibitions,* Washington D.C.: American Association of Museums.

Serrell, B. (1992) 'The 51% solution: Defining a successful exhibit by visitor behavior', *Current Trends in Audience Research and Evaluation* 6: 26-30.

Shettel, H. (1968) 'An evaluation of existing criteria for judging the quality of science exhibits', *Curator* 11: 137-153.

Shettel, H. (1976) '*An evaluation of visitor response to 'Man in his Environment'',* Washington D.C.: American Institutes for Research.

Shettel, H. 2001. 'Do we know how to define exhibit effectiveness?', *Curator* 44:327-334.

Silverman, D. (1997) *Qualitative research: Theory, method and practice,* London: Sage.

Slater, A. (2000) '"Constructive chillers": a new market for museums', R. Rentschler
and A.-M. Hede (eds.) *Museum Marketing: Competing in the Global Marketplace*, Amsterdam et al.: Butterworth & Heinemann: 91-103.

Stevens, R. and Hall, R. (1997) 'Seeing Tornado: How Video Traces Mediate Visitor Understandings of (Natural?) Phenomena in a Science Museum', *Science Education* 81: 735-747.

Stevens, R. and Toro-Martell, S. (2003) 'Leaving a Trace: Supporting museum visitor interaction and interpretation with digital media annotation systems', *Journal of Museum Education* 28: 25-31.

Thomas, S. and Mintz, A. (1998) *The Virtual and the Real: Media in the Museum,* Washington, DC: American Association of Museums.

Underhill, P. (1999) *Why we shop: The Science of Shopping,* Washington: Simon & Schuster.

vom Lehn, D. (2006) 'Embodying Experience: A video-based examination of visitors' conduct and interaction in museums', *European Journal of Marketing* 40: 1340-1359.

vom Lehn, D. and Heath, C. (2005) 'Accounting for New Technology in Museums', *International Journal of Arts Management* 7: 11-21.

vom Lehn, D. (forthcoming, 2009) 'Examining "Response": Video-based Studies in Museums and Galleries', *International Journal of Culture, Tourism and Hospitality Research.*

vom Lehn, D. and Heath, C. (2006) 'Interaction at the exhibit-face: video-based studies in museums and galleries', H. Knoblauch, B. Schnettler, J. Raab and

H.-G. Soeffner (eds.) *Video-Analysis. Methodology and Methods*. London:
Peter Lang: 101-113.

vom Lehn, D., Heath, C. and Hindmarsh, J. (2001) 'Exhibiting Interaction: Conduct
and Collaboration in Museums and Galleries', *Symbolic Interaction* 24: 189-
216.

Wilson, G. (2004) 'Multimedia Tour Programme at Tate Modern', *Museums and the
Web'04,* Ontario, CA: ACM Press.

Yalowitz, S. and Bronnenkant, K. (2009) 'Timing and Tracking: Unlocking Visitor
Behavior', *Visitor Studies* 12: 47-64.