Displacing the object:
mobile technologies and interpretive resources

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Abstract

In recent years there has been a growing interest in using new techniques and technologies to enhance interpretation in fine art museums and galleries. There is an interest for example in exploring the ways in which mobile technologies ranging from the basic mobile phone through to personal digital assistants, could provide visitors with access to a range of information which would be tailorable with regard to an individual's interests concerns and the like. These developments are accompanied however by a growing concern, amongst curators and museum managers, that new technologies can undermine the character of the gallery and the ability of visitors to contemplate and enjoy an aesthetic encounter with the object. Developments and innovations need to balance an interest to enrich the interpretive resource with a commitment to preserving and enhancing aesthetic experience. This brief paper discusses the ways in which visitors to a contemporary art gallery used Personal Digital Assistants (PDA) to navigate and explore an exhibition. The PDAs provided the visitor with 'content'- including text, audio and images concerning a selected number of objects. Our own observations are based upon video-based field studies of the ways in which ordinary visitors used the devices during their visit to the gallery. The paper addresses the ways in which visitors used the device and the material it made available to examine objects, both alone and with others, and the consequences of the PDA for how people organised their visit. It concludes with a brief discussion of possible implications of the observations on the design, deployment and evaluation of novel interpretation devices.

Keywords: Interpretation devices, Personal Digital Assistant (PDA), Social Interaction, Art Museum and Gallery, Ethnography, Technology Design

Introduction

In recent years, there has been a growing interest in exploring how digital and communication technologies might enhance the interpretation of fine art museums and galleries. It has been suggested that new technologies may provide more flexible and 'tailorable' resources; resources that enable visitors to experience and discover art unparalleled by more traditional solutions such as gallery cards, audio guides, catalogues and labels. There is for example a growing commitment to using digital display technologies to provide information concerning particular works, and an interest in exploring the ways in which mobile technologies, ranging from the basic mobile phones through to personal digital assistants (PDAs), can be used to enhance the range of material available to visitors as they examine exhibits and navigate exhibitions. These developments however are generating some debate and discussion. Many curators and museum managers are concerned that these new technologies may not only undermine the aesthetic of the gallery but provide resources that distract from, or even displace, the object. Indeed, it is increasingly recognised that in developing support for visitors to fine art museums and galleries, it is critical that we preserve the primacy of the object and aesthetic encounter whilst simultaneously enhancing the resources available for its interpretation. Balancing these two demands may not be unproblematic.

In this brief paper, we wish to discuss the ways in which visitors to a contemporary art gallery used novel interpretation devices to navigate an exhibition to explore particular works of art. The devices in question were Personal Digital Assistants and provided with visitor with 'content'- including text, audio and images concerning a selected number of objects. Our own observations are based upon video-based field studies of the ways in which ordinary visitors used the devices during their visit to the gallery. In this paper, we wish to address the ways in which visitors used the device and the material it made available to examine objects, both alone and with others, and the consequences of the PDA for how people organised their visit. The paper concludes with a brief discussion on possible implications of the observations on the design, deployment and evaluation of novel interpretation devices.

Background

There is growing pressure on museum and galleries to legitimise their funding and to demonstrate their effectiveness both in attracting visitors and in enhancing information and learning. Science museums and centres have responded to these constraints by renewing and developing exhibition areas and providing where relevant visitors with a more interactive and participatory experience. New technologies have supported and encouraged these initiatives. To a large extent, this movement towards interactivity, has been based upon basic computing technologies, in particular the conventional workstation, but more innovative developments, including systems that support interaction and collaboration amongst visitors, have also been deployed. Surprisingly perhaps, given audio-guides, gallery cards and catalogues and the like, all of which are portable, until recently there has been less interest in exploring the ways in which mobile technologies can enhance the visit, whether in art museums and galleries or science centres and museums.

In general however, despite the growing interest in deploying novel interpretation devices in museums and galleries, and the substantial body of research concerned with 'visitor behaviour', there are relatively few studies that examine how visitors, both alone and with others, use new technologies when examining exhibits and exploring exhibitions. There are however a number of important exceptions that raise some interesting issues and challenges concerning the design and deployment of innovate solutions for use in museums and galleries. Some studies are highly positive. For example Screven (1986) argues that interactive interpretation devices can enhance a visitor's ability to examine and make sense of exhibits and extend dwell time. Other studies find for example, that despite the opportunities these new technologies offer they can intimidate and frustrate visitors and undermine the effectiveness of exhibitions (Serrell et al. 1992a). However, in reviewing these and other studies, it is important to not only differentiate the different types of technology that are used and the circumstances under which the experiments were undertaken and the evaluation methods employed, but also the design and display of the content and the types of visitors that frequent the institutions in question. It is also critical to bear in mind, that despite important exceptions (in particular, Aoki et al. 2002), the technology and the content is designed to enhance an individual's encounter with the object, rather than

communication and interaction between visitors with regard to exhibits and the exhibitions. An 'individualistic' conception of the visitor appears to underlie many of these experiments and the solutions that support them. This stands in marked contrast to the findings of recent studies of visitor behaviour (Falk et al. 2000b; Leinhardt et al. 2002; Paris 2002; vom Lehn et al. 2001a).

The Experiment and Field Observation

The discussion in this paper is based on field observation and video-recording collected in a contemporary art museum where a team of museum educators and technologists experimented with the deployment of a PDA over a number of weeks in the Summer of 2002. Visitors were provided with the opportunity to use a PDA when visiting a particular collection of galleries. The device was a conventional PDA with a headphone that delivered information concerning one exhibit in each room of the gallery. Depending on the exhibit the device delivered information either as text-, audio- or video-file.

The experiment was published as “multimedia tour”. Staff explained the functionality of the device, aspects of the content delivered throughout the tour and how visitors might deal with possible technical problems. At the beginning of the experiment, there were difficulties with the technology; the device frequently crashed when impatient visitors attempted to repeat operations and overloaded the system. The design team dealt with these technical problems within the first week or so and this made it much easier and less frustrating for people to use.

Data collection consisted of field observation and audio-visual recording of people using the system as they visited the galleries. Data collection was undertaken over a four week period and generated a substantial corpus of naturalistic observations and materials; data that included visitors of different ages, those alone and with others, and visitors who came on different days and at different times. In undertaking video-recording, we spoke to visitors as they arrived at the desk and inquired whether they were prepared to participate in the research. We would then ask to wear a small microphone and arranged to unobtrusively follow them on their tour of the galleries. Visitors who agreed to participate in the investigation were informed that they could approach the researcher at any point if they decided to terminate their participation in

the study. Analysis of the materials draws on recent methodological developments in the social sciences concerned with the social and interactional organisation of human conduct and interaction (see for example, Heath et al. 2000c).

Navigation Patterns

In the traditional modern museum human guides were a common means to organise visitors' navigation and examination of the galleries. Visitors were not allowed to navigate the museum in their own pace and the guide defined the navigation path and pace as well as the information provision in the galleries (e.g. Hudson 1975). As museums developed to become educational institutions labels were introduced to accompany original objects and the number of guided tours was limited to special events at set times. Visitors themselves decided the path through the exhibition and the time they spent with exhibits. Written labels sometimes associated with pictorial information, offered visitors information about the exhibits. Some 19th century scholars even argued that labels should be the predominant form of educational device that illustrated by exhibits. "An efficient educational museum may be described as a collection of instructive labels, each illustrated by a well-selected specimen" (Goode in Alexander 1996: 12). Others contend that the original objects are the critical source material for the museum experience whilst labels and other interpretation resources pollute it.

In recent years, the importance of the educational agenda of museums has stimulated the development and deployment of novel, often hi-tech interpretation resources in exhibitions. They are devised to provide visitors with information about and instruct their examination of exhibits. Investigations of the success of information kiosks indicate that they can increase the "effectiveness of exhibits" (most recently, Shettel 2001). Information kiosks can motivate visitors to approach and spend more time with exhibits and by providing visitors with a vast amount of content in different media formats such as text, images, audio and video they can enhance the communication power of exhibits (e.g. Exploratorium 2001; Screven 1986; Serrell 1992). However, the deployment of stationary systems like information kiosks is not unproblematic. Through their design and placement by an exhibit the position where additional information about an exhibit can be received is predetermined. Therefore, the installation of an information kiosk creates a second activity area besides the exhibit.

Visitors who arrive by the exhibit can adopt two positions, one where they use and view the kiosk and another where they examine the original object.

PDAs are a very different technology. In the case at hand, the PDA is introduced as a device that organises their navigation of the gallery as a "multimedia tour". As part of the experiment, the content that visitors receive from the device is limited to one exhibit per room of the gallery. A visitor who uses the device normally holds the PDA in her/his hands and wears the headphones. When s/he enters the first room s/he waits for information displayed on the PDA and then orients to the respective exhibit featured by the device. S/he attends to the information delivery by the PDA and at least occasionally looks at and inspects the exhibit. As the delivery of content is completed visitors further explore the room and glance at the other exhibits. The dwell-time at the exhibits that are not covered by the device is remarkably shorter than at the one featured by the device. This observation reflects the "tour character" of the visit. The PDA becomes a surrogate tour guide that highlights the important and relevant aspects of the exhibition that are viewed exemplary for the theme of the room. Visitors who use the PDA examine this particular exhibit in some detail and only briefly attend to the other exhibits in the room that seem to only further illustrate the theme of the room in different ways.

These observations suggest that the deployment of PDAs fundamentally transforms the museum visit and configures the way in which visitors navigate exhibitions. Visitors normally navigate exhibitions and approach exhibits they become interested in through their looks and events happening in their locale. The PDA and the information it delivers can change visitors' navigation path and the time they spend with exhibits. It can help increase the attracting and holding power of exhibits and communicate information about them. The PDA can help increase the "effectiveness" of exhibits as measured by attracting, holding and communication power, which are the conventional indicators developed in visitor studies (see for example, Shettel 2001).

The increased dwell-time at the by the use of the device raises questions concerning the actions and activities visitors carry out while being in the locale of an exhibit featured in the information delivery. With respect to visitors' use of stationary

information kiosks we have observed that visitors receive the information from the device and then move on either to look at the original object or elsewhere. In many cases, the information kiosk was used as a substitute for the exhibit (i.e. Heath et al. 2003). Surprisingly, visitors who use the PDA also often spend more time with looking at and operating the device than with the original object. In the case at hand, we have observed that even when the device delivers audio information visitors often looked at the screen rather than at the exhibit. A similar observation has been made by Walter (1996) who studies the use of electronic audio-guides in the Roman Bath Museum. Its mobile characteristics are not able to resolve this problem that concerns curators and museum managers and has been observed with the deployment of stationary information kiosks. However, the possibility to retrieve information whilst remaining mobile stimulates visitors to choose a position at the exhibit-face when they use the device and retrieve information. Despite having adopted a position by the exhibit visitors do not necessarily view and examine it. The PDA often substitutes the original object.

Interpretation Devices in Action

Art perception and experience is often characterised as a disembodied, cognitive accomplishment. Scholars argue that artworks have characteristics the viewer can "decode" (e.g. Arnheim 1974; Gibson 1986) or that the viewer individually constructs meaning from what they see based on prior knowledge and the like (e.g. Hein 1995). However, it is being acknowledged that in order to make sense of exhibits as intended by their designers viewers need information and knowledge that facilitates the 'correct' decoding of the cultural object (e.g. Bourdieu 1990). Interpretation resources as they are currently being deployed into museums contribute to this perspective. They are designed to provide the individual viewer with information that enables him/her to understand the exhibit.

In the case at hand, the PDAs deployed in the contemporary art museum are being designed to allow visitors to carry with them information they can use to navigate the gallery and make sense of the displays. Our observations suggest that despite being mobile devices the PDAs are used and consulted for information mainly in stationary positions. A visitor with a PDA adopts a position where s/he can view and examine the exhibit. The position that the visitor adopts is influenced by the information that

the device delivers about the exhibit. The visitor then visually orients to the device whilst remaining in this position. For example, when the device informs the visitor about a particular exhibit feature the visitor adopts a position where s/he can best see this feature. As the PDA conveys further information the visitor changes her/his position and views other exhibit features featuring in the information delivery by the device. However, after a brief glance or look at the exhibit the visitor shifts her/his orientation to the device whilst remaining in the position at the exhibit-face. S/he occupies a position at the exhibit although their principal involvement is with the PDA.

Viewing exhibits and using interpretation devices are embodied activities. Visitors who navigate exhibitions look at and experience exhibits whilst moving past them. And when having taken a position they not only look at the exhibit in front of them but also at other exhibits in the locale. Through movement, looking and other kinds of activities visitors step-by-step produce the context in which each object is seen (see vom Lehn at al. 2001). The information provided by the PDA in the contemporary art museum primarily provided information about individual exhibits and support individual visitors viewing and experiencing them. However, they support only to a small extent the wide range of activities that visitors carry out when navigating and exploring exhibitions.

Furthermore, when exploring an exhibition and examining exhibits the embodied activities of visitors, their movements and ways of looking are visible to all those in perceptual range. In previous investigations we have begun to show how visitors use others' postures, visual orientation and activities in material environments as a resource to coordinate their conduct in and orientation to exhibitions. The visibility of actions and activities allows all those in "perceptual range of the event" (Goffman 1981: 3) to anticipate each other's trajectory of actions (e.g. Heath et al. 2000; vom Lehn et al. 2001ab). Visitors who use the PDA are often predominantly oriented to its screen. Other visitors encounter and see the user of a PDA as someone engaged with a small, portable device. They cannot see or hear the information the user of the PDA is engaged with and have difficulties in assessing the state of her/his activity and in making judgements about the trajectory of that activity. They also cannot assess how the ongoing involvement with the PDA is related to the exhibit the user is standing at.

Will s/he stay at the exhibit for much longer or will s/he soon move on? Therefore, it seems that the deployment of PDAs may have significant influences on the ways in which visitors socially organise their navigation and exploration of the gallery. The devices configure not only the navigation pattern of the user but also influence the ways in which others navigate and explore the exhibition.

PDAs and Social Interaction

Museums are public places that people navigate and explore together with others, both those they are with and others who happen to be there at the same time. In the past few years, a growing number of investigations have begun to show how the experience of exhibits and exhibitions is produced in social interaction and discussion between visitors (e.g. Leinhardt 2001; vom Lehn et al. 2001a). Investigations also highlight that visitors learn about and experience exhibits by virtue of other people's orientation to and experience of them (e.g. Bitgood 1993; vom Lehn 2001a).

Despite these findings in visitor studies and sociology novel interpretation devices are normally designed for individual visitors and users. It seems that designers and developers of such devices believe that through appropriate provision of information the individual experience of exhibits can be maintained "pure" and "unpolluted". The gallery where the PDAs have been deployed normally is relatively busy. Visitors who navigate and explore the exhibition without the device coordinate their examination of the displays with other people and orient to those exhibits that at the moment are not attended to by others. When visitors use the PDA they turn to the exhibit that is featured on the device and adopt a position that they occupy for the duration of the information delivery. They obstruct access to the exhibit features for other visitors as long as they keep the position at the artefact.

Furthermore, the deployment of the PDA in the exhibition undermines visitors' ability to coordinate their actions and activities with others in the same space. The user of the PDA is secluded and desensitised from events in the locale through the headphones and the small screen. These features, the headphones and the small screen, make it difficult for the user to participate in actions other visitors carry out around her/him. Other visitors have difficulties to anticipate the navigation path and orientation of the user of a PDA because they do not have access to what the user of the PDA sees,

hears or orients to. In many cases visitors pass by without stopping at and examining an exhibit that is occupied by the user of the PDA. This is particularly unfortunate because the user of the PDA often stands at the exhibit whilst operating and examining the device. Therefore, the deployment of the PDA not only substitutes the object for its user but also undermines other visitors' experience of the exhibit who navigate and explore the same gallery.

Previous investigations have shown that visitors continually remain sensitive to and peripherally aware of events in their local environment when examining exhibits (e.g. vom Lehn et al. 2001a). They often find out and learn about exhibits and their features through the actions of others. The small screen does not allow other visitors to see what the user of the PDA is orienting to and assess when and where s/he will be moving to next. The headphones prohibit visitors to overhear others and make sense of an exhibit by virtue of other people's talk and judgement about it. Therefore, it seems peripheral participation in others' actions and activities which plays a critical part in visitors' experience of museums is undermined by the design of PDAs.

Social interaction and talk are increasingly viewed critically important for visitors' museum experience (e.g. Falk et al. 2000b; Leinhardt et al. 2002). The design of the PDA undermines the emergence of opportunities for social interaction between visitors. The small screen and the headphones separate the user from her/his companions. S/he cannot seamlessly participate in their action and interaction because s/he cannot see or hear what they are attending to. And the companions cannot easily become engage in talk and interaction with the user because they do not have access to the information s/he is currently receiving from the PDA. Yet, the design of the PDA does not stop visitors from trying to make the device work for them in the gallery. Visitors take off the headphones to display that they are ready to talk and make other attempts to engage in social interaction and talk. In one case, for example, we have observed that a couple tried to connect a second headset to one PDA in order to listen to the information delivery together.

Discussion and Implications

The design and deployment of PDAs largely is tailored to the needs of the individual visitor as user and learner. Museums are public environments that are normally

populated by multiple visitors at the same time. Visitors experience exhibits in social situations and coordinate their actions with others and engage in social interaction and talk. Investigations increasingly demonstrate that the concept of the individual visitor as viewer, user and learner is a misconceived. The museum experience is produced in social interaction amongst all those who inhabit a gallery at the same time. Highly contingent forms of participation emerge at and around exhibits through which visitors coordinate their involvement with and produce their experience of exhibits. Visitors remain continually sensitive to and peripherally aware of events in their local environment. They experience and learn about exhibits through the action and experience of other people's they have not come with to the museum and through social interaction with companions.

Furthermore, social interaction and talk between companions are critical for the museum experience. Attempts to separate and seclude visitors from events in their local environment through the layout of exhibitions, the design of exhibits or the deployment of interpretation devices designed for individuals undermine the effectiveness of exhibitions. These findings from recent investigations in visitor studies suggest that the development of novel interpretation techniques and technologies that facilitate highly contingent forms of participation and support and maybe even engender social interaction and talk between visitors can enhance the experience of and learning from exhibits and exhibitions.

This investigation has concentrated on the deployment of a multimedia tour based on PDA technology in a contemporary art museum. The observations discussed in this paper may have some implications for the design, deployment and evaluation of interpretation resources developed to enhance visitors' experience of art exhibitions. PDAs can become surrogate tour guides that can direct the navigation path of the visitor and point out interesting aspects of the exhibition. When using such a device visitors tend to spend more time with exhibits featured by the device than with other exhibits in the same exhibition. Hence, it seems the content delivery through such devices can help organise and manage the museum visit.

Guiding visitors' experience of a museum is a social activity. Current PDA technology and content are based on the concept of an individual visitor whose

experience of exhibits, can be increased by strengthening the relation between the individual user and the individual exhibits. Our observations suggest that in many cases, the screen of the PDA becomes the focal area of the visitor's attention and the interpretation device becomes a substitute to the original exhibit. The device work best for the visitors when it provided them with sufficient clues and incentives to turn away from the technology and to the exhibits, for example when audio- and visual information stimulate the visitor to alternate his gaze between the device and the exhibit and to compare the information s/he receives from the PDA with aspects of the original exhibit.

The design of interpretation resources can benefit from taking into consideration that visitors embed devices like labels, information kiosks or PDAs in their action and interaction. Devices that are designed without consideration of the social environment of their use tend to undermine peripheral participation and impoverish social interaction between visitors. Therefore, they weaken rather than enhance the effectiveness of the exhibition.

Designers of interpretation devices can exploit this observation and provide visitors with content that not only informs them about the exhibition but also gives them directions in the exhibition whilst remaining sensitive to the movement of other people in the same gallery. It seems critical for the effectiveness of interpretation devices deployed into museums that they are not only tailored to the needs of individual users but also support and exploit people's awareness of events in the local environment (with respect to shared workspaces see, Dourish et al. 1992). Such systems could aid the coordination of visitors' navigation and examination of exhibitions and enhance their museum experience by delivering content that is tailored to the current social environment of the gallery.

Our observations also suggest that people, even when they use a device designed for an individual user, enjoy talking to others and sharing their experience of the exhibition with them. They suggest that people's enjoyment and experience of exhibitions can be enhanced when interpretation devices provide them with opportunities to communicate what each other is seeing and orienting to. In the recent past, experiments have been undertaken that try to accommodate the context of social

interaction through the design of PDAs that allow visitors to participate in each others' activity with their devices (see, Aoki et al. 2002; Woodruff et al. 2001). Others have used portable interpretation resources to create records of the visit and facilitate and stimulate communication about the exhibition after the visit at home or at school (see, Fleck et al. 2002).

The observations in this paper also may have some implications for the deployment and evaluation of novel interpretation resources in museums and galleries. Many experiments with novel interpretation resources are carried out under experimental conditions. They concentrate on the usability of the device and people's satisfaction with its use. The present investigation demonstrates the importance of experiments with novel devices under "naturalistic conditions" where visitors use the new technology whilst others act and interact in the same space. In order to make decisions about the design and deployment of novel interpretation resources museum managers require detailed knowledge about the ways in which visitors experience and make sense of exhibits. The publicness of museums makes it necessary to understand how visitors participate with and around exhibits in social interaction with their companions and others who happen to be in the same space. Devoid of such an understanding of the museum experience that is supported by novel interpretation devices their deployment into the exhibition may end in failure despite the seeming success in the experiments.

In the future we will continue our investigation of the deployment and use of novel interpretation devices, both hi- and low-tech, in museums and galleries. In collaboration with museum managers, designers and evaluators of interpretation resources we will explore the possibilities to develop techniques and technologies that allow visitors to concentrate on the original object rather than on the interpretation device when examining exhibits in the public environment of museums and galleries. We are particularly interested in experiments that consider social interaction between people not as disturbing or distracting influence but as means and catalyst of their museum experience.

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