

Rethinking interactivity: design for participation in museums and galleries

Dirk vom Lehn
Christian Heath
Jon Hindmarsh

Work, Interaction & Technology Research Group
King's College London

Email {dirk.vom_lehn, christian.heath, jon.hindmarsh}@kcl.ac.uk

Abstract

There is a growing interest in museums and galleries to deploy novel technologies, such as computer exhibits, information kiosks and Personal Digital Assistants (PDAs) in their exhibitions. Museum managers and designers hope these technologies can help to facilitate new forms of participation and interactivity and enhance people's understanding of exhibitions. This paper puts the impact of social interaction on people's museum experience and understanding at its heart. It briefly discusses observations and findings from video-based field studies that we have undertaken to explore visitors' conduct and interaction in museums and galleries. It uses the finding from our studies to begin to develop a number of design sensitivities that may be considered when designing and deploying new technologies and systems in museums and galleries.

1. Introduction

In recent years there has been a growing interest in creating new forms of participation in museums and galleries. Substantial funding has been committed to the design and development of new exhibitions and galleries in order to facilitate the engagement of visitors and enhance the experience of visitors and their learning opportunities. New tools and technologies have played an important role in this regard enabling designers, curators and museum managers to develop exhibits that facilitate interactivity and enable visitors to engage in more complex forms of participation in the museums and gallery space (Schiele & Koster 2000). In some cases, these technologies are used to provide more flexible and wide-ranging information concerning established objects and collections, in others they form part of the exhibit itself (Bradburne 2000; Ciolfi & Bannon 2002; Hall, Ciolfi, Hickey & Bannon 2002; Koleva 2001; Schulze 2001). However, it is increasingly recognised that these new forms of interactivity, whilst enhancing the individual's engagement with particular exhibits, often do so at the cost of impoverishing co-participation and collaboration. Indeed, 'interactivity' is not infrequently conflated with social interaction (Heath, vom Lehn & Osborne 2005).

In this paper, we wish to provide a brief overview of a programme of research concerned with interactivity and interaction in museums and galleries that we have

been undertaking over the past five years or so. The programme involves close collaboration with curators, museum managers, educationalists and designers, and with museums and galleries that specialise in the arts and decorative arts as well as science centres and science museums. The research primarily involves fine grained video-based field studies in museums and galleries concerned with understanding the conduct and interaction of visitors both with and around exhibits. It also involves working closely with designers, curators and artists in developing and deploying interactive exhibits and undertaking studies of their use. Underlying the research is a commitment to using new and old technologies to enhance engagement and participation in museums and galleries and in particular to create new forms of co-participation and collaboration. Towards the end of this paper, we will sketch one or two more general design sensitivities that have emerged through our empirical studies and naturalistic experiments.

2. Interactivity

In science museums and science centres there has been a growing commitment to the deployment of conventional computer exhibits that are largely based upon standard hardware and interfaces. Screens are relatively small and rather than a keyboard the exhibits often rely on a touch screen interface. Leading museum spaces such as the Wellcome Wing of the Science Museum in London and science centres such as @Bristol and the Glasgow Science Centre have a significant number of these types of exhibit. The model of interaction embodied in these exhibits is a conventional computer-based exchange that largely consists of a series of actions by the user coupled with prompts and/or responses provided by the system. Through a series of moves the user seeks to achieve a particular goal.

The form of interaction afforded by these conventional computer exhibits prioritises the individual user and largely neglects collaboration and simultaneous co-participation. The systems require an individual to follow and respond to instructions displayed on the screen. The interaction with the system is scaffolded to elicit successive, single actions from the user in response to 'moves' by the system, be they instructions, questions, queries or whatever. It is organised by a series of two part sequences of action, computer-user, computer-user and so on, - which is designed for the use of a single respondent. Indeed co-participation is often restricted to a friend or family member attempting to help someone understand and use the system. Not infrequently, when they do try to engage in the task, the principal user will try to resist their interference (Heath, vom Lehn & Osborne 2005).

The impoverished forms of co-participation afforded by these conventional computer exhibits can often be seen in the ecological arrangement of visitors that gather around exhibits. For example, it is not unusual for queues to emerge where people waiting in line have restricted access to both the user's actions and the system's operation. Moreover, people often arrive at some point during the activity, so by the time it is their turn, they already have a fragmented partial experience of the exhibit. The scale and positioning of the screen and the interface and the structure of the interaction afforded by the system, do not simply prioritise the individual user, but also transform those gathered around, often waiting to use the exhibits, into an audience that has impoverished access to the activity that they are witnessing. This is hardly surprising since museums and galleries have liberally deployed conventional computing technologies primarily designed for single users into their public, collaborative spaces (Heath, vom Lehn & Osborne 2005; Semper 1998).

These problems are not only limited to the deployment of computer exhibits in science museums and science centres. In the arts and decorative arts there has been a growing interest in using screen-based systems to provide visitors with enhanced information concerning the objects and artefacts within the gallery and exhibition areas. Two developments have been of particular significance, information kiosks and multi-media mobile devices (Exploratorium 2001; Schulze 2001). The deployment of these devices in museums raises one or two problems. *Information kiosks* largely consist of a screen alongside particular exhibits. The screen provides information including, for example, brief films of the piece's production and operation, textual descriptions, diagrams and the like. When people arrive at the exhibit they often turn to the kiosk and become an audience to the information delivered by the system and spend more time with the system than with the original object. In these cases, the information kiosk displaces the object (Heath & vom Lehn 2004; vom Lehn & Heath 2005).

Multimedia-mobile devices like PDAs have risen in popularity with museum managers because they promise to address some of the problems of information kiosks. They allow visitors to access digital information while examining particular exhibits. Our observations suggests that while people face the exhibit they often attend more to the device than to the original object. Like information kiosks PDAs may displace the object (vom Lehn & Heath 2005).

Both, information kiosks and mobile devices prioritise the individual user. They are operated and accessed via small interfaces that do not support collaborative use and enquiry. Yet, people often come with companions to a museum and try to coordinate their exploration and examination of exhibits and information resources with each other. In many cases, they develop a curious division of labour, one participant attending to and voicing the information delivered by the system the other viewing the original object and articulating her/his discoveries. When all members of a group use a PDA they either separate for the duration of their visit or try to synchronise the information delivery by the system; they attempt to press the 'play-button' at the same time or may look for possibilities to connect multiple headphones to one device. In many cases, their attempts to collaboratively view and examine a museum fail when they use novel digital resources. They give up either the device or the interaction with others.

3. Contingent Participation

Our studies of people's interaction with and around computer exhibits and information systems have arisen in the context of a programme of research through which we have recently begun to explore how visitors explore and make sense of museums and galleries. We hope detailed, video-based studies of visitors' interaction with and around different kinds of exhibit may make a contribution to the development and deployment of novel exhibits and exhibitions. We are particularly interested in the ways in which people experience exhibits in and through their interaction with others, both those they are with and others who happen to be 'within perceptual range of the event' (Goffman 1981).

Our studies demonstrate that social interaction forms a pivotal and a virtually unavoidable part of people's experience of museums. Visitors normally come and explore exhibitions in concert with companions and in coordination with other people who happen to be there at the same time. While participants explore the museum they are continually aware of and sensitive to each other's actions in the same space. Their

awareness of events in the locale allows participants to organise their participation with exhibits with others (vom Lehn, Heath & Hindmarsh 2001).

The studies begin to reveal that the context in which visitors see and experience exhibits is not prefigured by the design and arrangement of the artefacts but emerges in and through their action and interaction. Participants see an exhibit in the light of exhibits they have seen before and in anticipation of exhibits they see next (vom Lehn, Heath & Hindmarsh 2001).

When participants arrive at an exhibit in use they draw on their observation of the action and other material to gradually become involved in the interaction at the artefact, for example, by commenting on and instructing action, by helping the user in interacting with the exhibit and understanding its meaning, and so forth. They often examine and see exhibits in collaboration and interaction with companions. They try to stimulate a particular response to an exhibit in them by providing them with resources to make sense of the artefacts. Through their bodily and material conduct they animate and enliven the exhibit's features to configure how others may see the exhibit (Heath & vom Lehn 2004).

4. Crafting Participation: Naturalistic Experiments

Our video-based studies in museums have demonstrated the complexity of the ecology of participation in exhibitions that needs to be recognised when designing and deploying exhibits. We have used our detailed observations and findings to undertake a series of naturalistic experiments in close collaboration with the Interactive Crafts Group at the University of Staffordshire.

The experiments with the design of particular objects and artefacts help to develop an understanding of those exhibit features and characteristics that may facilitate social interaction and collaboration. They involve the successive design and display of arts- and craftwork in public exhibitions to explore the effects of changes in exhibit features on people's conduct. Resulting from our collaboration with the Interactive Crafts Group we displayed a number of exhibits, including "Deus Oculi" (1999), "Ghostship" (2002) and the "Universal Curator" (2003/04). The exhibition of the craftworks was accompanied by detailed, video-based studies of people's interaction with and around the pieces that informed the design and deployment of each next exhibit. The three craftworks were intended to occasion humour, surprise and discovery, encourage enquiry and exploration and facilitate social interaction and collaborative examination.

The video-based studies of the craftworks reveal that they stimulate relatively long sequences of engagement and interaction in which people discover the functionality. The functionality is embedded in the relationship between spatially distributed parts of the exhibits. People discover the relationships between their parts by collaboratively exploring the pieces and by observing others' interaction with and around them.

Social interaction and collaboration are critical for people's understanding of the craftworks; without interacting or collaborating with others people cannot discover the functionality of these pieces due to the physical distribution of their functional parts. We have observed different forms of interaction and collaboration at the exhibit. For example, participants produce relationships between exhibit features by virtue of verbal explanations accompanied by gestures and bodily conduct, participants coordinating their examination of different parts of the craftworks with each other, participants revealing the functionality between different parts of the exhibit by generating surprise and occasioning laughter, and participants

collaboratively producing their own exhibitions and creating stories that bring their pieces to life (Heath, Luff, vom Lehn, Hindmarsh & Cleverly 2002; Hindmarsh, Heath, vom Lehn & Cleverly 2005).

The exhibits were relatively successful in generating different forms of participation and interaction both amongst companions and between strangers. Yet, in some ways they failed individual visitors. Individuals had difficulties in understanding the relationships between the different parts of the pieces. They relied on a member of staff, the researcher, the artist or another visitor to step in and make the exhibit work with them (Hindmarsh, Heath, vom Lehn & Cleverly 2005).

5. Design for Interaction and Collaboration

The design and deployment of exhibits and systems in museums and galleries is an extremely challenging task that cannot ignore that people normally examine and make sense of exhibits in and through social interaction. They explore museums in interaction with their companions and coordinate their conduct with other visitors who happen to be in the same space.

Exhibits are used and examined by people from diverse socio-demographic and ethnic backgrounds, of different age groups and with different educational biographies in highly complex and contingent social situations. This puts huge demands on exhibition designers to create artefacts that can be inspected and understood by a variety of people who just happen to be in the museum at the same time interacting with each other. Detailed, naturalistic studies in museums may help revealing the social organisation of people's conduct and interaction and inform the design of new exhibits and systems.

The analysis points towards a number of research interests and opportunities that we currently pursue in collaboration with exhibition designers and curators. We will further explore and unpack theories and concepts of 'interaction' and 'participation' that currently pervade the work of museum managers, designers and evaluators. We use our studies of people's conduct and interaction in museums, galleries and science centres to create a catalogue of 'design sensitivities' that may inform the development and deployment of future systems created to enhance people's experience and understanding of exhibitions. The most relevant for the development of exhibits and interpretation resources that facilitate social interaction and collaboration are (Hindmarsh, Heath, vom Lehn & Cleverly 2005; vom Lehn & Heath 2005):-

- Recognising that social interaction is critical to people's experience of exhibits and exhibitions. They come with companions and meet others who happen to be there at the same time.
- Providing opportunities for sustained interaction with and around exhibits by offering resources for participants themselves to creatively shape and configure the experience of others, either by changing aspects of the display or by other means.
- Creating spaces for individual, private participation with exhibits and providing individual visitors with resources to examine and make sense of exhibits designed for multi-parties.

With our research we hope to shift away from the impoverished notions of the 'viewer' and the 'user', 'interaction', 'participation' and 'collaboration' that pervade discussion and debate in disciplines concerned with the design, deployment and evaluation of exhibits and information systems. We currently collaborate closely with

exhibit designers and curators to experiment with novel techniques and technologies to create exhibitions that facilitate and support a social and collaborative museum experience.

Acknowledgements

The paper has arisen as part of a programme of research supported by grants from the European Commission 'SHAPE', ESRC Science and Society Programme (RES-151-25-00047) and the AHRC (AR17441). We would like to thank the visitors who kindly agreed to participate in the research and the management and staff of the museum where the research was undertaken, in particular Catherine Aldridge, James Bradburne, Jane Burton, Jason Cleverly, Ben Gammon, Sarah Hyde, Denny Plowman and Gillian Wilson. We also would like to thank our colleagues at the Work, Interaction & Technology Research Group, Paul Luff, Marcus Sanchez-Svensson and Katie Best for their help with the ideas and materials discussed in this paper, and the reviewers of this workshop for their very valuable and helpful comments on a previous version of this paper.

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