

Aarhus School of Architecture // Design School Kolding // Royal Danish Academy

Engaging Experiences in Interactive Museum Exhibitions

Borup Lynggaard, Aviaja; Langballe, Line; Geert Jensen, Birgitte

Published in:

The Cultural Heritage and the Science of Design

Publication date:

2005

Document Version:

Publisher's PDF, also known as Version of record

[Link to publication](#)

Citation for published version (APA):

Borup Lynggaard, A., Langballe, L., & Geert Jensen, B. (2005). Engaging Experiences in Interactive Museum Exhibitions. In *The Cultural Heritage and the Science of Design: Proceeding of the 2nd International Meeting* (pp. 383-388). Cumulus.

General rights

Copyright and moral rights for the publications made accessible in the public portal are retained by the authors and/or other copyright owners and it is a condition of accessing publications that users recognise and abide by the legal requirements associated with these rights.

- Users may download and print one copy of any publication from the public portal for the purpose of private study or research.
- You may not further distribute the material or use it for any profit-making activity or commercial gain
- You may freely distribute the URL identifying the publication in the public portal ?

Take down policy

If you believe that this document breaches copyright please contact us providing details, and we will remove access to the work immediately and investigate your claim.

Abstract 05-128

Engaging Experiences in Interactive Museum Exhibitions

Birgitte Geert Jensen
Associate Professor, Industrial Designer
Aarhus School of Architecture
Norreport 20
DK-8000 Aarhus C
Email: birgitte.geert.jensen@aarch.dk

Aviaja Borup
MA-Student, Interaction Design
Aarhus School of Architecture

Line Langballe
MA-Student, Interaction Design
Aarhus School of Architecture

Keywords: Museum, Experience, Interaction Design, Technology

Abstract

The aim of the present paper is to outline possibilities for the development of combined IT and architectural concepts supported by joint engaging experiences for visitors to the room of the museum of the future. Focus is upon a joint experience, as many existing IT-systems designed for museums primarily appeal to a strong individualised experience where the visitor views a PDA or similar, rather than experience the atmosphere and interaction of the room. In this context, there are several examples from practice and in the research literature of IT-systems for science centres, art museums and history museums.

There is considerable potential in the development of experiences and in the communication of information customized to visitors in the museum apart from personally held information devices.

The paper will present background research for developing solutions to a new media museum. This museum is a particular challenge as the exhibition objects, i.e. radios, TVs and tape recorders, present information media and have a great potential in being 'live'. This way a major part of the experience in the museum will be the sensation created through the combination of object, environment and the atmosphere that can be created through multimedia.

Different cases in perspective of existing museums will be introduced, the values and critical points will be discussed, and the seeds for a new kind of museum experience will be presented. This feeds a redefinition of the museum experience, and we will look upon the consequences for the social, cultural and informative experience.

Introduction

A multidisciplinary workgroup was in the autumn of 2004 formed to develop a new media department in a medium sized Danish cultural heritage museum. The workgroup consists of researchers in the fields of architecture, design and IT at different levels, working together with companies on software infrastructure, tracking systems and other technological fields, in cooperation with a Danish TV- and HiFi-manufacturer and the museum.

Through research on existing museums combined with a mix of competences among the people in the workgroup, ideas for a new museum experience has begun to take form. At the time of writing the project is still an ongoing research project.

Our goal is to develop a wider museum experience than seen before. The aim is to go beyond the experience within the limitation of the physical visit. This is here done by working with a three-step experience, concerning before the museum visit (pre-visit), during the visit and after the visit (post-visit).

We will also be working with aesthetic interaction and examine how the informational layers will be communicated to the visitor.

A third issue that is highly prioritized is to develop space for social interaction in the museum. We want to open up for using the museum rooms for interaction. We wish to challenge the visitors and use new ways of interaction with the exhibit and each other.

At the museum there is also an ongoing project which concerns this subject. It is named the Town History Writer. A person is employed to gather the stories from the inhabitants of the local county. We find this approach very useful and interesting to rethink into the future museum experience. In that way the people can contribute to the knowledge bank of the museum, interact about their knowledge and the stories come with a great touch of real life.

Existing museum experience

A typical visit to a museum is at present mostly focused on the physical visit to the exhibition.

We will in this paragraph focus on the pre-, during and post-experience and give examples of the way the existing museums provide the user with such. The museum experience is divided into these three categories, seeing this as the three phases a visitor must go through. We will explore if any of the existing museums extend the museum experience for the visitor beyond the during-experience, beyond the actual visit at the museum building.

We will discuss the disadvantages and the usefulness in the following examples. The mentioned museums all share the fact that they have interactive initiative which we find interesting to explore.

Pre visit:

Ontario Science Centre [1], (Toronto, Ontario, Canada) is a typical science museum which provides the visitor with a bit of preparation in the shape of a web site.

This is an initiative which is common within the science centres/ museums whose main audiences are children. They offer a pre-experience to their audience which prepares them for the visit. The preparation consists of a guided visual tour on the web in 3D through the facilities of the museum, so that you get a sense of locality and know where to find the special items that the museum offers when you arrive.

Equally, you receive information on the web about their exhibitions, so that you feel well-informed about the subject.

It is common for science centres and museums to offer this information about their exhibit.

San Francisco Exploratorium [2], also a science museum that offers an online exhibition for the visitors. The exhibition is what we call edutainment which is information and education given to the visitors through entertainment and play. It offers no interaction with other visitors, though. The webpage separates itself from other online exhibits by not being a guide but by being educational through playfulness.

The Newseum [3], USA, is an interactive museum about journalism. They offer a part of their exhibit on the net which they for example update every day with front-pages from the newspapers from around the world. Even though the main audience in this museum does not consist of children, they also provide their segment of visitors with edutainment in the pre-visiting phase.

Pre-visiting experiences for museums only deal with information concerning the exhibition: how to get there, and how to navigate around once you get to the museum. It is not possible for the visitor to interact or have influence on the exhibition.

It is most common for science centres to address workshops for schools. The teacher can order a special education package to suit the class. Online exhibition is educational, but offers no interaction with other visitors or the exhibition.

During the visit:

In "Welcome to the Experience Economy"[11] Pine and Gilmore carry out a study of how companies can provide an experience to their costumers through the product.

According to Pine and Gilmore the user of a product is no longer satisfied only with the product.

An experience or lifestyle has to be an attachment to the product.

In this case we see a tight connection between a physical product and a museum experience.

Focus is being moved from only the information that the museum provides the visitor with, to also containing the experience that the visitor gets when he/she receives the information.

Thus we have kept our focus on museums which have new interactive aspects integrated in the exhibit, and therefore provide the visitor with some kind of experience or challenge during the visit.

It is most commonly seen that the "interactive museums" are PDA based. In this way they communicate the information about their exhibit items to the visitors.

Naturhistorisk Museum (Museum of Natural History)[4], Denmark, provides each visitor with a small computer (PDA) which contains an RFID tag. This tag communicates with each item on the exhibit. When a visitor approaches the item, information occurs on the screen of the PDA and the visitor is provided with the information wanted. This method is commonly used in many museums.

Dinosaur Museum[5], Japan, offers the same way for the visitors to gain the knowledge of the museum. To provide an extra feature, the museum gives the visitors the opportunity to preserve the memories of the visit in a physical form. This is done by a photo being taken of the visitor at the stand that you specifically find interesting or amusing. When you enter a marked area on the floor, a sensor registers the presence of a person and a photo is being taken for the visitor to bring home. This gives the user of the museum a personalised proof of participating.

Autostadt, Germany. [6]

This museum is built up as an amusement park where cars are the theme. It becomes a small city. A city you enter and become a citizen of for the hours or days you spend there. Here you get the entire history of cars, and you can visit the different pavilions, i.e. the Lamborghini pavilion or the Audi pavilion.

Suddenly the visitors become part of a joint community with common interests instead of just making a trip to the museum. If the visitor is in the market for a new car, it is possible to customize and personify a car and drive off in it.

At Sony Wonder[7], New York, the visitor logs on to the intranet and becomes part of the Sony community for as long as the visit takes, and at the exit the visitor logs out.

Ars Electronica [8], Switzerland, is a museum where the newest playful electronics are being shown.

The visitors get to explore the possibilities within the future electronics and interact with the other visitors through games. The visitor participates and becomes part of the exhibition through these games. It is a museum of electronic games. This is one of the few museums which provides a breeding ground for sociability through interactive objects.

Sustainable Tourism and Innovation in Mobile Tourism Services [12]

This project researches into the possibilities of combining tourism and mobile technology. It deals with getting the information and services out to the user before, during and post visit the destination.

Common for all of these interactive museums are that the communication technologies all isolate the visitor when taking the tour around the museum. Whether it is PDAs, mobile phones or headsets; they all draw the focus to the object rather than the exhibition and the museum rooms. It is not possible to share the eventful visit with fellow visitors when you concentrate all of your attention on the gadget and not the surroundings and the sociability.

The visitor gains information directly: the information is standard and everybody receives the same, but at different time.

Post visit:

W5 [9], Belfast is a science centre that not only has workshops at the museum, but they also extend the visit by offering for their showcases to come to schools to entertain and educate.

Sony Wonder, New York, is a museum of Sony products and new electronics. It is possible to bring home physical memories to share with other visitors or people who are planning a trip. You can also download screensavers on to your computer and thus bring a little Sony wonder into your daily routine. The visitor brings home a statement of the visit and now has a personal proof of participation in the visit. This object or statement of one's visit provides a feeling of a joint community. The visitors now share something that is beyond the visit of a museums building, just like at Autostadt the feeling of being a part of a joined community is present.

At Ars Electronica one example is that the visitors were being supplied with a small pin which communicated with the objects at the museum. This pin represents a physical memory and proof of participation.

Wrap-up

Many of the above-mentioned museums have initiatives of the expanded museum experience that we are seeking, but none of them gather the three stages of the visit; pre, during and after in a complete way.



These are the values from the above mentioned museums that we find useful for our future work:

Pre-visit	During the visit	Post visit
Website preparation <ul style="list-style-type: none"> ▪ Practical information ▪ 3D visual tour ▪ Exhibit information ▪ Edutainment ▪ Group tour bookings 	<ul style="list-style-type: none"> ▪ Personalized tour ▪ Physical memory and proof of experience ▪ Personal log on ▪ Interaction between visitors ▪ Edutainment 	<ul style="list-style-type: none"> ▪ Physical Memories ▪ Education ▪ Joint community ▪ Personalized artefact

The science museums provide useful information, so that the visitors have the opportunity to learn about the exhibition at the museum and be given practical information about the museum during the pre-experience. Another aspect which we find useful from these museums is the possibility to educate the visitors through playfulness which is integrated in the exhibit items.

There is also a great potential in the intranet logon that Sony Wonder gives to the visitors at the museum.

We see great possibilities for the user to expand and personify the visit through a logon from home, work or from school.

The playfulness at the Ars Electronica exhibition, and the social interaction which this results in, provides elements of the expanded museum experience. The user takes part in the exhibition and is being challenged.

The information and education that the visitors receive at a museum through gadgets like PDA and mobile phones, offer an individualisation which makes it more comforting on the tour around the museum. The visit is being domesticated when one receives a personal object while visiting the museum building. We find this aspect very human, but we would like to avoid the audio-visual aids because of the individualisation that arises. We are looking for a way for the information to be personalised without these aids. As an alternative, we will use an interaction between the visitors and the facilities of the museum building. This provides a breeding ground for the information to come directly to the visitor simultaneously with opening up for possibilities of social interaction.

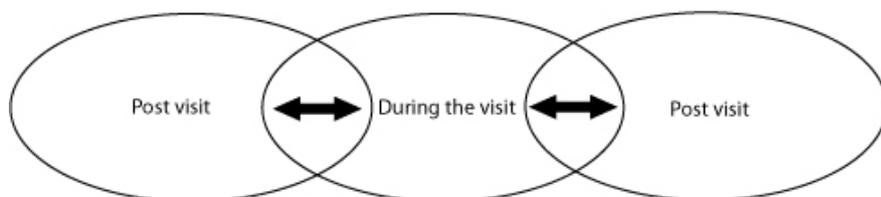
The values that we found in the post-visit experiences have to do with the feeling of being part of a joint community. This is done through a standardized product that gives a united feeling: (Ars E) a

personalized product that the visitor had influence on (a car from Autostadt), or a photo or a book showing the visit and documenting that the visitor has been there.

The future museum experience

We now have an overview of the existing museum experiences and have picked out the qualities that we want to retain and draw into the future museum experience. Next step is to start looking elsewhere for different values that can contribute to the museum experience.

We wish to use these values to create a coherent museum experience.



The paragraph is divided into three different areas that we will emphasize in our future work: the social aspect of the experience, the cultural aspect, and the informative aspect.

How can the future museum experience contribute to the social experience?

A goal for us has been to move away from the individualized experience towards a more shared experience. We want to reveal the social space within a museum experience. This is accomplished by using the qualities of the physical visit and the experience with other people.

A good example of a project working with this subject is the IFloor[13]. It is an interactive floor on which projections of public information is shown. The IFloor is controlled by bodily interaction through: “various playful ways of interacting with the cursor” of up to 15 people at a time. In this way the users have to negotiate and cooperate to pull the cursor. This way of interacting “(...) serves as a social space enabling awareness of fellow citizens and the pluralism that is equally important in maintaining a vivid democratic society.”[13] We want to provoke such social interactions in our design of the future museum experience.

We will achieve this by using space as interface and the physical museum rooms for the interactions. We will research in different ways for the visitor to interact physically and playfully with the exhibit and other visitors. This is accomplished by using technological solutions to create space for shared experiences.

How can the future museum experience contribute to the cultural experience?

Visiting a museum is perceived as a cultural experience. The future museum will be more than just the visit. The visitor can prepare the visit from home, and the museum can prepare for the visitor. Furthermore, it is possible for the visitor to affect the exhibition while there or from home. We want to expand the new initiative of the Town History Writer by placing him in the museum where people can come by with historical objects, record stories and scan pictures. It is now possible to pose questions or show new material around the exhibition on interactive displays, if the Town History Writer finds it convenient. The inhabitants are now creating their own history, and it is based on the real people. The knowledge bank will be dynamic, and the Town History Writer will

be in constant dialogue with the inhabitants. The user is now the storyteller and takes part in creating the cultural environments instead of being a passive perceiver. The stories can become part of the exhibition when a suitable theme is on.

There are different cultural aspects in the post-visit experience: Bringing a physical object from the museum. By getting a physical object from the museum, the visitor can get a feeling of being part of the community. A personalized object gives a memory of the exact visit and the particular thing that the visitor created. The product also gets an extra immaterial value of the story of creation and the experience that lies within.

Another expansion of the cultural experience lies within re-experiencing the tour and digging deeper into the information that the visitor finds interesting.

How can the future museum experience contribute to the informative experience?

As earlier described, the PDA-based museums give direct information to the visitor, and the technology opens towards a more individualised experience. Though we want to draw the information out into space, we still want to maintain the individualized information by making the exhibition recognize the visitor and then transform.

It is also a goal to make an adaptive museum that is flexible and transformable on a bigger scale than just described. By tracking the trails and patterns of the visitors, the curators can change the exhibits continuously. This opens towards greater usability for and understanding of the visitors. The curators can test different set-ups and study the behaviour of the visitors.

We want the communication to be surprising and fun to exploit through playful interaction. On the one hand, the visitor should be challenged by the interaction methods –be it gesture-based or another bodily experience-based interaction. On the other hand, it would also be interesting if the exhibition itself gives an output that surprises in its form and method. The media exhibits are of great potential in being ‘live’. We imagine activating the items in a playful way.

The technological aspects of the exhibits of the museum are also interesting if they can be used in an edutaining way. We find values in science museums that can be interpreted to the media museum concerning the bodily interaction with the different technologies through experiments. The experiences specifically addressed to school classes are also interesting to exploit and develop for the overall museum experience.

From here

The presented research and ideas are still at a conceptual stage. We have found values and qualities for solutions that we wish to implement in the future museum experience. The future work lies within concretising and specifying the ideas and trying them out in user scenarios and working prototypes. The presentation will include some design solutions for the future museum experience through scenarios.

Acknowledgment

We would like to thank Peter Gall Krogh, Marianne Graves Petersen, Kaj Grønbaek and ISIS Katrinebjerg for supporting the work in the I-museum project and for useful comments on this paper.

References:

1. www.ontariosciencecentre.ca
2. www.exploratorium.edu
3. www.newseum.org
4. www.naturhistoriskmuseum.dk
5. www.dinosaurfactory.jp
6. www.autostadt.de
7. www.sonywondertechlab.com
8. www.aec.at
9. www.w5online.co.uk
10. www.cavi.dk
11. Pine, J., and Gilmore J. "Welcome to the Experience Economy" Harvard Business School Press; (July 1, 1998)
12. Liburd, Janne J., PhD, University of Southern Denmark, Sustainable Tourism and Innovation in Mobile Tourism Services, Accepted for publication in: Tourism Review International 2005 (forthcoming)
13. Krogh, P.G., Ludvigsen, M., Lykke-Olesen, A.: "Help me pull that cursor" - A Collaborative Interactive Floor Enhancing Community Interaction. To appear in proceedings of OZCHI 2004, 22-24 November, 2004 at the University of Wollongong, Australia.
14. Petersen, M.G., Iversen, O., Krogh, P., Ludvigsen, M. (2004) Aesthetic Interaction - A pragmatic aesthetics of interactive systems. In proceedings of DIS2004, ACM Press
15. Petersen, M. G., Ludvigsen, M., Jensen, H. F., and Thomsen, A. (2004) Embracing Values in Designing Domestic Technologies. In Proceedings of European Conference on Cognitive Ergonomics, ecce'12, York, September 2004
16. Agger Eriksen, M., Krogh, P., Ludvigsen, M. Playful Interaction. First International Conference on Appliance Design, Bristol, UK, 6-8 May 2003
McCullough Malcolm, Digital Ground (2004) MIT Press
17. Jensen Jens F. "Interaktivitet & Interaktive Medier", in (red.): Multimedier, Hypermedier, Interaktive Medier, FISK-serien 3, Aalborg: Aalborg Universitetsforlag, 1998
18. Frascara, Edited by Jorge, Design and the Social Sciences: Making Connections (2002)