ENGAGING SPACES

Interpretation, Design and Digital Strategies

Proceedings

Editors
Halina Gottlieb
Marcin Szeląg

nodem

NODEM 2014 CONFERENCE & EXPO

ENGAGING SPACES

Interpretation, Design and Digital Strategies

December 1-3, 2014
Warsaw, Poland

Proceedings

Editors
Halina Gottlieb
Marcin Szeląg

Conference edition

nodem

Welcome to the NODEM 2014 Conference

We are delighted to give a warm welcome to the NODEM 2014 conference participants who have responded to our invitation, and we hope that you will find the conference informative and worthwhile. We are gratified that many participants from our previous NODEM conferences continue to engage in our interdisciplinary effort to address challenges and opportunities facing museums and cultural heritage institutions. We are proud that participation at NODEM conferences is becoming more global in reach involving culture heritage professionals from South America, Asia and USA.

Our highest priority is to provide the most stimulating sessions and exhibitions for sharing know-how, generating ideas and starting collaborations. The primary goal of the NODEM conference Engaging Spaces is to bring together heritage professionals, museum researchers as well as ICT experts from around the world in an open dialogue to discuss the issues facing newly built or renovated museums and other culture-historical institutions to stay competitive in engaging today's visitors.

We hope that our diverse and dynamic group of keynote and special session speakers and exhibitors provide new insight about practical tools, engagement models and methods for heritage institutions to become more effective in the on-going development efforts of involving visitors through interpretative content and design and digital strategies.

On behalf of NODEM 2014 conference organizers and partners we would like to thank you for choosing to attend the NODEM 2014 conference.

We wish you an interesting and productive conference!
Sincerely,

Halina Gottlieb
PhD, Founding Director of NODEM, Digital Heritage Center Sweden AB

Marcin Szeląg
Assistant Professor, Adam Mickiewicz University in Poznań, Poland

Conference Program Committee

Marcin Szeląg (Chair of Program Committee), Adam Mickiewicz University, Forum of Museum Educators, Poland
Andrea Nanetti, Shanghai Jiaotong University International Research Centre for Architectural Heritage Conservation, Shanghai
Anne Balsamo, The New School for Public Engagement, USA
Ari Häyrinen, University of Jyväskylä, Finland
Behrang Mousavi, The New Institute (Het Nieuwe Instituut), Netherlands
Bodil Axelsson, Linköping University, Sweden
Christoffer Gottlieb, Digital Heritage Center Sweden AB
Daniel Spikol, Malmö Högskola, Sweden
Dorota Folga-Januszewska, Academy of Fine Arts in Warsaw, Cardinal Stefan Wyszyński University in Warsaw, President ICOM-Poland, Poland
Halina Gottlieb, Interactive Institute Swedish ICT, Sweden
Harald Kraemer, Zurich University of the Arts, Switzerland
Herminia Din, University of Alaska, USA
Jacek Smolicki, Malmö Högskola, Sweden
Katarzyna Nowakowska-Sito, The Museum of the History of Polish Jews, Exhibitions and Museum Collections, Poland
Kevin Walker, Royal College of Art, UK
Krzysztof Walczak, Poznań University of Economics, Poland
Lily Díaz-Kommonen, Aalto University, Finland
Magdalena Laine-Zamojska, University of Jyväskylä, Finland
Marco de Niet, The DEN Foundation (Digitaal Erfgoed Nederland / Digital Heritage Netherlands), Netherlands
Mariana Salgado, Aalto University, Finland
Neil Silberman, University of Massachusetts Amherst, USA
Ole Smørdal, University of Oslo, Norway
Piotr Majewski, NIMOZ – National Institute for Museums and Public Collections Poland
Piotr Szaradowski, The National Museum in Poznań, Poland
Sanna Marttila, Aalto University, School of Arts, Design and Architecture, Finland
Wim Hupperetz, University of Amsterdam, Netherlands
Zygmunt Kalinowski, Museum of the First Piasts at Lednica, Poland

Editorial board

Contents

Proceedings

TACTEC, Transforming Art and Culture Through Engagement and Construction

Raquel Barros Pinto
Communication and Society Research Center, University of Minho, Portugal
raquelbpinto@hotmail.com

Lia Oliveira
Research Center in Education, University of Minho, Portugal
lia@ie.uminho.pt

Nelson Zagalo
Communication and Society Research Center, University of Minho, Portugal
nzagalo@ics.uminho.pt

Abstract: *This article describes the development of an interactive application based on participatory and creative activities of visitors of art museums, TACTEC (Transforming Art and Culture Through Engagement and Construction). This prototype pretends to promote new ways of learning about the artwork in the museum environment. The project arises from the combination of art and technology and constitutes an interactive application developed for tangible surfaces based on Windows Touch and Tablet Android systems. TACTEC refers to the direct relationship between the visitors and the artworks presented in the museum space. The main point of our work is the relational engagement in a creative exploration. With this model we pretend to offer museum visitors a new communication model where, apart from the motivation of the visit, the museological context constitutes itself as a living platform that provides moments of enjoyment and connection with the works exhibited in a unique approach to the visitor. The developed platform offers the possibility of viewing the original works and the possibility of creating new scenarios, based on the creation of visual narratives, using elements/fragments from the original artworks. The images created can be shared on social networks and thereby constitute the museum visit also as a form of relationship with the outside world. The methodology adopted was development research. The techniques for data gathering adopted were: questionnaires, observation, interview and analysis of documents. The instruments for data collection: video register, screen cast, and interview protocols. Usability tests were carried out at the Centro de Computação Gráfica, University of Minho, Guimarães and at the Sociedade Martins Sarmento museum, Guimarães, Portugal.*

Keywords: Participation, Interactivity, Art, Museum, Creativity

Introduction

On the basis of the application designated as TACTEC (Transforming Art and Culture Through Engagement and Construction) we can find the principle of involving the art museum's visitors in performing creative experiences around the existing artwork in the museum they are visiting. With the approach presented here we intended to find new ways of enabling the visitor's involvement in the development of activities that explore the content embedded in the artwork and to design, using interactive media, new spaces for reflection and communication. With the development of the communication model proposed we are looking to make possible the examination of the visual content displayed and at the same time provide an approach of an experimental nature, created by the visitor's engagement with the artwork presented in digital format.

With this study we aim to answer the following questions:
1) Do the visitors become closer to the artwork presented?
2) Does the presented model promote the creation of new visual narratives?
3) How can we relate the potential for creating new images to the characteristics evident in the presented model?

In the presented model, the informational paradigm can be found in a brief record, where a few notes about Hieronymus Bosch can be observed; that is, for example, the name, the origin, the period in which he worked and the name of some of his artwork. The latest version of the prototype of TACTEC allows visitors to interact with a virtual exhibition of Hieronymus Bosch's masterpieces. The platform also constitutes itself as a *medium* that presents visitors with a pool of possibilities to perform and do visual compositions. Different art principles and techniques used in the fields of photography, music, literature, and visual arts have been considered as basic assignments for developmental options. Some of these principles were associated with the logical principles used in collage, montage and mixing techniques (Pollig & Suhle, 1982; Adamowicz, 1998; Wescher, 1980). Some concepts such ownership, authorship, reproduction of artwork and the spectator emancipation (Weisstein, 1978; Benjamin, 1992; Benjamin, 2008; Rancière, 2010) also constitute the prototype's design. Knowing the concepts listed, it was also considered the dimension of "Art as Experience" by John Dewey (Dewey, 2005) and some of the arguments and foundations of communication and visual culture (Arnheim, 1990; Rose, 2002; Freedman, 2003 & Arnheim, 2005). This group of concepts and techniques allowed us to establish the creation of a materialized model application in an exploratory platform - TACTEC prototype – developed for a multitouch surface. The adopted methodology was the "development methodology" (Richey & Nelson, 1996; Richey & Klein, 2005; Richey, Klein & Nelson, 2008). In order to validate the model implemented, usability tests were conducted at the Center for Computer Graphics (CCG), at the University of Minho, and afterwards its validation was also executed in a museum context, at the Sociedade Martins Sarmento (SMS) in Guimarães, Portugal. The testing sessions at the SMS museum created some images posted on the project's Facebook page, at Transforming Art and Culture Through Engagement and Construction (TACTEC, 2013).

This application simulates the environment of an art studio (Baudrillard 1994). It allows visitors to go on a journey through the artworks presented there and it also gives the visitors the possibility to create new and original images. The development of activities in the canvas results from a free exploratory action, at the level of the subject's relation to the available visual elements, basing itself on general principles of learning the arts through experience (Dewey 2005). This approach moves away the game scenario because it provides visitors with interaction without rules, boundaries or specific final objectives. Therefore, all visual results are possible and it depends on the visitor's activities.

Related Work

The world of museums is changing (Simon, 2010). Institutional structures are opening its doors to technology and enabling the creation of spaces dedicated to experimentations using the interactive media. Visitors now have access to game-like applications (Pujol *et al.*, 2012; Ardito, Lanzilotti, Costabile & Desolda, 2013), they are able to stand before virtual actors (Swartout et al, 2010) and explore the different exhibition content in museums on multi-touch tables (Ciocca, Olivo & Schettini, 2012; Correia, Mota, Nóbrega, Silva & Almeida, 2010; Michael *et al.*, 2010). There are several applications developed for tablets and smartphones such as the ones that we can find at Louvre, Paris (Louvre, 2012), and also projects of augmented reality and other interactive systems (Alisi, D'Amico, Ferracani, Landucci & Torpei, 2010). The museum opens the doors of its galleries and its treasures through virtual tours exhibitions, as it can be noticed by several museums that joined "Project Art" from Google (Google, 2011). The technology settles and the panorama extends to actions of enjoyment, recreational actions, and information panels enriched by interaction scenarios. Many of the developed solutions are

focused on exploring cultural heritage contents, while others, in turn, are directed to contents related to art, looking for and promoting new approaches for the involvement of visitors in art museums, through aesthetic experiences, art learning and the development of creative activities (Pierroux, Krange & Sem, 2011 & Pinto, Zagalo & Oliveira, 2013).

Methodology

Because we place our research within the field of education and communication, we have chosen "developmental research" (Richey & Nelson, 1996; Richey & Klein, 2005 & Richey, Klein & Nelson, 2008) in order to map design and implementation of the proposed model. This methodology allows the model to be redesigned in its different stages of development according to the feedback from the exploratory tests that have been done with potential users and also considering the records of observation conducted during the test sessions.

Scenery

We are looking to develop a communication model for art museums, so we resorted to old paintings for the execution of our project. As a basis for the design of our application, we created a model that would allow the creation of visual narratives combined with the possibility of sharing it in social media. We see the type of the narrative as a key element in human communication. A way that involves the subjects into constructive action where the underlying method in the creation process is the one of discovery and involvement of the subjects (Bruner, 1991). In this context of creation we consider visual narratives as a result of a complex process that involves many concepts and skills linked to visual characteristics (Arnheim, 1997; Arnheim, 2005). At the same time, there was research about the artists and artwork that dominate the museums and the European Art History. In this scenario, the work of the painter Hieronymus Bosch stands out, because it not only presents magnificent sceneries, filled with a large number of characters and packed with action and stories where the preciousness of the detail is combined as a seemingly endless source of elements (Beg, 2011 & Rembert, 2012), but also because he is the author of the triptych, patent at the Museu Nacional de Arte Antiga (MNAA), in Lisbon, Portugal. We hope to attend a prototype exhibition at MNAA in the near future. The purpose of this exhibition is provide the research process with new data samples that will help us to better understand and evaluate the model with national and foreign visitors.

Development of the model

From the work of Hieronymus Bosch we selected the triptychs, "The Temptation of Saint Anthony", "The Garden of Earthly Delights", "The Hay Wagon", "The Last Judgment", "The Adoration of the Magi", and also the pieces "The Wayfarer", "Ship of Fools", "The Temptation of St. Anthony", "Cutting the Stone" and "The Seven Deadly Sins and the Four Last Things". Based on the analysis of these artworks, it was possible to draw a profile of subjects that allowed us to assemble a referential composed of different elements, which later became the categories menu in the model.

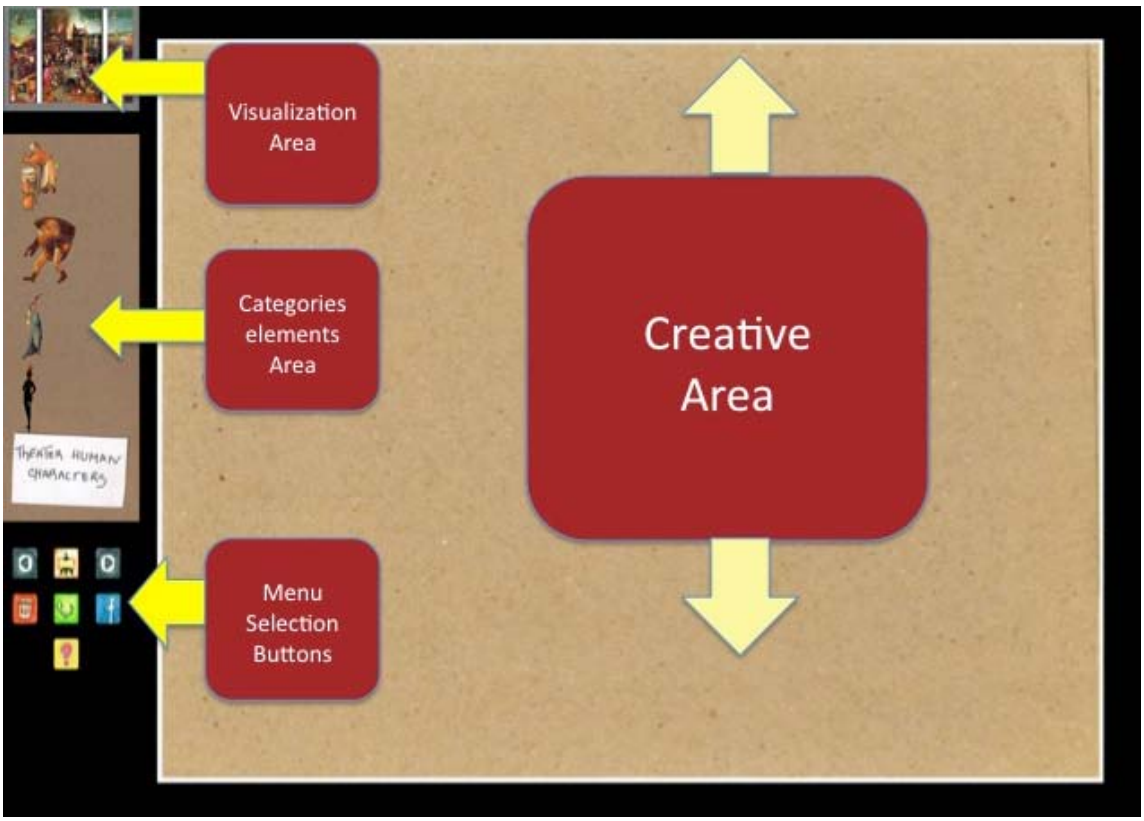


Figure 1. Layout of the prototype

We then observed that within the selected artwork it was possible to identify a set of objects from daily life that were repeated in different pieces. Also, the frequent representation of birds, mammals, fish, amphibians and reptiles was noted. The universe of Hieronymus Bosch also features a diverse collection of grotesque figures, human figures, building images, and plant elements that coexist side by side between the spheres of the sacred and profane in the different compositions. From this analysis it was possible to identify patterns, from which a set of 161 elements, distributed in 8 categories, were extracted. After this process is complete, a set of categories menu has been created and it is constituted by "Theatre Human Characters", "Animal Figures," "Theatre Characters", "Divine Figures", "Grotesque Figures," "Everyday Objects", "Buildings" and "Nature Images". A category called "Background" was also created that is set apart from the previous categories, consists of a picture database, and is intended to be the support to host compositions to be carried out with other elements.

The present combination of menus contributes to the development of visual activities and the construction of visual compositions, inspired by the assembly of elements and on the reshape of those elements (Figure 1). The interactive platform also allows the view of the selected artworks of the painter and allows to post the visual compositions created on Facebook (Figure 2).

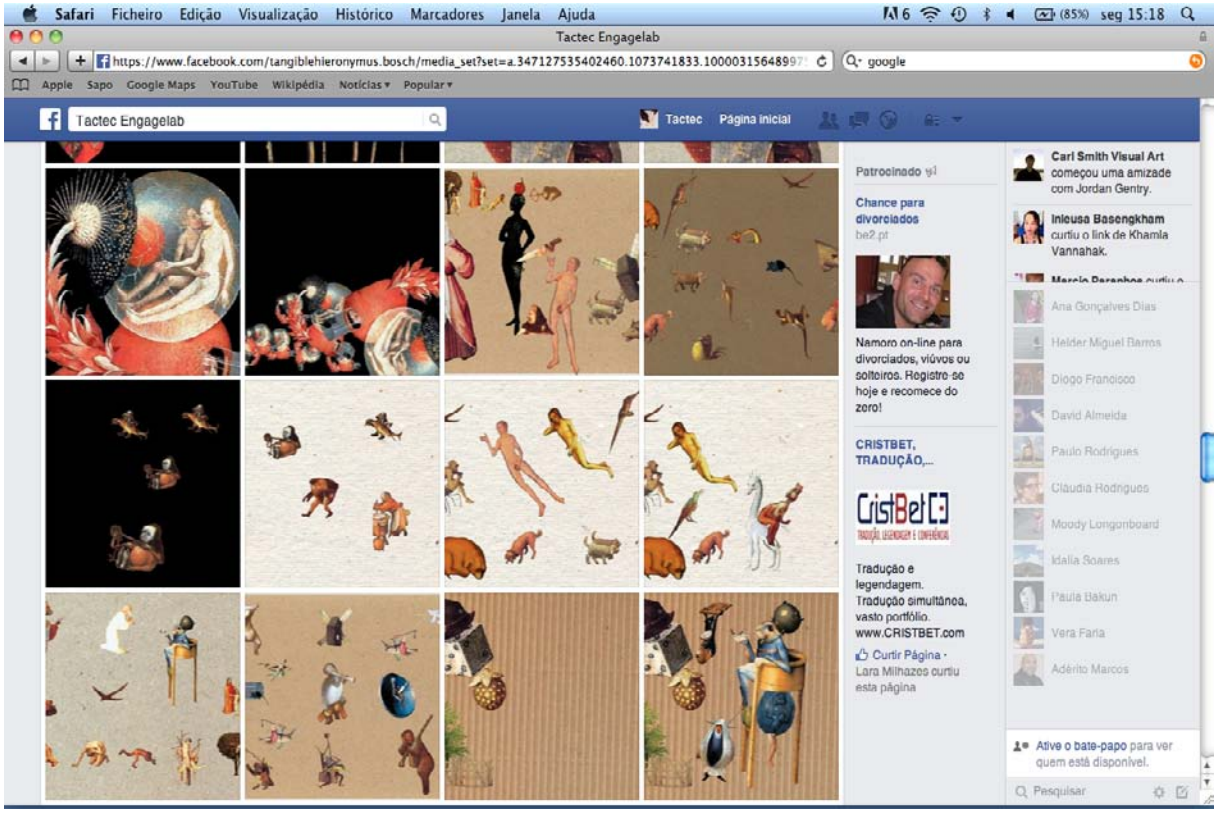


Figure 2. Screenshot of TACTEC on Facebook

Paths: from design to sample characterization and data collection

In order to conduct the present study we created a prototype, a communication model for art museums. Because this is the development of a device that is designed to bring closer museum visitors and the content of the exhibitions, the research that was developed includes different phases of design and prototyping. Thus, aiming to develop a device, that actually translates into a platform that enhances the relationship between visitors and the art, the development of our investigation involved conducting several exploratory and usability tests to better understand the parameters of "efficiency", "learning", "flexibility", "user's attitude" (Nielsen, 1993 & Rubin & Chisnell, 2008) and also to check whether the developed model is effective and efficient in its interface design as well as in the way users respond to it (Hix & Hartson, 1993; Preece, 1993 & Preece, Rogers & Sharp, 2011). These tests allowed us to pass through several stages of development and evaluation to reach the creation of the final model.

Instruments

In the course of our investigation we collected data to conduct a quantitative and qualitative evaluation strategy. We developed and implemented questionnaires, made records of direct observation, made video recordings and *screencast* and took notes in a field journal. Experts validated the questionnaires and the observation grids used. From this process data to analyze and to quantify has resulted. Some data, such as samples of text published by subjects on Facebook, have been analyzed according to content analysis (Bardin, 1997). "Image analysis" has also been applied to the final images published on Facebook (Mitchell, 2005; Aumont, 2005; Joly, 2007 & Marshall, 2007).

Regarding the quantitative parameters, the questionnaire items were answered on a five-point Likert scale. They can measure aspects regarding application, such as: "The application is informative"; aspects regarding the use of the application: "The articulation of the elements of artworks by the same author encourages the perception of his language"; and finally aspects regarding the artwork of Hieronymus Bosch: "The application allows you to create dynamic discoveries around elements in the artworks".

Usability test plan

To perform the test sessions, the participants followed a protocol based on a script. The tasks and the estimated time for each are defined in Table 1. We also asked participants to use the think aloud protocol during the test session.

Table 1. Script

Task	Estimated time for the task
Task 1: Select an image from each category and place it on the desktop;	three minutes
Task 2: Choose an image and make its repetition in three different sizes;	three minutes
Task 3: Select an image to enlarge; rotate in various directions, and move the image in the creative area;	one minute
Task 4: Perform a visual composition;	five minutes
Task 5: Post the picture on Facebook.	one minute

Study description

In this process of evaluation we have considered two groups. Both provided the usability evaluation but the evaluations were carried out at different places. One group constitutes the sample from the tests that have been conducted at the Centro de Computação Gráfica (CCG), University of Minho, and Sociedade Martins Sarmento (SMS) museum's visitors constituted the other group. With the implementation of a questionnaire in both scenarios (CCG and SMS) we aim to understand some general usability aspects such "effectiveness", "efficiency", "satisfaction" and "specific attitudes towards the interface" (Hornbæk, 2006). In order to address that purpose we used a set of five-point Likert scale questions The conclusion of the survey allowed to trace a profile of the sample in a general manner including age, education, gender, digital literacy and, also, to obtain data regarding the questions specifically related to usability, engagement and satisfaction parameters (Nielsen, 1993 & Preece, 1993).

The sample

The first sample consists of three female subjects and eight male subjects, their ages ranging from sixteen to fifty-two and their education level consisting of four subjects in high school, two BSc, two MSc and one PhD. The second sample consists of nine female subjects and four male subjects, their age ranging from eleven to fifteen and all the participants being middle school students. Both samples revealed to have contact with digital technological solutions. All subjects affirmed to use digital devices such smartphones and tablets.

Results and discussion

Figure 3 shows a graph of the metrics obtained for a subset of questions presented in the questionnaire. It presents the average values of the responses, referenced to the scale of 1 to 5, where 1 is "strongly disagree"; 2 corresponds to "agree somewhat "; 3 corresponds to "agree"; 4 corresponds to "quite agree" and 5 corresponds to "completely agree". The green color represents the average of responses in the test conducted in the CCG, the red color corresponds to the answers obtained in the SMS museum and the blue color to the average of both responses. After reading these responses, and, with the crossing data by information recorded in the think-aloud protocol, we can try to understand to what extent it is possible to answer the initial questions.

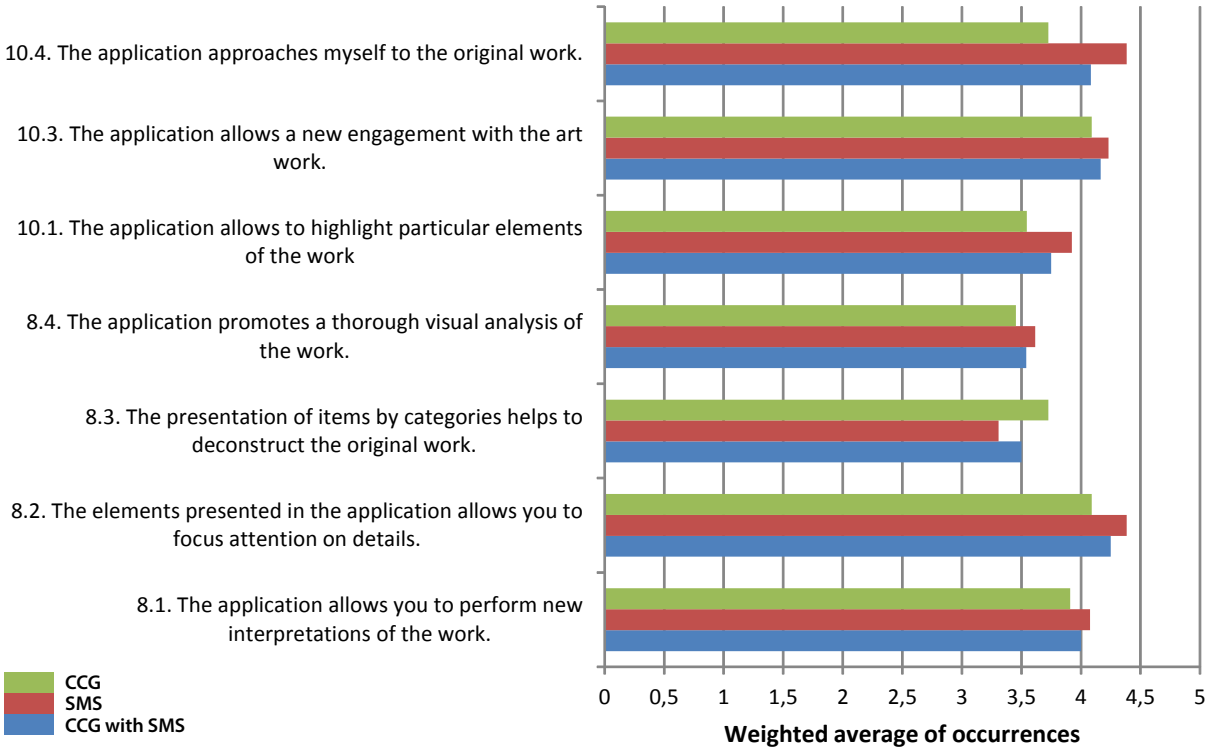


Figure 3. Bar graph for the questions regarding the application interface and with the user experience

It is observed that the average value for the question "8.1. The application allows you to perform new interpretations of the work" approaches the indicator "quite agree". Regarding the questions "8.2. The element presented in the application allows you to focus attention on details" and "10.3 The application allows a new engagement with the art work", the average of the responses of each group is also around 4 of the rating scale. This suggests that both the elements collected and the design of the application allows a new engagement with the artworks presented. Concerning the questions 8.3 and 8.4, the answers lie above the 3 rank. It means that globally the participants agree that the presentation of the elements by categories helps deconstruction of the artwork and also that the application promotes visual analysis of the artwork. Through the observation of the graph, we can also infer that the majority of the participants "quite agree" that the application highlights particular elements of the works and that it also allows a more personal approach to the original artworks.

Tasks vs. free exploration

Using the previous elements and also based on the observation of the images created by the distinctive users, we can admit that the use of this communication model promotes the approximation to the artworks presented. Since the subjects can manipulate fragments extracted from the artworks, it can fuel a greater familiarity with the elements that constitute the imagination of Hieronymus Bosch. The creation of new visual narratives is evident through the extensive number of images posted on Facebook. The collage technique used in the model allows the realization of different visual compositions, like the one illustrated in Figure 4.

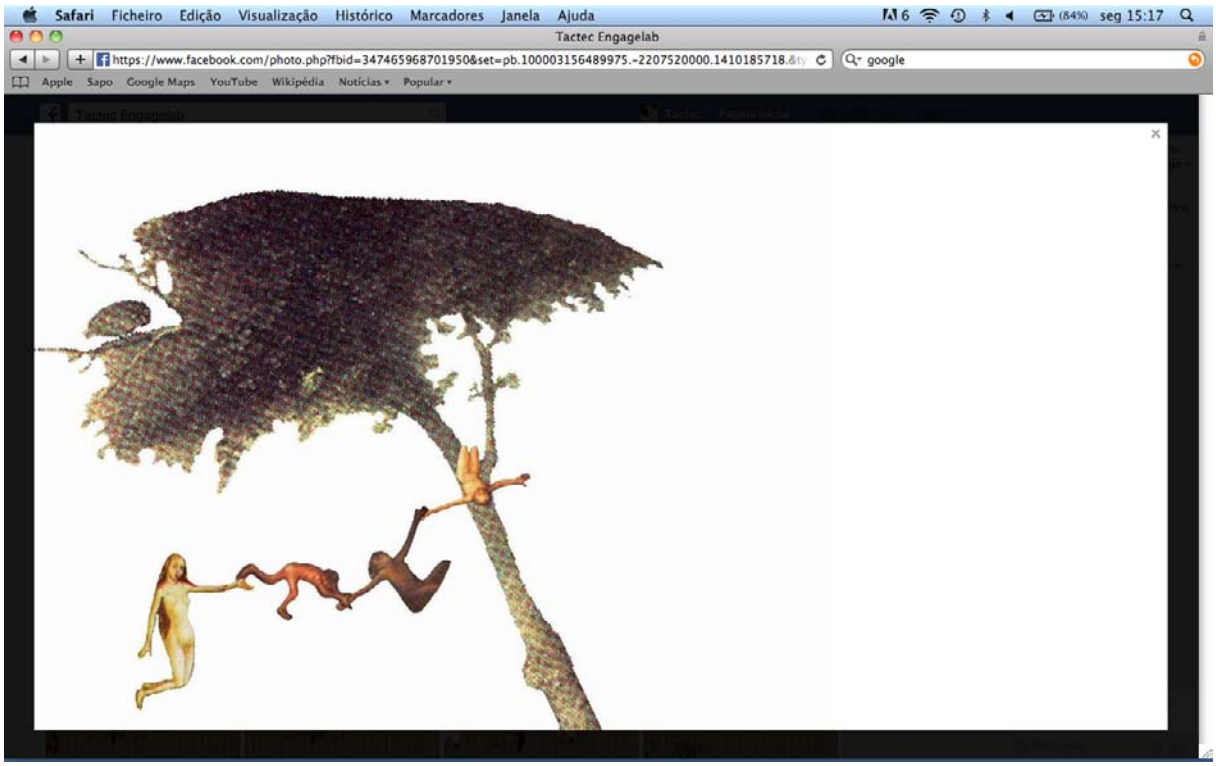


Figure 4. A visual composition made TACTEC prototype

Final Remarks

The analysis of the data collected allows the conclusion that the device that was developed works as a platform that provides an intuitive approach between the subjects and contents presented. In particular, the subject's satisfaction in the development of activities and the number of images produced makes it clear that the model consists of an engaging scenario of creation and sharing of visual narratives. It is also observed that the visual narratives, resulting from a process of intuitive exploration of the menus, which through its navigability allows access to a vast number of elements, defines a distinctive pictorial universe of the original work. With this communication model, and based on the analysis of the observations, it seems clear that the subjects gained an affinity with the theme presented, giving rise to their creativity in a playful manner, with involvement and enjoyment. With the results obtained with the Sociedade Martins Sarmento museum visitors, the next phase is to present it at the Museu Nacional de Arte Antiga, in Lisbon, where the triptych "The Temptation of Saint Anthony" is exhibited.

Acknowledgements

This work was supported by the CIED (Centre for Research in Education) by funds from FCT (Foundation for Science and Technology), under the PEST-OE / CED / 1661/2014 project UI.

We would like to thank the Centro de Computação Gráfica for the free access to its facilities to conduct usability testing, and in particular for the kindness of the Director to assign a multi-touch table for the completion of exploratory testing and usability. We would also like to thank the Sociedade Martins Sarmento museum, and, in particular, its Director for allowing TACTEC exhibition, and thank all museum staff involved during the process.

References

Adamowicz, E. (1998) *Surrealist Collage in Text and Image: Dissecting the Exquisite Corpse*, Cambridge: University of Cambrige.

Alisi, T. *et al.* (2010). *Natural Interaction for Cultural Heritage: the Archaeological Site of Shawbak.* Paper presented at the Conference on Multimedia.

Ardito, C. *et al.* (2013) 'Integrating Traditional Learning and Games on Large Displays: An Experimental Study', *Educational Technology & Society,* 16(1): 44-56.

Arnheim, R. (1990) *O Poder do Centro. Um Estudo da Composição nas Artes Visuais*, Lisboa: Edições 70.

Arnheim, R. (1997) *Para Uma Psicologia da Arte. Arte & Entropia*, Lisboa: Dinalivro.

Arnheim, R. (2005) *Arte e Percepção Visual. Uma Psicologia da Visão Criadora*, São Paulo: Pioneira Thomson Learning.

Aumont, J. (2005) *A Imagem*, Lisboa: Texto & Grafia.

Bardin, L. (1997) *Análise de Conteúdo*, Lisboa: Edições 70.

Baudrillard, Jean. 1994. Simulacra and Simulation. Michigan: The University of Michigan.

Beg, T. (2011). Interpretation of Hieronymus Bosch's painting 'The Garden of Earthly Delights'

Benjamin, W. (1992) *Sobre Arte, Técnica, Linguagem e Política*, Lisboa: Relógio D'Água.

Benjamin, W. (2008) *The Work of Art in the Age of Mechanical Reproduction*, London: Penguin Books.

Bruner, J. (1991) 'The Narrative Construction of Reality', *Critical Inquiry,* 18(1): 1-21.

Ciocca, G. *et al.* (2012) 'Browsing museum image collections on a multi-touch table', *Information Systems* (37): 169-182.

Correia, N. *et al.* (2010). *A multi-touch tabletop for robust multimedia interaction in museums.* Paper presented at the International Conference on Interactive Tabletops and Surfaces, New York, NY, USA.

Dewey, J. (2005) *Art as Experience*, New York: Penguin Group.

Freedman, K. (2003) *Teaching Visual Culture: Curriculum, Aesthetics, and the Social Life of Art*, New York: Teachers College Press.

Google. (2011). Art Project. from http://www.google.com/culturalinstitute/project/art-project?hl=pt

Hix, D. & Hartson, H. R. (1993) *Developing User Interfaces: Ensuring Usability Through Product & Process*, New York: John Wiley & Sons.

Hornbæk, K. (2006) 'Current Practice in Measuring Usability: Challenges to Usability Studies and Research', *International Journal of Human-Computer Studies,* 64: 79-102.

Joly, M. (2007) *Introdução à Análise da Imagem*, Lisboa: Edições 70.

Louvre. (2012). Louvre Audio Guide. Retrieved 2014-03-18, from http://www.louvre.fr/en/publishing-and-audiovisual-productions/applications#tabs

Marshall, J. (2007) 'Image as Insight: Visual Images in Practice-Based Research', *Studies in Art Education,* 49(1): 23-41.

McLeod, K. & Kuenzli, R. (Eds.) (2011) *Cutting Across Media: Appropriation Art, Interventionist Collage, and Copyright Law*, Durham, N.C: Duke University Press.

Michael, D. *et al.* (2010). *Comparative Study of Interactive Systems in a Museum.* Paper presented at the EuroMed, Lemesos, Cyprus.

Mitchell, T. (2005) *What Do Pictures Want?: The lives and Loves of Images*, Chicago: The University of Chicago Press.

Nielsen, J. (1993) *Usability Engineering*, Academic Press: New Jersey.

Pierroux, P. *et al.* (2011) 'Bridging Contexts and Interpretations: Mobile Blogging on Art Museum Field Trips', *MedieKultur, Journal of Media and Communication Research,* 27(50): 30-47.

Pinto, R. B. *et al.* (2013). Gestures of Appropriation in the Pictorial Universe of Painting Through the Use of a Tangible Surface. In Franken-Wendelstorf, Lindinger & Sieck (Eds.), *Kultur und Informatik: Visual Worlds & Interactive Spaces* (pp. 205-218). Gluckstadt: Werner Hulsbusch.

Pollig, H. & Suhle, V. (1982). Collage. In Auslandsbeziehungen (Ed.). Stuttgart-Bad Cannstatt: Dr. Cantz'sche Druckerei.

Preece, J. *et al.* (2011) *Interaction Design: Beyond Human Computer Interaction*, West Sussex: John Wiley & Sons Ltd.

Preece, J. (Ed.). (1993) *A Guide to Usability. Human Factors in Computing*, Oxford: The Open University.

Pujol, L. *et al.* (2012). *Personalizing interactive digital storytelling in archaeological museums: the CHESS project.* Paper presented at the 40th Annual Conference of Computer Applications and Quantitative Methods in Archaeology (CAA), Southampton.

Rancière, J. (2010) *O Espectador Emancipado*, Lisboa: Orfeu Negro.

Rembert, V. P. (2012) *Hieronymus Bosch*, New York: Parkstone.

Richey, R. & Nelson, W. (1996). Developmental Research. In Jonassen (Ed.), *Handbook of Research for Educational Communications and Technology* (pp. 1213-1245). London: Macmillan.

Richey, R. & Klein, J. (2005) 'Developmental Research Methods: Creating Knowledge from Instructional Design and Development Practice', *Journal of Computing in Higher Education,* 16(2): 23-38.

Richey, R. *et al.* (2008). Developmental Research: Studies of Instructional Design and Development. In Jonassen (Ed.), *Handbook of Research for Educational Communications and Technology* (pp. 1099-1130). New Jersey: Lawrence Erlbaum Associates.

Rose, G. (2002) *Visual Methodologies. An Introduction to the Interpretation of Visual Materials*, London: Sage.

Rubin, J. & Chisnell, D. (2008) *Handbook of Usability Testing. How to Plan, Design, and Conduct Effective Tests*, Indianapolis: Wiley Publishing, Inc.

Simon, N. (2010) *The Participatory Museum*, Santa Cruz: Museum 2.0.

TACTEC. (2013). Transforming Art and Culture Through the Engagement and Construction. from https://www.facebook.com/tangiblehieronymus.bosch/photos

Weisstein, U. (1978) 'Collage, Montage, and Related Terms: Their Literal and Figurative Use in and Application to Techniques and Forms in Various Arts', *Comparative Literature Studies,* 15(1): 124-139.

Wescher, H. (1980) *La Historia Del Collage. Del Cubismo a La Actualidad.*, Barcelona: Editorial Gustavo Gili.

Restaging a Garden Party: Sharing Social Histories through the Design of Digital and Material Interactive Experiences

Caroline McCaw, Morgan Oliver, Leyton Glen
School of Design, Otago Polytechnic, Dunedin, New Zealand

Abstract: *This paper outlines the design, development and outcomes for two student group projects, from the School of Design at Otago Polytechnic. Both projects consider ways of developing social history storytelling, through the design of interactive experiences using material and digital forms. Working with the content and histories of Olveston, a heritage home, gifted to the southern city of Dunedin, New Zealand, the projects engage historic values in innovative ways.*

The first project restages elements of a garden party, first presented in 1907, to celebrate Dorothy Theomin's "coming out". This event, documented in the local newspaper, is recreated and discoverable, through a geo-located Augmented Reality app. Scenes are restaged drawing on a combination of old photographs and new footage and recordings. The second project considers ways of developing the existing resources and narratives currently employed in the Olveston house tours to extend the visitor experience. A wide range of media and outcomes are employed in this open brief, in order to develop these material interactive tools.

Through engaging strategies and strategies of engagement this paper consider ways that young people become enthusiastic about both the research into, and retelling of old stories. This evolving practice of the design of social history storytelling, enlists techniques of theatre and film-making, and contemporary museological ideas of community-based identity building, along with IDEO design thinking methods. We produce characters, objects and images that have material and contextual connections to place, and help to develop new local and visitor audiences.

Discussion considers the role of embodied local experience, in partnership with digital, augmented and take-away experiences, realized through the creative process of designing. Nina Simon's definitions of social and relational objects (Simon 2010) are compared with Shedroff et al's model of Experience Design.

Keywords: interactive social history storytelling, recreating historic scenes and spaces, experience design, Augmented Reality

Introduction

This paper examines two design projects developed by staff and undergraduate students at Otago Polytechnic's School of Design, in partnership with a local heritage tourism operator.

Students developed social history storytelling, through the design of interactive experiences using material and digital forms. Working with the content and histories of Olveston, a heritage home, gifted to the southern city of Dunedin, New Zealand, the projects engage historic values in innovative ways. This paper begins by providing some contextual detail to the historic home, identifying problems that a design methodology may propose potential solutions for. It then briefly outlines the research and development of these design outcomes. The designs include characters, objects and images that have material and contextual connections to their site, however they place historic story-telling on the edges of the traditional museum experience, drawing on everyday and shared experiences including food preparation, overhearing conversations, and discovering lost toys in the garden. The paper then considers the outcomes of the project in terms of contemporary ideas surrounding museum experiences, and design thinking.

Background to the Olveston Context

David Ezekiel Theomin was born in Bristol, Gloucestershire, England in 1852, the son of a Jewish minister, and came to New Zealand via Australia in 1879. While in Melbourne he married Marie Michaelis, a businessman's daughter. The couple then moved to Dunedin, New Zealand to help develop this new colonial city through their commercial enterprises. David and Marie went on to have two children, Edward (1885) and Dorothy (1888), both born in Dunedin, New Zealand. However neither of their children were to produce an heir.

Throughout the 1880's and 90's Theomin's business interests flourished. In the early 20th century the Theomin family commissioned a grand 35 room house to be built on their Royal Terrace property completed between 1904 and 1906. Throughout his life Theomin was a community and civic leader, and a prominent figure within the Jewish congregation in Dunedin. The Theomins provided generous financial support to many cultural and philantropic organisations in the city.

During their international travels and through the family's importing businesses the Theomins amassed an impressive collection of European and Oriental treasures at Olveston. When David Theomin died, his daughter Dorothy was the sole remaining member of the family, and she remained at Olveston until her death in 1966. Her will revealed that Olveston and all its contents were to be gifted to the city of Dunedin.

After the formation of the Theomin Gallery Management Committee, Olveston was opened to the public as a visitor attraction in 1967. To this day the house is maintained in a manner befitting the Theomins' wishes and remains a snapshot of this wealthy merchant family's tastes, interests and general domestic way of life.

In many ways Olveston House is a very successful visitor attraction. In 2014 Olveston House was voted 'New Zealand's number one landmark' by the tourism website TripAdvisor, beating far grander national attractions including Auckland's Sky Tower and Old St Paul's Cathedral in Wellington.

Design problems identified

In 2014 the manager of Olveston invited Communication Design students at Otago Polytechnic to be involved in developing new projects which could help promote this historic site and story. During the initial planning phase of the project, a number of problems were identified. Firstly, as the success of Olveston on TripAdvisor reflects, the existing tours were popular and met the needs and expectations of the visitors who sought them out. However during our own experiences on tours it was clear to see that this visitor group was a fairly narrow demographic, derived significantly from sightseers arriving on cruise ships and bus tours that visit Dunedin from October through to April. The guided tours are spoken, and connect stories of the family, the rooms and the collections of objects in the rooms for visitors within a 60 minute schedule with no photogrpahy or tour deviation permitted. Anecdotally the tours of Olveston appeal most to older women, exposing a lack of activities or areas of engagement for mixed groups including youth and children. Furthermore, outside of the formal tour format, visitors were largely unable to engage with the Olveston story. There is no freedom to view the interior without supervision, and the gardens, while well-kept and free to visit, feel disconnected from the rich narratives to be found inside the house. We felt that there was a missed opportunity for local visitors in particular who might be inclined to visit the gardens to experience the Olveston story without having to commit to a formal 60-minute tour of the interior.

The gift shop is located as part of the entrance area and offers a generally low quality array of reproduction trinkets and – like Theomin's merchandise – are mostly manufactured outside of New Zealand. From our brief analysis, this seemed to be a wasted opportunity to make strong connections between the Olveston House tour and the ability to provide 'aides-memoires', low cost items that would remind visitors of their experience.

In terms of engaging our students in this project, the level of security inside Olveston was also an impediment. Management were reluctant to let students have unsupervised access to the interior due to some valuable collection items, and the supervision necessary wasn't able to be provided.

The proposed direction for the project was thus based on an analysis of these problems. In short, we wanted to engage young people and children as well as mixed groups of both locals and visitors to Dunedin with the Olveston story using new means. We also wanted to develop products for the gift shop that engaged directly with Olveston's – and the city's – social histories.

Designing User-focussed experiences

At the start of the project we introduced a number of relevant theories connecting design thinking with writers reflecting on successful museum experiences. This began with a workshop reflecting on, and employing IDEO methods. As a doorway into thinking about people's behaviour in relation to interaction design we introduced ideas from a workshop in 2010 with Fred Dust from IDEO. Dust presented the details of his experiences working with interaction design and offered us some hands on provocations to aid thinking about interaction design in interesting ways. Primary to this is the IDEO philosophy that focus groups are inherently problematic because people have a tendency to exaggerate and or lie to make themselves look good. IDEO base their research on relentless observation. Silent observers follow people around and document meticulously through cameras their actual behaviour, this then becomes the input for any resultant design brief. IDEO also pay particular care to the language they use, As big fans of iterative prototyping we were encouraged to see IDEO's passion for the 'Design Thinking' feedback loop through extensive prototyping and testing and we also encouraged this at every possibility with our students in the Olveston project.

We reflected further on the design of meaningful experience, drawing upon Diller, Shedroff & Rhea's (2006) model of Experience Design. Diller et al. develop ideas of the value of experience, and define experience with reference to Pine and Gilmore's term 'the experience economy'. "To experience something requires that we recognize an alteration to our environment, our bodies, our minds, our spirits, or any other aspect of ourselves that can sense change" (Diller, Shedroff and Rhea 2005 p18). The experiential relationship we have with physical objects, a practice grounded in everyday experience, can shift recognition and meaning beyond the object itself to create meaningful memories. Drawing upon these ideas students visited a number of local museums and another historic attraction to observe visitor behaviours, and to analyse expected and actual responses to objects, spaces, instructions and proposed experiences.

Along with a design-focussed perspective, we considered some contemporary museological thinking.

Contemporary museum curator Nina Simon (2010) suggests that we should look at an image or object " … not for its artistic or historical significance but for its ability to spark conversation" (Simon 2010). These artefacts and experiences she defines as social objects. "Social objects are the engines of socially networked experiences, the content around which conversations happen. Social objects allow people to focus their attention around a third thing rather than on each other" (Simon 2010 ch 4 n.p.). Simon draws upon Jyri Engstrom's (2005) term 'social objects' addressing the role that objects have between people relating on online social networks. He uses the example of Flickr where people don't socialize generally about photography, but rather about specific shared images, discussing discrete photographic objects. The objects don't have to be physical but they do need to be distinct entities. A social object is one " … that connects the people who create, own, use, critique, or consume it. Social objects are transactional, facilitating exchanges among those who encounter them" (Simon 2010 ch 4 n.p.). Simon uses the example of her dog as a reliable social object. "When I walk around town with my dog, lots of people talk to me, or, more precisely, talk through the dog to me. The dog allows for transference of attention from person-to-person to person-to-object-to-person" (Simon 2010 ch 4 n.p.).

The consideration and use of museum material as social objects, according to Simon, doesn't separate visitors from the historic material. Rather, "… it let us onto the stage to share it with the actor, the objects, and the story at hand" (Simon 2010 ch 4 n.p.). Our students, through their role in the project, were encouraged to see themselves as on stage too. In turn they developed theatrical responses to their brief. The gardens of Olveston House are public spaces and they are reframed by these designs, becoming both an exhibit space and a theatrical space, visitors can continue to explore it imaginatively and beyond the terms offered by the designed experience of the home tours. Simon suggests that this is a conscious choice. "Most social objects are personal, active, provocative and relational. To make objects social, you need to design platforms that promote them explicitly as the center of conversation" (Simon 2010, ch 4, n.p.).

While Diller et al.'s model of Experience Design proposes an emotional connection with the space, object or activity; Simon's methods more explicitly engage objects in a social relationship, with and between people. For both thinkers, communication is most powerful when it is personal and actively involves a participatory experience. These experiences evoke meaning with and through objects, spaces and storytelling, rather than through passively consuming information. Just as the physical objects in Museum contexts tell their stories, so too our own physicality contributes to the story and histories of the cities we inhabit.

The projects' research, development and outcomes

Because of the short overall time frame for the project we wanted to engage the class quickly with the stories and narratives surrounding Olveston House. We began by taking tours of the house, then immediately debriefed to discuss what we had seen and heard and what we thought were significant and relevant historical markers for us, rather than what the tour might present. At this point we initiated a 48-hour research challenge. Students formed groups to research, imagine and write scenarios for a party hosted at Olveston in 1907 for Dorothy Theomin. They identified groups of party-goers and researched into the types of conversations they might have. Each scenario included characters, a topic of conversation and a location in the house or gardens. Who would these people be? What would they talk about? Who were the Theomin's social circle and what did they share?

To do this students accessed information from other museums and libraries in Dunedin, including The Hocken Archive and Toitu Otago Settlers Museum. Online resources such as a New Zealand digital newspaper archive[1] and an online New Zealand encyclopaedia gave important local social context to understanding their city 100 years earlier, including detailed records kept of just such parties. The outcomes from this challenge showed a high level of engagement, exploration and discovery. Scenarios presented included the introduction of domestic electricity use (Olveston was one of the first houses in Dunedin to have this), the differences in food production and consumption, Theomin's philanthropic work,[2] Dorothy's recently completed education at the Roedean School in Britain and the association of the Theomin's with other well-known early colonial family businesses, many still in existence.

At this point we also divided the whole group into two teams based on shared interests and expertise. One group focussed on the gift shop and the development of potential 'aides-memoires'. From the start this team was interested in the idea of turn of the century food production and consumption. Not having supermarkets to rely on, the students were inspired by the comprehensive and relatively modern kitchen and scullery in Olveston. They set about developing a recipe book which reflected the tastes and available ingredients of 19th century as well as developing hand printed kitchen towels and cards. Their design process led them to engage with a number of food production companies still operating in Dunedin and with commercial printing processes relatively unchanged.

[1] www.paperspast.natlib.govt.nz, www.teara.govt.nz

[2] Notably with Dr Truby King, the founder of the Royal New Zealand Plunket Society.

Figure 1. Printed cards and tea-towels draw on local historic food industries. Designs are reproduced using similar technology and methods to those of 100 years ago

The second team used Augmented Reality to develop an engaging, embodied experience that built on the enthusiasm generated from the research challenge. In comparison to the other project these 100 year old narratives and scripts developed by the students were implemented using 21st century technology.

To achieve this, the Augmented Reality group needed to quickly come to terms with a number of technological challenges. The group had some experience with digital film-making, so a sub-group were tasked with turning the scenarios into highly resolved scripts, auditioning actors, shooting the film and processing the green screen footage in post-production. Alongside this a small group engaged in 3D-modelling and Augmented Reality workshops. Prototypes were quickly developed and ideas were progressed or discarded. This was a significant period of discovery and invention, with staff and students working together to generate problems and solutions on the fly in a collaborative project-based learning environment. The group was able to create a number of models, film two of the five scripts and implement them all as Augmented Reality – a significant feat.

There were challenges posed by the site itself; many of the solutions tested indoors in our studio didn't work the same way in an outdoor setting. The scale of the site also posed problems, but in the end students were able to successfully use environment scanning for markerless tracking and insert video into the scene. This meant that after the user loaded the correct channel in the AR browser they simply pointed the device at the location and the video would show, attached correctly to the location (Figure 2).

The design outcome largely achieved what we set out to do; develop an exploratory, embodied experience where a narrative unfolds for the visitor as they move around the garden. Threads of conversation are 'overheard' as they wander, and the visitor gets a real sense of an event happening around them, and a feeling being part of it.

Figure 2. A depiction of the working Augmented Reality film scenes, re-presenting characters from a 1907 garden party

This team also proposed two secondary outcomes. The first was a supplementary experience in the garden, separate from the main narrative project, and aimed at children – a discoverable toy hunt. Children can use a map and smart device to find ten toys, lost in the garden since 1907. The map contains clues about the locations and the location itself has a small tracking marker mounted physically on a peg. Children can see the marker and using a smart device with an AR browser are able to 'discover' each historic toy as an animated 3D model. The toys themselves were inspired by some childrens' toys on display in the house as well as other popular toys of the period. The other secondary outcome was an AR postcard to be made available in the shop. This would be a regular postcard with an attractive and appropriate image but when viewed using a smart device and AR browser the user would see a detailed 3D model of Olveston house.

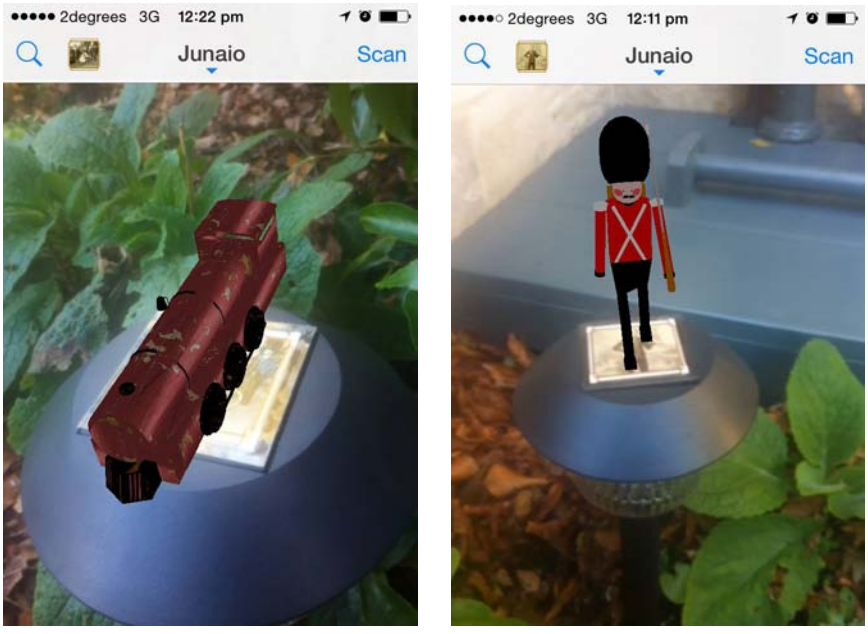


Figure 3. Two screen shots of discoverable toys to be found on a 'toy hunt' in the garden

Results and discussion

The projects were presented to the manager and shop manager of Olveston House, both who loved the design outcomes and want to take all the designs beyond prototypes. Students were also highly engaged in these projects, and were proud of their achievements. The project represents a valuable collaboration between academics, design students and a heritage group.

The examples discussed in this paper contribute insight into a possible future for historical narrative that is outside of museums, drawing on both old and new technologies and relationships.

In this case, students engaging with social history research used immersion and role playing, techniques of theatre and film-making, to make sense of – and share – their new knowledge.

As well as learning about old and new technologies, ranging from the introduction of domestic electricity to the house's impending ultrafast broadband connection, students learned how to research and develop stories, with different media, documenting the span of time. By pairing newspaper images and narratives with contemporary digital visualisation tools students were able to make connections of their own. Through these connections they developed designs that appeal to other young audiences. And these designs are able to make connections with a user group not normally reached by this historic home, nor other local social history museums.

This socio-technological approach to telling historical narratives started within our own learning context at a tertiary design school. Here students engaged with a variety of research strategies and design-led thinking, and through their designs and researched narratives (both inside and outside of a 'classroom') produced new augmented experiences as well as reproducing persisting social objects, such as tea towels. The stories they learned, both through traditional research and local and everyday conversations were transformed and retold, in ways that reflect Nina Simon's ideas of object-rich theatre, and Shedroff's core emotional engagement rings, including value and a sense of participation.

Growing up in a time of extensive screen mediation, these students sought ways to emplace themselves in an embodied designed experience. One of the benefits of Augmented Reality is the grounded viewing experience , layering embodied experience, learning and information on one site, through a combination of screen and site-specific storytelling. The students designing 'aides memories' for sale at the shop reflect the value placed by young people on handcrafts typified by contemporary craftivism movements. In this project we can witness new assemblages of social history storytelling between, by and about young people, across time.

As we work to develop a robust model for teaching interaction design in the area social history storytelling we see the local museum industry benefit too, with numerous graduates from our programme finding employment at museums and in design studios that work directly in producing museum interactives.

When we began writing this paper we were seeking sponsors to take this project to full production and delivery. Serendipitous connections were born out during discussions with a telecommunications company as part of this work. One of the characters that were written into the film scenarios was a real person known to attend parties at Olveston. It was revealed that this was great aunt of the company representative we were working with. Suddenly this stranger felt a personal and material connection to the project – much as the students had done in their research – identifying with stories and making personal associations with this place, here.

However we have found that securing financial support for the full realization of this project more difficult to secure than we had hoped. As a result we have had to reduce the project's scope. This has meant focusing on the toy hunt game, which could be produced in the school, without film production expenses, relying on student and staff time. We used free licensed software to overcome these budget constraints, and have arranged

software developer time from within the Polytechnic. This is clearly not a sustainable business model, but we are hoping that this fully functioning prototype will provide proof of our capability and that this will provide a platform for future growth. These difficulties may have come about as a result of using new technology, prior to industry standardization, and with working within an educational institution rather than an IT company. However as our capability is proven, with more successful museum engagement we hope that these limitations will be overcome. This is a challenge for museum professional as well as educators. We need to reconsider each other as financial partners with shared educational values, and able to work together beyond traditional expectations.

Once complete our Toy Hunt application and game will be tested using local school children, and refined before going live. Olveston House has recently installed an upgraded wi-fi network, which will be available to toy hunters in the garden.

Our thanks to Olveston House, for the opportunity to present concepts, and further develop and reflect on these. Many thanks to the staff and students at Otago Polytechnic involved in the development and design of these projects. This list is not extensive, but thanks must go to Zoe Paterson, Greg Thomas, Fran Shaw, Rachel Hay, Marcia Stewart, Megan McPhail, Laura Benjamin, Laura Carr, Mattea Stahl, Sarah McDonald, Hannah Poole, Kristy Lind, Carla Galdeman, Shayne Hughes, Matthew Paterson, Finn Glover, Beaute Tanapura, Oliver Powell, Sean Moran, Finn Gallagher, Stuart Stoddart, Caleb Dudley, Connor McGregor, Mattea Stahl and Jamie Russell.

References

Diller, S., Shedroff N., and Rhea, D. (2006). *Making Meaning*. Berkeley, CA: New Riders Press

Engstrom, J. (2005). *Why some social networks services work and others don't*. Retrieved November 1, 2011, from http://www.zengestrom.com/blog/2005/04/why-some-social-network-services-work-and-others-dont-or-the-case-for-object-centered-sociality.html

Simon, Nina. (2010) *The Participatory Museum*. Santa Cruz: Museum 2.0, accessed online at http://www.participatorymuseum.org/Chapter4 accessed 1 Nov 2011

Shedroff, Nathan (2008). Design: A Better Path to Innovation*, Interactions Magazine*, (15: 6) New York: ACM

Wallace, M. 'Changing Media, Changing Messages' in Hooper-Greenhill, E (ed) (1999) *Museum, Media, Message*, London/New York: Routledge

Authenticity and Authorship: The Chocolate Kitchens at Hampton Court Palace

Aileen Peirce and Polly Putnam
Historic Royal Palaces, United Kingdom
http://www.hrp.org.uk/HamptonCourtPalace/stories/palacehighlights/chocolate-kitchen

Abstract: *In this paper we use the example of the Chocolate Kitchens at Hampton Court Palace to explore issues of authenticity and authorship in re-creating historic interiors.*

In February 2014, Historic Royal Palaces opened a suite of three rooms associated with chocolate making. One is an almost perfectly preserved Chocolate Kitchen with 18th century fixtures and fittings. The second, badly fire damaged, had little surviving historic building fabric. The third, the Chocolate Room, was empty apart from badly broken 18th century ironmongery in the fireplace and the scars of historic shelving on the walls. In the surviving Chocolate Kitchen, we took the unusual step of using projection-mapping technology, avoiding physical interventions in this sensitive space. The blank space next door gave us the opportunity for experimental archaeology, making chocolate using historic equipment and recipes. In the Chocolate Room, where the final touches were put to the chocolate, we decided to re-create the historic interior.

Unlike many restorations, none of the original contents survived but research uncovered detailed inventories, archaeological fragments and extant examples from other collections. In the Chocolate Room we have mixed real objects and carefully researched re-creations with our guiding purpose being that the space must feel inhabited. We have also used the latest projection mapping techniques to create an animated diagram, using 18th century illustrative styles, to bring the abandoned Chocolate Kitchen to life.

We make the argument that it is possible to produce an "authentic re-creation". Research has shown that this was the actual Chocolate Room. While its contents are not original, the authenticity of the experience lies in the archaeological and technological accuracy involved in the re-creation of each item. Nonetheless, the question must be asked, have we created an elaborate fake?

Visitors expect historic interiors to provide the authentic "history where it happened" experience. Our visitors tell us that they want to "step back in time", "walk in the footsteps of kings and queens". In the Chocolate Room, we have pushed the boundaries of authenticity, creating a world where visitors are transported to a moment in history – they are complicit in this process. Re-creation only becomes fakery when we lie to our audience. By presenting our process on site via our multimedia guide and offsite via our website, we create dialogues about materials and historic craft techniques. Visitor research shows that the process of reconstruction is something that visitors find every bit as fascinating as the experience of the room itself. The re-creation of the Chocolate Room becomes an authentic 18th century experience using historic craft skills, but one that is explicitly authored in 2014 using digital media.

Keywords: chocolate, restoration, authenticity, interpretation,

Introduction

Hampton Court Palace is renowned as the favourite palace of Henry VIII – the iconic view is the Tudor West Front with its Great Gatehouse and intricate brick chimneys. It is less well known as a baroque palace. In 1689, William III and Mary II decided to demolish Henry's great Tudor palace in favour of a new design by Sir Christopher Wren. The ambitious design proved too expensive and a compromise was reached with a new baroque palace attached to the existing Tudor state apartments. Following a multi-year programme of conservation and re-presentation of the Tudor parts of the palace, Historic Royal Palaces has more recently turned its atten-

tions to the baroque palace, interpreting the less well known 17th and 18th century stories. Conserving and representing the royal Chocolate Kitchens was part of this programme and they opened to the public for the first time in February 2014. Historic Royal Palaces is the independent charity that looks after the Tower of London, Hampton Court Palace, the Banqueting House at Whitehall, Kensington Palace, Kew Palace and Hillsborough Castle. They are buildings where monarchs and their courts lived, and where history was made. These palaces witnessed many of the defining moments of our nation, and collectively they explain much of the nation's story. Our job is to protect both the palaces and the life in them. We welcome people, we stage events, we entertain. Our aim is to help everyone explore the story of how monarchs and people have shaped society, in some of the greatest palaces ever built.

The Project

In 2012, a discovery in the archives pinpointed the location of the Chocolate Kitchen and Chocolate Room at Hampton Court. In the Chocolate Kitchen, we had an extraordinary survival – the charcoal braziers, fire ironmongery, table and cupboard all survived in remarkable condition. The Chocolate Room, in contrast, had few surviving original features. We also had a third room that had been badly damaged in the fire of 1986 with no surviving features other than the windows. We decided to use a range of interpretative techniques across all three rooms to tell the unique story of royal chocolate making and consumption at Hampton Court. What makes our chocolate story unique is that visitors can see not only the actual spaces where chocolate was made for royalty but also the actual equipment that was used. Other sites and museums tell the wider story of chocolate but here we focused on the story of royal chocolate making and drinking in the place that it happened. Hampton Court is renowned for its Tudor kitchens. Our vision with the Chocolate Kitchens project was to allow visitors to explore for the first time the elegant and sophisticated privy kitchens of the Georgian court, a contrast with the busy food factory of the Tudor Kitchens. For the first time we would open some of the many closed doors around Fountain Court, giving visitors a glimpse into what had been a busy kitchen complex. Opening the Chocolate Kitchens would also answer the often-expressed desire from visitors for more "downstairs" stories, presenting the story of Thomas Tosier who, uniquely among kitchen servants, has direct access to the King. Our vision was to enable visitors to step back in time in the amazingly well preserved Chocolate Kitchen; left physically untouched but interpreted through projection mapped animated illustrations in the style of Diderot's 18th century Enyclopedia (Diderot, 1763).

Visitors could then explore the story of royal chocolate making in the adjacent interpretation room – with live chocolate making on monthly cookery weekends and a projection mapped film showing chocolate making on normal days. Finally, the Chocolate Room was to be completely re-created and filled with over two hundred bespoke objects commissioned from skilled craftspeople and based on documentary and archaeological evidence. It is this re-creation that we examine in detail in this paper, considering issues of authenticity and authorship and exploring whether it is possible for a visitor to have an "authentic" experience in a re-created interior.

Figure 1. South Front Hampton Court Palace

Historical Background

Chocolate was introduced into England in the mid seventeenth century following from its popularity in Spain. It was an expensive commodity and its early consumers considered it as both novel and healthful. It remained a drink for aristocratic and wealthy elite in England until at least the mid eighteenth century. A large portion of its expense was because it was heavily taxed because it was an imported commodity. When Britain's position as a colonial power strengthened in the mid to late 1700s, cocoa beans could be considered "home grown" and the duties on it lessened.

The first reference we know to royal chocolate drinking was Charles II's appointment of a Chocolate Maker called Solomon de La Faye in 1682. However, our project research focussed on the chocolate drinking from William III through to George II, so 1689-1759.

William III (1689-1702) installed chocolate making and serving facilities in his palaces at St James's, Windsor, Kensington and Hampton Court. He also bought many accoutrements for chocolate drinking including sets of chocolate cups and gold chocolate pots.

At Hampton Court Palace, a chocolate kitchen was included as part of the ambitious rebuilding of the eastern half of the palace. William III chose Hampton Court as his summer palace because, as an asthmatic, he found the air there more agreeable than in the centre of London.

New gardens, new state apartments, and suites of luxury accommodation for elite servants and courtiers were included in Christopher Wren's masterpiece, Fountain Court.

Research and Interpretation

Locating the chocolate kitchens was a central focus of the research undertaken for this project. From 1760, Hampton Court Palace was no longer used as a royal residence meaning, firstly, that the monarch did not

live there and secondly, it no longer had a stately or political function. Instead, the Palace was occupied by Grace and Favour residents. In short, those who the monarch felt deserved a free apartment. This meant many changes and adaptations to the fabric of the palace building meaning that many rooms, especially kitchens, lost their original functions. There were hints and rumours of the location of the Chocolate Kitchen but the location was not confirmed until documentary evidence was reappraised. Perhaps the single most important document was a lodgings list of 1702, drawn up shortly after William III's death (*LC 5/202*).

From this we were able to work out that the 8th room from the Queen's Stairs was the Chocolate Kitchen. Further evidence gleaned from buildings accounts and warrants suggested that there was a further room for the Chocolate Maker which was close to the east front entrance next to the King's Stairs.

The Chocolate Kitchen

This new research confirmed for the first time that there were two locations for Chocolate Makers and making in Fountain Court. The first room was the Chocolate Kitchen. This room had been used as a Grace and favour kitchen, and then, in recent memory it had been used as a store. Large areas of racking obscured much of the room. However, when they were emptied they revealed rare eighteenth century fixtures and fittings. These included:

1) A charcoal brazier. Charcoal is fed into sunken grates and then used like a hob top.

Shelving

2) A spit rack, used for roasting and a smoke jack mechanism which used heat for turning the
3) A flap down table

Their survival is remarkable because they are such ordinary things. We therefore decided to treat the Chocolate Kitchen as a "found space" repairing only what was necessary in order to conserve it.

Figure 2. The Chocolate Kitchen as Found, Historic Royal Palaces

Interpreting the Chocolate Kitchen

In terms of interpretation we wanted to preserve the untouched nature of the space and the objects within it. This ruled out any form of live interpretation as no cooking could take place there without damaging the space, more traditional techniques, lettering, text panels would mean both physical interventions, e.g., screwing into walls and also visual interventions which would interfere with the space.

Digital interpretative techniques were key here. We used the firm Ay-Pe, who used projection mapping to create animated digital diagrams demonstrating how the fixtures and fittings were used. Through the use of digital technology we could minimise intervention into the space but still enable visitors to experience it as a kitchen in use.

Figure 4. The Conserved Chocolate Kitchen with projection mapped interpretation, Historic Royal Palaces

The Chocolate Room

The Chocolate Room was another store. Less survived and the shape of the room had been altered. However, we used the physical and archival clues left behind to re-create at least some of what we now call the Chocolate room.

From our archival record, we know that this room was once a confectionary belonging to Lord Albermarle (William III's favourite courtier) and that it was given over to the King's Chocolate Maker (*LC 5/153*).

The biggest hint that we had as to the nature and function of the Chocolate Room, came through examining the physical space. Seventeenth century metal bars survive in the windows, as do shutters, giving the room an extra level of security. Although we know the room had been altered, the room bears the scars of shelving. Raking light surveys were carried out in order to map the shelves. To summarise, our available traces of physical evidence suggested that the room was a secure storage space.

Figure 5. The Chocolate Room Prior To Restoration, Historic Royal Palaces

Chocolate Making and Our Understanding of the Space

To fully understand the room, we needed to research and understand the role of the Chocolate Maker. The seventeenth and eighteenth century chocolate drink was thick and luscious. Raw, spiced chocolate was melted into water, milk or wine. However, it had a tendency to separate and required whisking before service. Early chocolate pots often had hinged finials so that a whisk called a molinet could be incorporated into the pot.

The scant references to Chocolate Makers suggest that from William III until George I they were private servants; certainly their wages were paid out of the monarch's private funds. Indeed, when the office of the King's Chocolate Maker becomes official, it is part of the Lord Chamberlain's department, which is traditionally associated with the King's body servants as opposed to the Lord Steward's office that ran the other kitchen departments, including the confectionary.

We know the most about George I's Chocolate Maker, Thomas Tosier. He owned a successful chocolate house in Greenwich, which was run by his wife, Grace. She used the prestige of her husband's position as the King's Chocolate Maker to promote the business, even keeping the name Tosier after her husband's death and her remarriage.

The chocolate whisking required that the Chocolate Maker had personal access to the king, delivering the chocolate and giving it a final flourish with the molinet before serving. It was largely drunk in the private apartments for the king's private morning meal. Indeed, George II's final act before he made a "noise louder than the

Royal wind" and died in his water closet was to drink his morning cup of chocolate (Walpole & Lewis 1937-). It is also traditionally associated with the levee, a strange ritual where elite guests watched the king get dressed. During the ritual, business could be discussed whilst chocolate was drunk and morning nibbles of sweetmeats were eaten.

Records show that William III's Chocolate Maker, Aert Kemps is given a bed and that substantial amounts were paid for it (*LC 5/125*), which suggests that the Chocolate Maker had a certain amount of prestige. Therefore, the chocolate room is likely to be where the Chocolate Maker slept and where precious things were stored. It makes practical sense for the expensive chocolate serving equipment separately from where beans were ground and roasted which is a hot and messy task.

Interpreting the Chocolate Room

Nonetheless, we were left with an empty room that needed fitting out with objects appropriate to the space and most crucially would help convey the elegance and luxurious nature of the royal chocolate drinking experience.

Again, reference was made to the archives. Although no inventory exists for the chocolate room we do have an inventory of all the silver and gold in the palaces. Listed were chocolate pots but most tantalisingly, six chocolate frames, or cup holders for cradling porcelain cups for chocolate (*LC 5/114*). Clearly, our budget didn't allow for these items to be recreated in gold and silver but we chose to make them in highly polished pewter. The pewterers use eighteenth century moulds and similar techniques to create their items. Although there were deviations in material, we chose to be highly accurate regarding their form. Therefore we chose items not made by any early eighteenth century goldsmith but royal goldsmiths. We recreated a chocolate pot from 1709 by Benjamin Pyne and the chocolate frames from 1713-14 by Paul de Lamerie.

Figure 6. de Lamerie, Paul *Pair of Trembleuse Stands or Chocolate Frames* (1713-1714), The Metropolitan Museum http://www.metmuseum.org/collection/the-collection-online/search/205000

Figure 7. Recreated Chocolate Frame, Historic Royal Palaces

Figure 8. Fragment of Chocolate Cup found in the palace moat in 1910, Historic Royal Palaces

The other items that we re-created to fill the chocolate room were glass and ceramic wares. Wine glasses and sweet meat glasses featured strongly in confectionary rooms (which often doubled up as chocolate rooms) in the country houses of esteemed courtiers. We relied heavily on the inventories of Boughton House, the home of George Montagu, and coincidentally the man tasked with furnishing Hampton Court for William III (Murdoch, Briggs, & Lindey, 2006). All the items were based on extant examples from museum collections and they were made using identical techniques and identical early eighteenth century recipes for re-creating glass.

Figure 9. Recreated Chocolate Cup, Hstoric Royal Palaces

Earthenware ceramics were based on models actually used at Hampton Court. An archaeological excavation of the moat surrounding the palace in 1910 removed large quantities of ceramic fragments, including a piece of an early eighteenth century chocolate cup. We worked with a skilled potter who uses local English clay and traditional glazes and techniques to make replica cups. In this instance he re-created a cup that we know would have been used at Hampton Court.

The furniture, cupboard, chairs and table are antiques have no royal or situational provenance but are of the right date and appropriate to the space. Again we were guided by inventories, in particular, the 1722 inventory of the Earl of Tankerville, (Add Mss 40,377) of a chocolate kitchen in which all of the items were mentioned. We could have had these made and perhaps it would have been more honest as an approach to do so, however, the truth is that it is cheaper to buy old furniture than commission new re-creations.

We took huge amounts of care in re-creating the layout of the objects in the room. Curators and food archaeologists worked in tandem using inventories and many seventeenth and eighteenth century images of kitchens and by considering what would have been practical and useful to fill the Chocolate Room. This resulted in a clean and organised space, suitable for storing precious gold and silver and serving expensive chocolate.

Questions Raised by Recreating the Chocolate Room

The research process has been guided by interpretative needs throughout. We chose not to fill the chocolate kitchen with props because we wanted visitors to have the same experience we did when we found this remarkably well preserved room that had been hidden behind storage racks for years. However, in the Chocolate Room, where little survived, we wanted visitors to understand how Mr Tosier had used it, so we chose to populate the space appropriately.

The act of re-creating the space and items within the Chocolate Room has been thorough and elaborate. Although there have been guesses, they have been educated ones. The archival record is particularly rich because of its royal nature. We have been able to expand and supplement this record through referring to real, extant objects in other collections and HRP's own archaeological collections and importantly the archaeological surveys of the space.

By using as many techniques and sources at our disposal we believe that we have re-created the chocolate room accurately with the aim to illuminate and inform the visitor. However, we do need to ask is our academic rigour nothing more than complex trickery? Is our beautiful room of replicas providing a genuine or indeed authentic experience of the chocolate room at Hampton Court Palace, or is it merely a cornucopia of fakes?

The Chocolate Room: Authenticity and Visitor Experience

"The presence of the original is the prerequisite to the concept of authenticity." Walter Benjamin, 1936)

Benjamin's famous statement in his essay "The Work of Art in the Age of Mechanical Reproduction" sets out a definition of authenticity that is rooted in the materiality of the object. In the Chocolate Kitchen, we are undeniably in the presence of the original. In the Chocolate Room, however, we had a bare room. We have chosen to re-create the fixtures, fittings and objects to allow visitors to experience the room as Thomas Tosier might have used it. Would a more "truthful" approach have been to leave the dilapidated storeroom as we found it?

Figure 10. *Cusinier Turc* Published by Bonnart. N (1652-1718) Paris, The British Museum, http://www.britishmuseum.org/research/collection_online/collection_object_details.aspx?assetId=491592&objectId=1461189&partId=1

Perhaps, but would this allow them to experience G M Trevelyan's "poetry of history" which:

> "lies in the quasi-miraculous fact that once, on this earth, on this familiar spot of ground, walked other men and women, as actual as we are today, thinking their own thoughts, swayed by their own passions, but now all gone, one generation vanishing after another, gone as utterly as we ourselves shall shortly be gone, like ghosts at cock-crow." (Trevelyan, 1949)

The experience of a bare room is hardly going to transport them back in time, allow them to walk in the footsteps of Thomas Tosier, seeing what he saw.

Visitor Responses to the Chocolate Room

In August 2014, we commissioned Morris Hargreaves McIntyre to conduct a qualitative visitor study, exploring perceptions of authenticity in relation to particular conservation and presentation techniques at Hampton Court Palace. One of the case studies was the Chocolate Room. Visitors told us they want authenticity but they also want immersion and escapism, evoking atmosphere and bringing history to life. They want an empathetic experience:

> "When you're coming to a place like this, as soon as you walk through the door you want to be taken back in time to that moment." Hampton Court visitor, (Morris Hargreaves McIntyre, 2014)

Our visitors talk of authenticity as subject-related (how they feel) rather than the traditional object-related (qualities inherent in the object) approach of museum and heritage professionals.

Figure 11: The Chocolate Room after restoration, Historic Royal Palaces

Perhaps therefore, alongside our professional judgments about the material authenticity of an object or building fabric, we also need to consider the "experience" of authenticity, what the visitor feels. Some of our visitors describe the "empty room" experiences of other sites as feeling less authentic (Morris Hargreaves McIntyre, 2014) because they cannot imagine the world that existed inside those rooms.

Authenticity, Interpretation and Visitor Experience at Hampton Court Palace

Providing the visual and other sensory prompts to transport them into another time seems to them to be a more authentic experience despite the fact that those prompts are 21st century re-creations. Lowenthal reflects on the mutability of authenticity:

> "Each generation views authenticity in a new guise, reflecting its new needs for truth, new standards of evidence, and new faiths in the uses of heritage." (Lowenthal, 1999)

It is perhaps these "new faiths in the uses of heritage" that creates a new contract between visitor and curator/interpreter in the 21st century. In the Chocolate Room, we have pushed the boundaries of authenticity, creating a world where visitors are transported to a moment in history but we are not lying to the visitors – they are complicit in this process. Re-creation only becomes fakery when we lie to our audience. The contents are not original but the authenticity of the experience lies in the research, in the archaeological and technological accuracy involved in the re-creation of each item. Visitors continually refer to our rooms as "well researched" telling us they trust us to get it right:

> "I think I would expect that a place like this would have done the proper research to produce something." Hampton Court visitor, (Morris Hargreaves McIntyre, 2014)

Hampton Court has been the site of re-creations for centuries, most notably Edward Jesse's 1840s re-creation of Henry VIII's Great Hall which, as well as the carefully researched paint scheme, also featured an elaborate new stained glass scheme featuring Cardinal Wolsey, Henry VIII and all six of his wives which was entirely the product of Jesse's imagination (Lipscomb, 2010). The difference between the Victorian approach and ours is the transparency and honesty – Jesse was content to deceive, to blur the distinction between what was original and what was a conceit in order to inspire a sense of period (Lipscomb, 2010). In the 21st century, our interpretative goal might be similar to Jesse's but our methodology is very different. In the Chocolate Room, as with other re-created spaces at Hampton Court Palace, all new objects and interventions look new so the re-creation is obvious and honest. While this approach conforms with 21st century professional ethics, it puts us at odds with our visitors who find the "newness" unbelievable. Our visitor research shows that there is a tendency to conflate "old-looking" with authentic. Lowenthal describes this as a desire that the presented past should conform to modern stereotypes of historic life:

> ""This doesn't look how it should – it isn't bad enough!" exclaimed a journalist at the 1991 opening [of Helsinki's Tenement Museum]. He wanted squalid disarray" (Lowenthal, 2004)

We have encountered similar views in the Chocolate Room, with visitors unable to countenance the cleanliness and order.

> "The shininess of the room doesn't sit well with the authenticity" Hampton Court visitor quoted in (Morris Hargreaves McIntyre, 2014)

But why, we ask? You would expect a 21st century commercial kitchen to be as clean and ordered as an operating theatre. Why would Mr Tosier, with his full time kitchen boy, allow dusty shelves, dirty glassware and disorderly piles of crockery? Unfortunately, this dissonance between what visitors expect (old and dirty) and how the room actually would have appeared (clean and well ordered) means our interpretation has to work much harder to bridge this gap between expectation and presentation.

Figure 12. (Cheshes, 2013) Kitchens at the Danish, Two Michelin Star, Restaurant, Noma. http://www.bonappetit.com/restaurants-travel/article/inside-the-new-kitchen-at-noma-copenhagen

While academic thinking on authenticity has moved on considerably from the Venice Charter's (International Council of Monuments and Sites, 1964) prohibition on any form of reconstruction other than strict anastylosis, the idea of full-scale re-creation remains controversial. As heritage professionals, we spend our lives debating which period to privilege in a multi-period space, how far to conserve and restore a particular object and whether reconstruction is desirable or justifiable in a particular room. Each of over 1000 rooms at HCP requires a nuanced response to these questions. Re-creation should be used sparingly and consciously. We very deliberately chose not to add props or any re-created items to the Chocolate Kitchen, preserving its "as found" atmosphere and focusing visitors on the remarkably well preserved historic fixtures and fittings through an ephemeral projection. In the empty Chocolate Room, however, we felt that the volume of evidence and rigorous scholarship justified a re-creation that would greatly enhance visitors' understanding of the story.

Authorship and Visitor Experience

Finally, we must ask if re-creations such as the Chocolate Room should be explicitly authored. Do we need to show our workings, to explain the evidence that supports the re-creation, to justify the process? The process of re-creation is not our primary storyline and, while it may be fascinating to us as heritage professionals, we questioned whether it was of interest to our audience. The visitor research carried out by Morris Hargreaves Macintyre in 2014 produced a mixed response to this question. The majority of visitors trust our presentation of historic spaces to be well researched and they expect us to deliver experiences that are authentic. Some would like us to disclose the research, to demonstrate we have evidence for the way that we have presented rooms, many are fascinated by the process and would like to learn more. A significant minority, however, do not want to know more about the process of research, re-presentation and re-creation. Their desire is for escapism and they want to preserve the magic.

> "People come to places like this for a romanticised view of the past, and if that's what you want, you want a bit of a fairy tale and you don't really want to know how it's been put together." Hampton Court visitor, (Morris Hargreaves McIntyre, 2014)

> "There is a lot of effort put into using authentic techniques which is really nice and makes me feel more interested in it, but none of that was in the information I saw." Hampton Court visitor, (Morris Hargreaves McIntyre, 2014)

Balancing the needs of these different audiences is impossible using traditional interpretative media and would create a confusing multiplicity of storylines in what is a very small space. It is here that 21st century technology comes into its own. While the re-creation story is not the primary message in the room, by using digital media, we can create a multi-layered experience that allows those who are interested to find out more about the re-creation process, or those who are sceptical to satisfy themselves as to our methods, but with no intervention in the Chocolate Room itself which might break the spell for those visitors who just wish to be transported back in time. We documented the process of re-creation on film: showing the craftsmen at work, interviewing them about the traditional materials and techniques, filming the curators searching through the archaeology collection for 18th century chocolate cup fragments and interviewing the project team about their research, methodology and vision for the Chocolate Room. The resulting film is available on our website, social media and an edited version will shortly be available on our multimedia guide.

Conclusion

Jean Paul Sartre described the opposite of authenticity as "bad faith" (Sartre, 1943). He argued that an authentic experience cannot be achieved whilst there is any sense of being duplicitous or trying to hide one's true nature. Applied to this heritage context, digital technology, our online presence, has enabled us to reveal to visitors the true nature of the Chocolate Room as a re-created space. Therefore we restore, re-create and present the Chocolate Room in "good faith" to our visitors to provide an authentic experience in the truest sense. The reservations of the more sceptical visitors before they had been told about the re-creation process, "The Chocolate Room, it was awfully newly created, wasn't it?" were transformed into much more positive responses, "'I think what they've done is brilliant if they've tried to re-create everything in the actual way that it would've been done" (Morris Hargreaves McIntyre, 2014). So the re-creation of the Chocolate Room becomes an "authentic" 18th century experience for those visitors who do not wish to lift the veil but one that is honestly and explicitly authored in the 21st century.

Figure 13. Still from The Making of The Chocolate Kitchen film, https://www.youtube.com/watch?v=2Qslljfi_-I

Acknowledgements

The Authors of this paper would like to thank all of the makers involved in the re-creation of the Chocolate Room. We also would like to thank Charlotte Barker whose internship work led to the discovery of the Chocolate Kitchen and Chocolate Room, food historian Marc Meltonville and all of our colleagues at Historic Royal Palaces.

References

Benjamin, W., Arendt, H., & Zohn, H. (1970). Illuminations; edited and with an introduction by Hannah Arendt. Translated by Harry Zohn. London: Cape.

Book of Letters and Inventories. (1704-1761) Jewel Office LC 5/114 (1721) The National Archives.

Cheshes, J. (2013). An Exclusive Look at the New Kitchen at Noma, Copenhagen. Retrieved from http://www.bonappetit.com/restaurants-travel/article/inside-the-new-kitchen-at-noma-copenhagen

Diderot, D. (1763). Confectioner (P. Stuart, Trans.)The Encyclopedia of Diderot & d'Alembert Collaborative Translation Project (Vol. 3): Ann Arbor: Michigan Publishing, University of Michigan Library. Retrieved from http://hdl.handle.net/2027/spo.did2222.0001.429 (Encyclopédie ou Dictionnaire raisonné des sciences, des arts et des métiers).

International Council of Monuments and Sites. (1964). *Venice Charter, International Charter for the Conservation and Retoration of Monuments and sites*. Venice: Retrieved from http://www.international.icomos.org/charters/venice_e.pdf.

Inventories of the goods and chattels of Charles Bennet, 1st Earl of Tankerville, at Dawley, co. Middx., Uppark and Conduit Street, London, with Executors Accounts. (1722-1725). (Add Mss 40,377). West Sussex Record Office

Lipscomb, S. (2010). Historical Authenticity and Interpretative Strategy at Hampton Court Palace. *The Public Historian, 32*(3), 98-119. doi: 10.1525/tph.2010.32.3.98

Lodgings List. (1702-1710) Miscellaneous Papers, LC 5/202, f.199, (1702) The National Archives.

Lowenthal, D. (1999). Authenticity: Rock of Faith or Quicksand Quagmire? *Getty Newsletter, 14*(3).

Lowenthal, D. (2004). *The Heritage Crusade and the Spoils of History*. Cambridge: Cambridge University Press.

Morris Hargreaves McIntyre. (2014). They Trod These Stones: An Exploration of audience perceptions of Authenticity at Hampton Court Palace (Unpublished internal report for Historic Royal Palaces)

Murdoch, T. V., Briggs, C., & Lindey, L. (2006). *Noble households : eighteenth-century inventories of great English houses : a tribute to John Cornforth*. Cambridge: J. Adamson.

Original Warrants (1695-1704) LC 5/125, (7th July 1702) The National Archives.

Sartre, J.-P. (1943). *L'etre et le neant : Essai d'ontologie phenomenologique*. [S.l.]: Librairie Gallimard.

Trevelyan, G. M. (1949). *Autobiography of an Historian: An Autobiography and Other Essays*. London: Longmans, Green.

Warrant Books, General (1700 &1701). LC 5/153 The National Archives.

Walpole, H., & Lewis, W. S. *The Yale edition of Horace Walpole's correspondence*: New Haven : Yale University Press, 1937.

Proactive Spaces. An Insight on the Spatial and Museographical Features of 21st Century "Post-museum"

Francesca Lanz, Elena Montanari
Politecnico di Milano, Italy

Abstract: *In the last twenty years, the traditional understanding of museums and their role in the contemporary society have been radically questioned, both in theory and in practice. The interpretation of museums as static repositories of historical and artistic treasures is being gradually overtaken by a new comprehension of museums as public services and social agents, which do not only have a preeminent conservation function, but also – and primarily – an important educational, political and social role. This evolution is being further influenced by the ongoing transformation of the society they have to relate to, which is nowadays intrinsically characterised by global phonemena, the furtherance of cultural encounters and cross-fertilizations, and the shifting of cultures and identities produced by the augmented migration of people and peoples, objects, information and ideas.*

This context is triggering the enhancement of the role of contemporary museums as "active instruments at the service of society and its development", which is being actualised mainly through the experimentation of new curatorial practices, awareness-raising education projects and participative activities. The paper suggests that this thorough reassessment of the museums' mission and purposes, which is fostering a reconsideration of their scientific programmes, practices and approaches, might be as well complemented by a transformation and reorganisation of their spaces, intended as essential components potentiating museums' effectiveness towards contemporary society.

By observing the projects of a selection of newly built or recently renovated European museums, it is possible to detect the recurrent presence of strategic spaces, which are meant not only to accommodate but also to support and even foster the development of new practices. We may refer to them as "proactive" spaces – where the adjective "proactive" suggests their ability in consciously reacting to events, in timely adapting, or even driving and fostering changes. Proactive spaces are flexible, adaptive, multi-purpose and in-progress spaces, which remain "open" in their form, function and meaning in order to better respond to the evolving needs and activities of 21st century museums.

Keywords: museum spaces, exhibition design

Reflecting on 21st century museums: the rise of the post-museum model

Irrespective of the questioned definition of what "globalization" is, it is undeniable that the present age is deeply and increasingly affected by the growing relevance and acceleration of an array of "global" phenomena, which encompass an enhanced mobility and fluid circulation of people, cultures, ideas, information and goods, and a consequent high degree of cultural encounters and cross-fertilizations. Although the movement of peoples and knowledge has always accompanied and fostered the evolution of every civilization and culture in any historical and political period, today these dynamics act at an unprecedented speed and with a worldwide resonance. As many authors have already pointed out, this situation is having far-reaching implications on several aspects of contemporary society, impacting both at a macro-cultural level as well as on the individuals' micro-level (Rutherford, 1990; Bhabha, 1994; Appadurai, 1996; Welsch, 1999; Chambers, 2012). These shifting cultural conditions are as well challenging museums as institutions historically implicated in identity work and

inherently intertwined with society and its evolution (Macdonald, 2003; Karp et al., 2006; Message, 2006; Basso Peressut, Lanz, and Postiglione, 2013; Chambers et al., 2014; Gourievidis, 2014).

In the last twenty years the traditional understanding of museums and their societal roles have been radically questioned. The interpretation of museums as static repositories of historical and artistic treasures and sites for passive contemplation is being gradually overtaken by a new comprehension of them as public services, which do not only have a preeminent conservation function, but also – and primarily – an important educational, political and social role (e.g. Vergo, 1989; Macdonald and Fyfe, 1998; Sandell, 2002; Marstine, 2006; Macdonald, 2006; Watson, 2007; Marstine et al., 2013). In this context, today museums are more and more strongly asked to keep up with the society in which they stand, and in particular to be relevant towards contemporary issues. Giving up on the idea of their presumed super partes objectivity and universalism, they are expected to take and declare a political stance, not only reacting to present-day matters but also contributing to shape society and becoming places for dialogue, able to accept and build on dissent.

We may recognize in this evolution Clifford's idea of museums as "contact zones", based on Mary Louise Pratt's theories (Clifford, 1997), as well as the notion of "third space" which, as explored by Homi Bhabha, "enables other positions to emerge" (Rutherford, 1990, p. 211). In her compendium New Museum Theory and Practice, drawing on Hooper-Greenhill (2000), Janet Marstine refers to the implementation of this new type of museum as to the "post-museum":

> The post-museum clearly articulates its agendas, strategies, and decision-making processes and continually reevaluates them in a way that acknowledges the politics of representation; the work of museum staff is never naturalized but seen as contributing to these agendas. The post-museum actively seeks to share power with the communities it serves, including source communities. It recognizes that visitors are not passive consumers and gets to know its constituencies. Instead of transmitting knowledge to an essentialised mass audience, the post-museum listens and responds sensitively as it encourages diverse groups to become active participants in museum discourse. Nonetheless, in the postmuseum, the curator is not a mere facilitator but takes responsibility for representation as she or he engages in critical inquiry. The post-museum does not shy away from difficult issues but exposes conflict and contradiction. It asserts that the institution must show ambiguity and acknowledge multiple, ever-shifting identities. Most importantly, the post-museum is a site from which to redress social inequalities. […] the postmuseum can promote social understanding (2006, p. 19).

The upgrade of museums' mission and *raison d'être*, and their enhanced role towards the societies and communities in which they find themselves, represents core topics for the most recent advancement of both museum theories and practices. On the one hand, a number of scientific publications, national and international research programmes, conferences and seminars have sought to explore the actual and potential part of museums in contemporary society, and to evaluate the implications of the ongoing social and cultural transformation within their narratives, activities and tools. On the other hand, various museums are actually reacting to the chances and challenges posed by the current political, social and cultural context and by the related ongoing theoretical debate. Several pioneering institutions are indeed reassessing their purposes, approaches and practices in order to accomplish their role in proactively supporting and even driving these changes, acknowledging their potential to construct social values, and assuming clearer political and social responsibilities.

This shift is being implemented in different ways in accordance with the mission, tasks, context and resources of the different institutions, and mostly ensuing in the experimentation of new museological practices. These experiences often involve the museum's collections, fostering the rethinking of collecting policies, furthering the implementation of new cataloguing and archiving practices. At other times, these projects encompass a review of the museum's curatorial practices through the development of new models and methods based on participative, top-down, outreaching and community-based activities, as well as of innovative programmes and strategies aimed at widening the museum's cultural offers and audiences, including educational activities tailored to address different audiences, cooperation with schools, lifelong learning programmes, temporary exhibitions and events. Seldom, this revision impetus also impacts on the museum's spaces and, now and then, it is even conceived in concert with spatial renewal and re-organisation ventures.

By observing the projects pertaining to some newly built or recently renovated European museums, selected as pioneering examples of the ongoing evolution of contemporary museums, this short paper aims at analysing which is – and might be – the impact of the implementation of new practices and approaches on museums' spaces. In particular, it focuses on the recurrence of a special type of spaces, which are meant not only to accommodate but also to foster the development of new activities and curatorial practices: these are referred here as proactive spaces – the adjective "proactive" suggests their ability in consciously reacting to events, in timely adapting, and even driving and encouraging changes. Proactive spaces are flexible, adaptive, multi-purpose and in-progress spaces, which remain "open" in their form, function and meaning in order to better respond to the evolving requirements of 21st century museums, so far so to support their evolution into "post-museums".

Observing two paradigmatic examples: the Museum of London and the Museum aan de Stroom

The implementation of this kind of spaces within the spatial program of contemporary museums can be effectively analysed through the observation of two paradigmatic case studies, which illustrate their integration within both renovation or new construction projects.

Among the many established museums across Europe that have recently embarked on renovation projects, aimed at upgrading their strategies and tools as well as at reorganising their spaces, a significant example is represented by the Museum of London (Ross, 2015; Lanz, 2014). Since 2000 this institution has been going through a profound revision of its mission, practices and narratives, informed by a wider reflection on issues related to diversity, migrations and identity of the city of London. This process included the improvement of the museum activities, the refocus of its objectives, the reorganisation of its collection, as well the redesign of the museum's spaces and exhibitions. The related four-year long architectural project was driven by Wilkinson Eyre Architects, while the exhibition design of the new Galleries of Modern London – opened in 2010 in conjunction with the museums re-launch and completely dedicated to the story of modern and contemporary London and its inhabitants – was developed by an in-house team with an intimate knowledge of the museum's collections. This renovation respects the original building designed by Philip Powell, Hidalgo Moya and Partners in 1976, and at the same time enhances it, reconfiguring and expanding its spaces, improving the museum's connection with the city and improving the visit experience. Wilkinson Eyre increased the space by 25 percent to include the new functions and facilities required in a new contemporary museum, and has been conceived to support the new exhibition programme and museum approach. The project reorganized the vertical and horizontal circulation flows around and within the museum – including the design of the new main entrance, with the aim to improve the visibility of the museum from the street level – provided additional spaces for shops, exhibitions and educational activities – such as the Clore Learning Centre and the new City Gallery – transformed the museum lower floor plan, which now hosts the new Galleries of Modern London, culminating in the Sackler Hall.

The Sackler Hall is a new museum space, located in the place previously destined by Powell and Moya to the display of the Lord Mayor's State Coach, one of the most famous master pieces of the museum collection. Despite its cardinal position along the museum's visit flow, due to the architectural layout, this was a fairly dark space; therefore, Wilkinson Eyre removed the ramp connecting the museum's two levels, replaced it with a step in the northwest corner, and redesigned the façade to the inner garden, bringing light inside and opening up new views onto the surrounding buildings. Situated in this improved space, the Sackler Hall is a luminous double high room, which can be viewed immediately at the entrance of the upper galleries, and in general from several different points along the exhibition path; it is thus a visual fulcrum, and a spatial and metaphorical point of orientation within the exhibition. The Sackler Hall is characterised by a 45-metre suspended elliptical LED curtain; at one side of the hall, a bank of computer pods offers more information about the objects on display in the museum galleries as well as in the archives, widening access to the museum's knowledge, and

allowing personal and individual browsing and data gathering. It is also equipped with relaxing booths, and includes a cafeteria and an area hosting changing temporary exhibitions on London creativity, while the LED screen loop and plasma screens display information and video art work commissioned every two years by the museum in partnership with Film London.

In its functional destination, the Sackler Hall is somehow representative of the shift carried out by the Museum of London in its approach and understanding of its role. It is defined as a contemporary "information hub" and a café, but actually it can be described as a hybrid multifunctional space, which we may refer to as a proactive space. With its highly adaptive character, and its vocation as an actual public place, the Sackler Hall is able to reflect the ever-changing and questioning approach of the museum itself, supporting and even nurturing the activities which may take place here.

Similar types of spaces are more and more often to be found also in newly built museums, where architects and designers are broadly experimenting with innovative spatial programs. Among the several recently realized museums in Europe, the Museum aan de Stroom (MAS) stands as a cultural heritage forum, promoting integrated local heritage policies and cohering different collections to provide a multi-faceted presentation of the world port history of Antwerp (Montanari, 2013; Ruyters, 2012). Although it does not label itself as a "city museum" – as highlighted also by its name, literally "Museum by the River", referring to the location of the building as well as to Antwerp's ancient appellation, "Stad aan de Stroom" – the mission of this institution is focused on the identity of the city as a meeting place for diverse cultures, fostered by a strategic geopolitical location. By illustrating the exchanges that produced and enhanced the development of the urban area, its population and peculiar cultural system, it promotes a glocal narration of the stories "about Antwerp in the world and the world in Antwerp".

Inaugurated in May 2011, the museum was designed by the Dutch architects Neutelings Riedijk as a landmark with an eye-catching and iconic monumental form, catalysing the image of the developing district Het Eilandje, located next to the historic centre. The museum building is a 10-storey high tower, conceived via a combination of a showcase of the city's history and a public space. MAS's spatial layout is characterized by a clear distinction between "served spaces" – the galleries, enclosed within large "black boxes" dedicated to specific themed exhibits – and "servant spaces" – the horizontal and vertical distribution spaces, developing along the escalator. These areas do not merely operate as connection spaces, but rather they are conceived as an "additional" active space for the museum, provided with a specific and complex identity, as well as with a proper name (the Boulevard). Corridors and stairs are conceived as living public places, cohering the functions related to the mobility from one gallery to another, to the display of temporary short-term exhibitions and installations, the presentation of workshops, the organization of cultural events and public talks, etc. The enhancement of connective spaces and their conception as proactive spaces is implemented through the widening of the surfaces traditionally attributed to distribution areas, a flexible and reversible equipment which can be easily reconfigured, and a high-quality and clearly connoted formal and material identity. The Boulevard is characterised by a transparent wall, made of six metre-high curtains of undulating glass, which distinguish it from the "black boxes" of the exhibition areas: while these immerse the visitor into a chapter of the city history, the distribution spaces project an ever-expanding and ever-changing view on the city, the port and the river.

The potentiation of MAS's spatial program can also be detected in the innovative management of the museum's archive, which is freely accessible and becomes part of the visit. The Visible Storage was designed as a sequence of open-view storerooms, not only meant to preserve the objects that are not being exhibited but also operating as an exhibition area, where advanced participative initiatives are being tested and displayed (e.g. experimental projects fostering the participation of young citizens, innovative interactions between artists and curators, etc.).

MAS's Boulevard culminates in the panoramic terrace on the 60-metre high rooftop, which is meant to operate as a lively public space and a reference point for the cultural life of Antwerp. The way to the roof and the cross-

ing of the Boulevard are free, and remain accessible in a daily extended range of hours (the Boulevard is open until Midnight, while the exhibition areas usually close at 5 pm). These special management strategies were conceived to further enhance the connection between the museum and the city, and to foster the merging of museum places and activities with the urban spaces and socio-cultural dynamics.

Beyond these two exemplary cases, the appearance of what we refer to as "proactive spaces" can be detected in several other museums, independently from their main thematic focus – encompassing history museums, ethnographic museums, city museums, natural history museums, etc. – as well as their scale – including local, regional and national institutions.

When the the Musée de l'Histoire de l'Immigration in Paris, has been installed at the Palais de la Porte Dorée, the central large hall on the ground floor (the so called Salle des Fêtes) was conceived not only as a flexible exhibition space for temporary events, but also as an open stage for the presentation of specifically commissioned art projects, public conferences, presentations or celebrations, as well as a public forum where also the community is invited to intervene – in this place, about 500 sans papiers (undocumented immigrants) organized a museum occupation between October 2010 and January 2011 to manifest against the French immigration law.

Also small local museums are working with and within their spaces to take the most of them; here the creation of proactive spaces by means of restricted room and resources often generates interesting experimentations. For example, in the countryside near Parma, the ethnographic Museo Guatelli recently reactivated an underused space next to the reception to implement a place for innovative temporary exhibitions, operating as a sort of "third space" aimed at complementing the visit to the relevant collection with different reflections and perspectives.

Another significant experience was carried out by the new Ghent city museum, opened in October 2010 and located in the ancient city abbey. The museum is conceived as a gateway to the city and tells the story of Ghent chronologically, starting from the present to the past, and then back to the present and future with the final Expanding City Room. This space is meant as a room for exhibitions but also as an area hosting meetings, public debates and other events, aimed at dealing with present-day problems and concerns; in the center of the room some screens surrounding the relax area display images and videos about the contemporary city.

Among the most outstanding case studies exemplifying the role and potentialities proactive spaces' implementation in contemporary museums, it is worth mentioning the Tanks, the performance and installation spaces of the Tate Modern in London, designed by Swiss studio Herzog & de Meuron as part of the wider museum enlargement project. Opened in July 2012, the Tanks result from the architectural exploitation of the former containers used to store oil for the Bankside Power Station turbines. These new exhibition spaces include two of the former oil tanks (the east and the south ones, characterized by a huge circular 30 meter diameter and a 7 meter height), mainly used for performances, and three smaller rooms (the Transformer galleries). Directly accessible from the Turbine Hall, these spaces are organised around an atrium, serving as new ticketing and information area as well as an additional poly-functional space. The Tanks are underground rough spaces characterised by unpolished concrete walls and ceilings that conserve their original patina, and bare minimum partitions. The Tanks have been fully conceived, used and designed as actual proactive spaces: as asserted by Chris Dercon, director of the Tate Modern, they provide an "entirely new type of space for Tate Modern, and museum internationally: [...] generator of ideas, creative energy and new possibilities for artists and audiences. They challenge many aspects of what historically has been important to museums – their collections and modes of display and archive – and ask vital new questions of what is to be a museum in the 21st century" (2012, p. 2).

Bringing forward open conclusions

In this moment it is difficult – and perhaps somehow inconsistent – to draw a conclusion on what a proactive space is: the experimentations with these new spaces in different museums are highly heterogeneous, since they relate to diverse museums' missions, distinctive tools and contents, specific contexts and resources. Although the identity of this new type of museum space is still in progress, it seems possible to affirm that their increasing relevance in accomplishing and fostering the evolution of 21st century museums is clearly taking shape, and is worth to be inspected.

By observing the evolution of contemporary museums in response to the impact of the current convoluted socio-cultural situation, it is possible to assert that, despite the ongoing renovation impetus is mainly resulting in the implementation of new curatorial practices, education activities or communication strategies, also the upgrade of museum spaces, the rethinking of museographical settings and the experimentation with innovative spatial programs may play a crucial part in this process.

Even though the lively debate about the enhancement of museums' political and social role often tents to forget or to move to the background the role of museum spaces – which are referred to as mere venues, passive to what happens inside them – it is understood that architecture and exhibition design have always had a crucial part in the construction and conveyance of the displayed message, and highly affect the relationship with the visitors and the context. The intertwinement among the building, its contents and the communicative means and strategies is – and should always be accounted as – a complex system of knowledge, which highly contributes in shaping the museum experience, defining the museum identity, facilitating the transmission of its message, as well as adding further levels of significance.

In the last decades, the widening of the museums' spatial program has been gradually developing through the diversification of spaces and facilities, including the integration of new services, the expansion of the areas dedicated to education and participation activities, the improvement of temporary exhibitions up to their assimilation within permanent collections. In the framework of the progressive complexification of museum spaces, we intend to highlight the potential role of what we defined as "proactive spaces", not only in complementing but also in support such evolution.

Proactive spaces may arise from a reorganization of the spaces of the museum resulting from the revision of their mission and programmes, from the annexation of new spaces to the museum structure, as well as from the design of a newly build venue. Despite their different museographical origin, they are usually characterised by an adaptive and open nature that variously reflects in their design. Although they include a highly heterogeneous array of places, is possible to detect some recurrent formal features connoting both their architectural and metaphorical conception. For example, their plan is frequently characterized by the use of the circular shape, which recalls the idea of inclusive and democratic dynamics (the round form avoids sharp angles and is generated by a set of parts that are equidistant to a focus point). Their structural layout, dimensions and proportions allow to arrange them in different ways and to host different activities. Coherently, their equipment is conceived in through highly adaptive models: the limited number of fixed furniture, the implementation of reversible and ephemeral tools, and the use of temporary settings allow an ever-changing management of their functional program. Furthermore, these spaces are usually complemented by digital devices (e.g. video walls, projectors, etc.) which entail an ever-changing display of contents; these "non-finished" museographic strategies foster a continuous formal, functional and symbolical upgrade and allow to promptly fulfil different – and sometimes unpredictable and quickly changing – needs.

Proactive spaces are usually a nerve centre of the museum layout; this can be related to their central location within the museum plan, or to the overlapping with distribution areas. By working as a hinge between the different museum galleries and various spaces, they have the possibility to operate as a physical and/or visual fulcrum, as well as a metaphorical point of orientation for the museum activities. Despite the strict relationship

or superimposition with other museum spaces, and the intersection with the overall paths, they usually stand out as specifically connoted places, provided with a clear and recognizable identity, and preferably with a specific and independent access. Their design may offer the opportunity to rethink the spaces primarily dedicated to the horizontal and vertical distribution of visitors fluxes, such as corridors, stairs, etc., which are expanded, further equipped and formally connoted. The enhancement of connective spaces produces active areas with a specific identity, whose high visibility allow to add additional exhibitions, seminars and workshops, and to develop new relationships between the different parts of the museum, with the visitors, as well as with the city. The boosted relationship with the context beyond the museums' walls (be it a neighbourhood, a city, a metropolitan or territorial region), which in general is a common feature of the ongoing evolution of contemporary museums, frequently recurs also in the design of proactive spaces, Their salient contact with the "outside" – e.g. by means of transparent margins allowing a visual permeability, direct physical connections, or specific access hours and fares – represents a kind of embodiment of a wider aim of openness characterising the "post museums", and their commitment to establish a straightforward relationship with the contemporary civic society and its communities.

Due to their flexible, adaptive, multi-purpose and in-progress nature, proactive spaces remain "open" in their form, function and meaning, and thus they are likely to meet the need of contemporary museums to accommodate renovated practices, projects and activities according to enhanced museum role. This openness, which reflects in their layout, functional programme and design, can be understood as the architectural contribution to a change in the approaches and attitude of 21st century museums.

Acknowledgements

This paper ensues from the research activities carried out by the authors within the MeLa project, funded by the European Commission under the Seventh Framework Programme (SSH-2010-5.2.2) www.mela-project.eu.

References

Appadurai, A. (1996). *Modernity at Large. Cultural Dimensions of Globalization*. Minneapolis: University of Minnesota Press.

Basso Peressut, L., Lanz, F. and Postiglione, G. (Eds.). (2013). *European Museums in the 21st Century: Setting the Framework*. Milan: Politecnico di Milano.

Bhabha, H. K. (1994). *The Location Of Culture*. London & New York: Routledge.

Chambers, I. (2012). The Museum of Migrating Modernities. In B. Ferrara (Ed.), *Cultural Memory, Migrating Modernities and Museum Practices* (pp. 13-32). Milan: Politecnico di Milano.

Chambers, I., De Angelis, A., Ianniciello, C., Orabona, M. and Quadraro, M. (Eds.). (2014). *The Postcolonial Museum. The Arts of Memory and the Pressures of History*. Farnham: Ashgate.

Clifford, J. (1997). *Routes: Travel and Translation in the Late 20th Century*. Cambridge, MA: Harvard University Press.

Dercon, C. (2012). *The Tanks at Tate Modern: fifteen weeks of art in action*. The Tanks Programme Notes, 18 July – 28 October 2012.

Gourievidis, L. (Ed.). (2014). *Museums and Migration: History, Memory and Politics*. Abingdon: Routledge.

Hooper-Greenhill, E. (2000). *Museums and the Interpretation of Visual Culture*. London: Routledge.

Karp, I., Kratz, C. A., Szwaja, L. and Ybarra-Frausto, T. (Eds.). (2006). *Museum Frictions: Public Cultures, Global Transformations*. Durham & London: Duke University Press.

Lanz, F. (2014). City Museums in a Transcultural Europe. In L. Gourievidis (Ed.), *Museums and Migration: History, Memory and Politics* (p. 27-43). Abingdon: Routledge.

Macdonald, S., and Fyfe, G. (Eds.). (1998). *Theorizing Museums: Representing Identity and Diversity in a Changing World*. Oxford: Blackwell.

Macdonald, S.J. (2003). Museums, National, Postnational and Transcultural Identities. *Museum and Society*, 1(1), 1-16.

Macdonald, S. (Ed.). (2006). *A Companion to Museum Studies*. Malden & Oxford: Blackwell.

Marstine, J., Bauer, A.A., and Haines, C. (Eds.). (2013). *New Directions in Museum Ethics.* London: Routledge.

Marstine, J. (Ed.). (2006). *New Museum Theory and Practice: An Introduction*. Malden & Oxford: Blackwell Publishing.

Message, K. (2006). *New Museums and the Making of Culture*. Oxford and New York: Berg.

Montanari, E. (2013). Museum aan de Stroom – MAS, Antwerp, Belgium. In L. Basso Peressut, F. Lanz and G. Postiglione (Eds.), *European Museums in the 21st Century: Setting the Framework*, Vol. 2 (pp. 494-503). Milano: Politecnico di Milano.

Ross, C. (2015) (forthcoming). From Migration to Diversity and Beyond: the Museum of London Approach. In C. Whitehead, S. Eckersley, K. Lloyd, and R. Mason (Eds.), *Museums, Migration and Identity in Europe*. Aldershot: Ashgate.

Ruyters, M. (2012). Conversation with Cart Depauw, Director of the MAS in Antwerp. *(H)ART magazine*.

Rutherford, J. (Ed.). (1990). *Identity. Community, Culture, Difference.* London: Lawrence & Wishart.

Sandell, R. (Ed.). (2002). *Museums, Society, Inequality*. London & New York: Routledge.

Vergo, P. (Ed.). (1989). *The New Museology*. London: Reaktion Books.

Watson, S. (Ed.). (2007). *Museums and their Communities*. London & New York: Routledge.

Welsch, W. (1999). Transculturality: The Puzzling Form of Cultures Today. In M. Featherstone and S. Lash (Eds.), *Spaces of Culture: City, Nation, World*. London: SAGE Publications.

Archives as New Spaces for Engaging Experiences: Technologies and Languages within the Scenario of "Heritage Continuum"

Ece Özdil
Politecnico di Milano, Design department, Italy

Abstract: *Over the last five years, the way in which we engage with cultural heritage has changed immensely. Cultural institutions, especially the structure of museums, have moved from "ownership of content" toward a permeable structure, accumulating and diffusing information and knowledge, and positioning heritage content within a dynamic system, not only to communicate but to provide "use value" for audiences. Within this scenario of cultural knowledge circulation, technologies have gained an important role in creating tools to preserve and diffuse cultural heritage in digital environments. Today, new ways of archiving information have emerged, focusing on these recent digitalization processes as well as debating open-access issues; however, as will be discussed in detail later, this paper does not attempt to analyze archives according to their "traditional" definition, but from a metaphoric point of view; introducing concepts of narration, performance, and source of memory, thus offering as a part of engagement strategies a first step to discuss the possible future positioning of archives from a design research context. To this end, a holistic approach is adopted here in analyzing diverse types of case studies (exploratory, descriptive, and inspirational), debating on one hand, the possibility of developing "active" archives within these concepts with a focus on how the archival material can be (re)used or produced, and on the other hand, the possibility of "opening" archives as open-ended knowledge systems responding to the additive and cumulative nature of cultural heritage content and knowledge.*

Keywords: archives, engaging experiences, ICT, virtual exhibits, interface design, strategies, interaction

Introduction to the scenario of "Heritage Continuum"

Recent changes in the heritage field in the last decade are highly related to the strong relationship built between museums, collections, and archives. One reason for this derives from the (r)evolutionary period of museums, where they started to be seen less as a distinguished and sacred place, often referring to unique or authentic objects by adopting their identities, but as a core place of cultural activities where culture is represented not only by ownership, but exhibited and reflected through a permeable structure. In short, museums today are represented in more recent work as places of knowledge with a dynamic structure through diverse strategies activated by "cultural objects"[1] (Azzurro, 2011; Kirshenblatt-Gimblett, 2006; Dernie, 2006) and as a consequence also of less recent work (Malraux 1967; Putnam 2001), moving from a description as the location where historical or objects of importance are kept and appreciated, toward metaphorical use for a space for the dissemination cultural knowledge. Therefore, today it can be claimed that the formation of a museum can no longer be seen as a structure separate to other cultural institutions and society but is infused in them, hence founded on a collaboration aimed at placing cultural heritage collections "in common" to make "use value" of their content.

[1] The use of the term "cultural object" does not only mean museum objects, archival materials, or records. In a broader definition, moving towards it's materiality and authenticity, the term "cultural object" is also used to mean an object with relational aspects that a) owns and offers a meaning-making process; b) is polyvocal, holding also symbolic meanings in relation to context; c) is under a cultural influence; d) enables communication and diffusion of its inherited meanings; and finally, e) interacts with the surrounding physical space to offer an interpretative space for audiences. In this case, a designed object or a display for an exhibition can also refer to a cultural object.

There are, in addition, similarities in the inherited roles of cultural institutions, as they are all responsible for the safe keeping of collections and archival materials (often not only paper-based materials as records but including also objects and artefacts, and new media). They all provide knowledge related to these materials when visited, interacted with or demanded.

The dynamics are two-sided, as first, the relationship between the institutions, and second, the relationship with users, generates an ongoing exchange of cultural knowledge through experience. The whole circulation of content between these institutions and visitors leads to a growth in culture and knowledge itself that has been continuously cultivated, and thus increased between these actors.

> We are no longer merely consumers of culture or cultural artefacts. We are instead – all of us – producers of our indicative cultural creations that exist for as long as we are experiencing them [...]. (Federman, 2005)

Today, we actively take part in and are driven by cultural experiences. Participation, interaction and performative aspects are of great importance in the museum's offer of engagement during the last decade; that being so, it is a way of giving space to knowledge dissemination. In participatory museums, the experience on offer is about "creating dialogue or creative expression, shared learning or co-creative work." (Simon, 2010); In narration, on the other hand, the experience is not only a physical interaction, but led by stories that immerse us in emotions that we share with others. For performative museums the actor is instead the cultural object and "through physical exploration and gestures a fruitful exchange is activated between objects, contents and visitors."(Dernie, 2006). This has also been driven by technology that has changed drastically how we experience and perceive information and knowledge. Hence, the impact of ICT and technologies in processes such as digitalization should be taken into consideration. In this regard, the notion of knowledge, and the role of technologies are also relevant and of significant importance within this relationship.

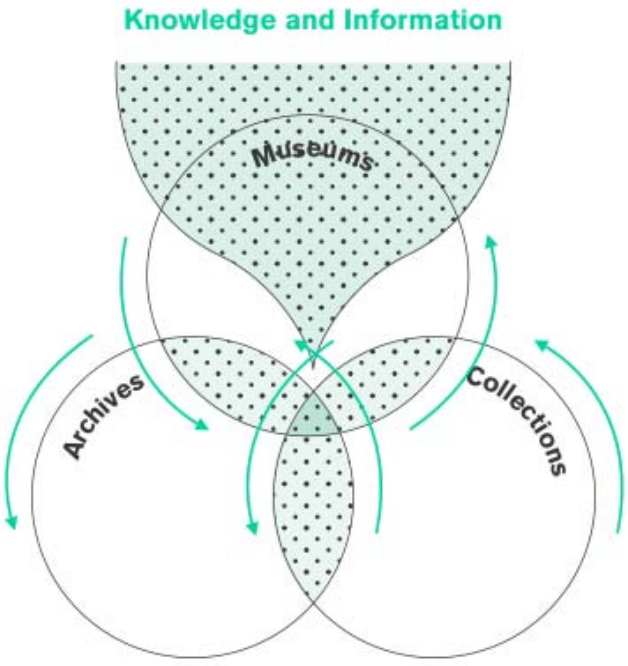


Figure 1. Heritage Continuum Diagram

Source: Diagram representing the relationship between museums, archives, and collections, showing how knowledge circulates between these actors (elaborated by the author).

This scenario creates the need to enable a new way of understanding both for archives and collections regarding their traditional definitions and beyond. As knowledge per se is additive and cumulative, heritage institutions should be open to creating even more space and recognition for new knowledge and information, today also including digital origination. Accordingly, this interpretation of the relationship between museums, archives, and collections that I have introduced and theorized focusing on the circulation of cultural knowledge under the scenario titled "Heritage Continuum", (see Figure 1 for an overview diagram) has guided and stimulated my PhD research[2] into investigating new ways of thinking about archives to contribute to their repositioning, design, and systems for knowledge. In this scenario, when focusing especially on archives, which will be discussed in detail later, the word *archive* takes on a metaphoric usage in the search for creating open-ended knowledge systems (Sennet, 2009); thus, the search is for archives that are able to evolve continuously, can be transformed or adapted to be diffused or activated, innovated, and integrated, connected adapting to the changes in technology and updated to the contemporary needs of visitors.

The research approach, focus, and methodology

The PhD research presented in this paper considers relevant theoretical developments in different fields, starting with a strong focus on the heritage field, and considering technological change and its impact on the role of institutions within society, with a specific focus on archives, looking to explore future scenarios for archives within a design research context. This trans-disciplinary point of view helps also in having a wider perspective on who user-visitors are, and on engagement strategies for audiences, in museums today.

By exploring the field and asking questions, research in the design context can bring insights to the notion and peripheries of the archival field, investigation into innovative forms of archives, and the search for experimental and non-linear solutions. Starting by taking into consideration a present audience, the research aims to draw conclusions on the impact of contemporary practices and technologies in cultural heritage. This is also an attempt to reach some solutions for bridging virtual, digital, and physical experiences. The research relies upon the main hypothesis that similar strategies and contemporary applications used in recent years by museums and artists might help archives to have a more active audience whilst going public.

The three-year long research is structured into three main phases; the type of methodology applied is chosen to have an adequate organization of actions related to specific scopes. The first phase is the exploratory and discovery phase which deals with an overview, building an aligned and updated theoretical background to the research topic, and enriching content with the use of both practical and technological case studies. The second phase, interpretation, aims to interpret the outcome of the first phase to develop future scenarios and design solutions. Finally, the discovery phase aims to experiment and prototype ideas, and analyze them for conclusions.

In this research, the use of case studies helps to explain the complexity with an open view of possible applications and real-life interventions; three different types of case studies are used. To begin with, descriptive case studies articulate what is already known about phenomena, which in this specific research deals with technological applications. Inspirational case studies supply insights and perceived casual inferences. Finally, exploratory case studies help to extend the patterns of acquisition and use that are established in other environments and fields.

[2] The research is held in the research unit: Design for Cultural Heritage.

What are archives? The meaning of archives in the research

There are many definitions of what constitutes an archive. Archives refer to physical spaces where documents are kept, such as record offices, and are also documents themselves, or references. Synonyms of an archive from a traditional point of view, are deposits, repositories, datasets, and any storage spaces for safeguarding and preservation. From an archeological and historical point of view, an archive can be a piece of evidence, a personal statement, or can help to deconstruct an earlier interpretation or construct something as yet unknown. From a political point of view, archives are under a specific influence, having their own powers.

Considering also my own research, I highly appreciate the description by Priscila Arantes. She mentions that "archives are created by organizations and institutions as well as groups and individuals. An archive is traditionally regarded as an organized system of documents classified and stored for some specific end (..) A mere deposit for documents; as an inanimate device" that factually recreates a given "fixed" past. She uses this description to start the debate in "Arquivo Vivo"[3], a live archive exhibition. This description illustrates what this research also aims to debate, which is the investigation of an archive that is open to new interpretations and recreations. Hence, continuously reconstructing for a specific aim, engagement, and visibility; and investigating solutions and projects moving from an inanimate device toward developing activation processes.

Many projects can be found on the creative assembling of archival materials, investigating different readings and interpretations of documents and objects. This was also the point of view of André Malraux in *Le Musée Imaginaire*. As is well known worldwide, Malraux had an idea for an imaginary museum (the 'Museum without Walls'; Malraux, 1967) which was one of the first attempts at creative thinking in the process of assembling, connecting, and making groups to display artworks. Some other works also illustrate this craving for new ways of organizing, displaying, and representing information, such as Aby Warburg's Mnemosyne Atlas (1927-29) as well as the concept of the "cabinet of curiosities"[4].

An archive, as mentioned also by Arantes, above, can be constructed by individuals for a specific end, for example to preserve memory and to enhance stories. An example has recently been made concerning the categorization of museums; Masumiyet Müzesi (The Museum of Innocence), built by Orhan Pamuk under the same name of his novel, officially opened in 2012. In the museum, the objects related to the characters of the book are presented and exhibited in wooden boxes and vitrines, representing, in the author's words, "documentation of a bygone Istanbul and a poetic look at the city's past through the eyes of a lover"[5]. Hence, the museum is based on the assumption that different objects assembled side by side can elicit unexpected thoughts and emotions. The US Holocaust Memorial Museum, if you like, can be considered a similar example (even if one is fictional and other is based on fact) offering an aesthetic experience built by both objects and environments. Both examples adopt a storytelling approach applied in a diverse strategy to engage as the whole museum offer[6].

It can be concluded that using the word *archive* as a metaphor, such as of the museum, is present over time, in search of memory, meaning making, storytelling, and to give voice to cultural phenomena. It is not a question of changing the whole archival profession.

> There is no doubt that the traditional skills of the archivist continue to be essential as, whatever the medium, all archives need to be effectively managed and this requires the ability to select, appraise, catalogue and manage archives. (Stevenson 2008)

---

[3] Arquivo Vivo is an exhibition resulting from postdoctoral research at Penn State University (USA) in 2012. A catalogue dedicated to the exhibition, curated by Priscila Arantes, can be found on itunes.

[4] Cabinets of curiosities (Wunderkammer) were repositories for all manner of wondrous and extraordinary objects, which arose in mid sixteenth-century Europe. The initial idea was combining also illustrations and diagrams to tell stories about the wonders and oddities of the natural world.

[5] Taken from his interview on REUTERS.

[6] Storytelling in museums offers a kind of aesthetic experience, where the space offers a solution, sheltering different constructions in relation to the whole story, as in a movie, that the listeners follow, almost having a "ludic" experience; spontaneous and unexpected events might occur in time. (Özdil, E., forthcoming 2014.)

However, it is not a question of just reducing the work to the categorization and organization of materials, but of opening space and reflecting upon what it can offer. Thus, this research does not aim to provide an overview of the archival profession, despite the importance of basic knowledge to understand its evolution today, or to neglect traditional archival work, but hypothesizes that by applying creative thinking to archives (as introduced by the influence of contemporary art and installations), and engagement strategies in museums (specifically on the basis of interaction, narration, and performance), and also through technology, the way in which archives reach audiences to also create new visitors, and new knowledge, can be changed.

Hence, very briefly, as discussed above, there is a strong focus on two concepts of sources of memory; that first, archival action can be made visible through curation plus technology, and second, archival space can contribute to the archive as new knowledge in return. These issues will be underlined in the next section as assumptions and related case studies.

Further theoretical assumptions and related case studies

The assumptions and cases in this section,[7] attempt to contribute to understanding how different engagement strategies and some creative applications may effect, first, the visitor experience, and second, the formation of archives as open-ended knowledge systems.

Defining the active role of audiences and impact of technologies

Active role(s) of audiences

There is a notable change in the expectations and roles of audiences in recent years, as they have turned out to be important actors in the system of heritage dissemination and activation. Today, visitors (both online and offline) desire to be in an experience-driven space, so changing from a regular visitor, to a spectator. This change is visible, for instance, in the works of Studio Azzurro: exhibitions that are constructed on the idea of storytelling and narration in space, guiding the audience through a progression of historical or thematically organized events. In addition, with the emergence of participatory modalities, visitors have also adopted roles as enablers of contents, helping build provenance, and constructing the past. For instance, the Foto Galatasaray project exhibited in Salt Galata in Istanbul that aims to re-use the photography archives of the photographer, Maryam Şahinyan, to create an inventory of the demographic transformation of the city of Istanbul, organizing events open to the public, such as name tagging days to give evidence to the photographs presented through public involvement.

Impact of technologies

Interactive digital touch tables, displays, and other surface applications are ever present in museums' offer today, as an example of rampantly employed technology. Interfaces as environments have also been considered as an effective solution to involve and engage visitors more, amplifying their senses through multimedia displays and digital interaction. They also provide deeper information (through 3D reconstructions, audiovisual elements, and video that could be presented by physical means.) In addition, digital catalogues, virtual tours, and multimedia atlases are also commonly used tools to publish and diffuse cultural heritage in digital environments. In some cases, as in the case study, TOIE(T)MOI, a digital exhibition designed by studio Lust[8], there can be interconnections between data and open-access materials to enrich visualizations and information.

[7] Please take into consideration the different types of case studies mentioned in Section 2 on methodology.

[8] Lust is a dutch design studio, that can be found on http://lust.nl

Extending the perception of the concept "Museum Effect"

> When a group of objects is exhibited together in a vitrine, a kind of visual construction or statement is involved, suggesting that they have some formal or cultural relationship one with another. (Putnam, 2001)

This assumption, as also mentioned before in the paper, examines the juxtaposition of contemporary art practice and museology through an overview of the artist's work. Since the beginning of the twentieth century, artists have longed to create meaning through ordering and categorizing, creating taxonomic arrangements as works of art. Some of the work approaches the concept of preserving memory, or addresses issues of artistic works between taxonomic display, collection and interpretation. For instance, as in many works of Boltanski, in his exhibition from 1994 titled "Humans", he uses photographs, changing their initial function into creating "spaces" for collective memory. Exposing them randomly, the installation aims to tell a story, moving from portraits' individuality and descriptivity, associating and integrating them with each other, into representations of emotions and history. In other work, this kind of taxonomic representation can bring to light a hidden knowledge. An example could be the "No Name Design" exhibition, where Franco Clivio brought an interpretation to some no name objects, categorizing them according to language, material, shape, function, and construction, which helps the visitor discover and reveal information hidden in objects.

Investigating "Routers and Connectors" as cross-platform developments

Recent developments such as digitalization processes have led the development of platforms providing open and heritage content available online such as Europeana and Google Cultural Institute. In support of this, several other EU projects and networks, such as Linked Heritage, have been established to grow the database and improve the system.

Based on this, this hypothesis assumes the need to make use-value of digitalized content through net-nature systems and investigates solutions beyond the boundaries of institutional ownership, time, and space. This aspect is evident in the highlighted case study.

Highlighted case study: "Records of Rights" 2013, National Archives, Washington, DC, Interactive Exhibit

This project is an interactive table and wall experience, mentioning phenomena from the abolition of slavery to the defining of workplace rights in the United States. Through the fruition of content, the table urges visitors to talk to each other about what they are discovering. In addition, an accompanying online exhibition allows users to explore the table's content from any location. In this case, we gain important insights into areas such as digital and virtual support for the experience of archival materials, systems that are open to contribution, and finally, the possibility to curate materials with diverse media and from different sources.

Exploring possible structures between exhibiting and archiving

> Documentation usually made in a different medium from that of the "original work", went on to perform its own engagement with audiences, often through mass media (..) as mediators between the original works and audiences elsewhere, these images circulated through books, in the news media, and the art market, as they became more than just records for archives. (Osthoff, 2009)

This assumption explores, first, how archival materials can be used as an enhancer of knowledge, information, and experience and second, how this type of structure can provide a basis for continuous cultural heritage production.

Highlighted case study: "Timekeeper" 2009,
Museum of Jewish Heritage, New York, Museum installation

This project, *Timekeeper*, is an interactive experience enhancing the interpretation of the permanent installation of Andy Goldsworthy: the Garden of Stones at the Museum of Jewish Heritage. It is installed in the museum alongside the window facing the installation and consists of an interactive station with a user interface designed as a timeline. The interface constantly updates the view as digital stills from a camera connected to the station. The images can be considered as unique visuals that connect the past and the present, interpreting a single "continuum" of the nature of the installation. Turning the dial on the display, visitors can experience the ever changing nature of the garden, navigating through different passage of seasons and time. It is also possible to see a live view of the garden online.[9]

In this case, the core value is the idea to conjunct the past and present of an artwork setting down different layers of interpretation: the physical presence find place in virtual and digital worlds giving space for new interpretations. In addition, the interface works as a "living archive" of the installation.

Conclusions

In this paper, the changing relationship between cultural institutions, engagement strategies applied by museums, the impact of technology, and the creative use of archival materials is debated. This is to explore the notion of archives, moving from its traditional meaning toward a metaphoric use, changing how the materials are also valorized and activated. In this case, an archive can be interpreted as an agent, a system for cultural knowledge dissemination. It is foreseen that this can be achieved by means of different sources and media, such as combining text, video, and visual media. New technologies can then integrate the broad range of types of documents into a singular, engaging experience; cases and literature building have so far strongly confirmed this possibility.

The function of the designer can be seen as twofold, working on the development (system and service, visual development, visualization) and curation side (selection of materials, space, and strategy) which also brings a new vision and expertise into archival profession.
Some doubts remain, that are to be explored:

- how to pursue the collaboration between different archives and sources, and collaboration between designers, archivists, and curators;
- how to sustain the application;
- how this new information can be a new source to all sides, and be archived.

With this research, I hope to shift away from the traditional notion of archive user (mainly an academic scholar, or expert) and generate a discussion on who is the future user of this kind of new interpretation of archives.

Bibliography

Arantes, P. (2013). Arquivo Vivo, Live Archive. [itunes, ipad] Retrieved from: https://itunes.apple.com/br/book/live-archive/id795040283?mt=11

Azzurro, S. (2011). *Museums as narrations*. Milano: Silvana.

Dernie, D. (2006). *Exhibition design*. London: Laurence King Publishing.

[9] A website is available at this link : http://www.mjhnyc.org/garden/

Derrida, J. (1996). *Archive fever: A Freudian impression*. Chicago: University of Chicago Press.

Federman, M. (2005). The ephemeral artefact visions of cultural experience. McLuhan Program in Culture and Technology. Retrieve from http://www.mcluhan.utoronto.ca/EphemeralArtefact.pdf. Accessed December.

Foucault, M. (1972). *The Archaeology of Knowledge*. London: Tavistock.

Kirshenblatt-Gimblett, B. (2006). *Exhibitionary complexes*. In I. Karp, C. Kratz, L. Szwaja, & T. Ybarra-Frausto (Eds.), Museum frictions: Public cultures/global transformations, (pp. 35-45). Durham: Duke University Press.

Malraux, A. (1967). Museum without walls. London: Secker & Warburg.

Osthoff, S. (2009). *Performing the archive: The transformation of the archive in Contemporary art from repository of documents to art medium*. Chicago: Atropos Press.

Putnam, J. (2001). *Art and artifact: The museum as medium*. London: Thames & Hudson.

Sennett, R. (2008). *The craftsman*. New Haven: Yale University Press.

Simon, N. (2010*). The participatory museum*. Santa Cruz, CA: Museum 2.0. Retrieved from http://www.participatorymuseum.org/read/

Stevenson, J. (2008). *The online archivist: A positive approach to the digital information age*. In Craven, L. (Ed.). What are Archives? Cultural and Theoretical Perspectives (pp.89-106). Aldershot: Ashgate.

Seen/Unseen Dancing Art Inside and Outside the Museum

Laura Donnelly
Kansas State University, United States

Marianna Kistler
Beach Museum of Art, United States

http://www.seenunseen

Abstract: *Night of Wonder, a collaborative evening of music, dance, architecture and art, expanded patrons' ideas about what museums are, where art making happens, and how art is viewed. Visitors explored all areas of the museum as they traveled to events located inside and outside the museum and engaged with performers and the interactive sculpture.*

The dance "Seen and Unseen" linked spaces inside the museum with the outdoor interactive sculpture "Spiritual Wonder." Patrons watching dancers placed on pedestals in a second story alcove looked out windows onto the center portion of the interactive sculpture. Dancers located outside the museum were placed inside sections of the Spiritual Wonder sculptural installation and were visible from different windows along the gallery hall. No single location afforded a view of the entire dance. However, from every angle, people caught glimpses of dancers in other locations performing different movements inspired by the interactive sculpture or the museum's architecture. People in the entry to the galleries saw dancers in the Spiritual Wonder sculpture first then moving outdoors to see them better, saw the dancers in the windows. Viewers on the ground east of the museum could see dancers moving within the Spiritual Wonder installation as well as occasional glimpses of dancers through the windows inside the museum.

The dancers encouraged patrons to join them as they processed through the museum into the outdoor interactive space. Patrons followed the dancers into the sculpture, down a ramp ending in a grassy meadow with gongs. Many aspects of the interactive "Spiritual Wonder" sculpture were created from musical and percussion instruments. As patrons saw the dancers playing the instruments many of them joined in the fun. Being "part of the art" brought a sense of playful, creative joy to the faces of all who participated in seeing in new ways.

Keywords: dance, museum, interactive, architecture, site-specific

Inside | Outside – Seen | Unseen

"Seen/Unseen, Dancing Art Inside and Outside the Museum" was a site-specific multi-disciplinary project presented at the Marianna Kistler Beach Museum of Art on the campus of Kansas State University. This paper describes the project and the historical and contemporary aspects of site-specific dance that were the starting point for the choreographic concept. A ritualistic dance involving passage from one place (one state of being) to another, it is also a site-specific performance that takes the dancers out of the proscenium and places them inches from museum patrons. As works of "moving art" the dancers interact with the spaces inside and outside the building while the placement of the dancers is inspired by the architecture of the museum – alcoves, windows, benches, and the Spiritual Wonder installation created outside the museum. Tavares Strachan's website http:seenunseen.com explores the ideas of presence and absence through installations designed so that the viewer is never able to see the "whole" work of art. Expanding these ideas into a happening type event with

roots in the Judson Dance Theatre postmodern dance movement, in "Seen and Unseen" no location permitted patrons to see the entire dance. However, from every angle, people caught glimpses of dancers performing in other spaces both inside and outside the museum and within and around the Spiritual Wonder sculpture.

Site-Specific Dance

Western concert dance today is most often performed on a proscenium stage with an audience seated in rows viewing the dance from a single static position. The dance and its performers are set apart by the proscenium in the way that works of art are framed. The movements of the dance are directed toward the audience. Dancing that happens downstage is closer to the audience and action that takes place upstage is further away. There is a definite center of attention (onstage) while the backstage space is reserved for costume changes, props, lighting equipment, exits, and entrances. Almost all movement in western concert dance has a forward focus.

However, dance encompasses more than just traditional western concert dance. Beginning with ritual in early civilizations dance has had a long and varied relationship with its audience/participants. In ritual, folk, and social dance the boundaries between audience and dancer are much more fluid. Often all members of a community "know" the dances that are performed at weddings and other social gatherings. Some people excel at the physical aspects of dancing while others prefer to stay on the sidelines watching.

What is commonly called site-specific dance today has a long and rich history in traditional, sacred and contemporary performance. In India thousands of years ago dance was part of religious ceremonies performed in temples. Many cultures today continue to include dance in rituals that mark important events in the life of the group whether it is a wedding dance, a birth celebration or a healing ceremony.

Today site-specific dance/performance is described as "work created in response to a particular place or site, inspired by its architecture or design, its history, and/or its current use." (Koplowitz) Often looked at as an evolution of the 1960s Happenings (performance art that attempted to eliminate the boundary between viewer and art object), site-specific dance in the twentieth century dance actually began with the early modern dance pioneers. Isadora Duncan danced wherever she was and in response to the space in which she found herself whether it was a drawing room, a garden or an Ancient Greek temple. Ruth St. Denis and Ted Shawn had long careers on the stage but when they founded Jacob's Pillow in the Berkshire Mountains of Massachusetts, dancing outdoors became part of their work. Martha Graham, Doris Humphrey, Hanya Holm and Charles Weidman were core faculty at the Bennington School of Dance which was a laboratory for choreographers creating new work and exploring music, design, poetry, and art in relation to dance. Many of the dances for large numbers of performers at Bennington happened outdoors, and although the expansive lawns at Bennington may have been inspired the dances, the choreographers were focused on creating dance works that would eventually be seen in theatrical settings.

Collaboration – Outside Ideas

This project began when a museum advisory board member met with a composer and a choreographer to discuss options for entertainment for a fundraising gala for the Marianna Kistler Beach Museum of Art. The Friends of the Beach Museum of Art had determined that they wanted an event filled with wonderful music, dance and art to complement the "Museum of Wonder" exhibit. Settling on the title "Night of Wonder" the group was open to new ideas for engaging the museum patrons. Deciding on an evening full of interactive events rather than simple entertainment was an idea outside of the comfort zone for many of the board members. Sarah Caldwell Hancock, event chair, was exactly the type of sponsor that artists need for a collaborator. She was open-minded and willing to allow the project to develop. She selected a good team and she provided the resources and space for the art to evolve.

Artistic Impulse – Inside Ideas

As Victoria Hunter explains the

> …the site-specific choreographer experiences and interacts with the site on a number of levels, metaphorically digging beneath the surface to reveal a uniquely personal interaction with the site.
>
> On an immediate, practical level the site presents the choreographer with a range of spatial information, elements of which may serve to inform the creation of movement material and choreographic form.

The composer and choreographer working with an architect/designer explored the museum looking at spaces, light, surfaces, sound quality, resonance, windows, walls, art that could be moved and permanently installed works. Feeling the qualities inherent in the site each artist identified spaces they were drawn to investigate more deeply. Ways to use sound to draw the patrons through the gallery spaces were explored. Strategic locations where dancers could be placed to entice the museum audience to experience the architectural space as a design element were pinpointed. Images from exhibits, ideas of mystery and awe led to ideas about the sacred wonder of life.

Ideas were generated, explored, evaluated, modified, developed, thrown out, reconstituted and reworked. Spaces were revisioned, pathways mapped for patrons to follow through the museum. Concepts were explored: art outdoors, sculpture as shelter, dancers as moving art, musical instruments as structural elements, making sound as activity, sound as music, sound as call, procession, leaders, followers. And questions asked: How to draw people out of themselves and toward the spiritual wonder found in all life?

Communication and Creation – Inside to Outside | Outside to Inside

Crucial to any collaboration is open communication. After the initial investigation of the site, followed by the idea stage where almost anything is possible, the reality of time and place mean that changes will happen to the movement and the ideas as everyone deals with obstructions and boundaries. Boundaries of time and space: How much rehearsal time is available in the museum? Physical obstructions: Dancers must stay three feet away from objects in glass cases. Logistics: How to get the audience to move through the museum from one performance site to the next?

Bringing inner ideas and explorations into form in the outer world requires persistence. Dance is created on physical bodies in time and space. First the ideas must be translated into movement next the movement must be communicated to the performers. Then, the dance needs to be practiced until it is almost automatic, and the mental discipline to remain focused when dancing in the middle of a reception must be developed. These activities take time.

Since the art gallery is a public space rehearsing in the various gallery sites must not conflict with other scheduled events. Museums are filled with valuable works of art and dancers who perform in the galleries and around art objects must remain aware of their relationship to the exhibits at all times. Trust must be developed between performers and museum employees. Museums are generally quiet places but when filled with eight musicians and eight dancers, suddenly there is a lot of noise and activity. Charged with protecting the art, many conversations about how close one may dance to a sculpture, painting, or wall happened between creators and museum employees. More questions are asked: Can we place dancers on these benches – yes, can someone sit on this chair sculpture – no.

With site-specific work there is not only the choreographer's relationship to the space but also the dancers' reaction to and interpretation of the site. Sharing ideas based on each performer's impressions of the site adds layers of texture and refinement to the choreography. There is an ongoing dialogue as the performers move into the space and integrate their dances with the art.

Hidden/Exposed | Seen/Unseen

Dancers spend most of their time "hidden" from the world, taking class and rehearsing in studios. Their time on-stage is highly orchestrated and they are set apart from the audience. People often think of museums as places that are "other", quiet, only for the trained artist or intelligentsia. The "Night of Wonder" transformed the Beach Museum from a place where art is "stored" to a place in which looking at art is a living, breathing adventure.

As part of this adventure the patrons traversed the inside and outside spaces of the museum to see and experience all of the art. They were engaged by the immediate presence of the performers. They became curious about the parts of the dance that they couldn't see and began to move through the space seeking new vantage points from which to observe the dancers. When the dancers began to process through the gallery audience members wanting to discover the next site where the dance would happen followed them. Each time as the dancers exited the museum into the Spiritual Wonder installation patrons would follow them and begin to interact with the gongs, bells and percussion instruments that were part of the installation. Smiles and laughter emerged as formerly passive viewers became performing artists.

Acknowledgements

This project was made possible through the support of the following units at Kansas State University: Marianna Kistler Beach Museum of Art, College of Architecture, School of Music, Theatre, and Dance and the Music Department at Central Michigan University.

References

Anderson, Jack. (1993). Ballet and Modern Dance: a Concise History. Hightston, NJ: Princeton Book Company.

Banes, Sally. (1987). Terpsichore in Sneakers: Post-Modern Dance. Middletown, CT: Weslyan University Press.

Duncan, Isadora. (1996). My Life. New York, NY: Liveright Publishing Corporation.

Hunter, Victoria. (2005). Embodying the Site: the Here and Now in Site-Specific Dance Performance. *New Theatre Quarterly, 21*(4), 367-381. http://dx.doi.org/10.1017/S0266464X05000230

Koplowitz, Stephan. (n.d.) Creating Site-Specific Dance and Performance Works [Online course]. Retrieved from https://www.coursera.org/course/sitedance

McNeill, William H. (1995). Keeping Together in Time, Dance and Drill in Human History. Cambridge, MA: Harvard University Press.

Schoeneman, Alyssa. (2012, January 8). "Site-specific work: What is it?" [Blog post]. Retrieved from http://ascho3.wordpress.com/2012/01/08/site-specific-work-what-is-it/

Strachan, Tavares. (n.d.) "SEEN/UNSEEN." Retrieved from http://seenunseen.com/#/intro

Cross Cutting Concepts for Change: Collections – Alignment – Engagement

Rachel Hosker, Claire Knowles, Norman Rodger
University of Edinburgh, Library and University Collections, Scotland
http://www.ed.ac.uk

Abstract: *For many institutions engaging with their audiences has always been a challenge. Often this has not always been tackled systematically, with a coordinated approach to cultural heritage collections, whether physical or digital. Within Library and University Collections at the University of Edinburgh we have used cross cutting groups to address some of the intellectual, cultural and practical issues which affect our ability to engage with academics, students and the wider public. This has resulted in more effective use of expertise across all disciplines, to develop a strategy which delivers a suite of digital resources.*

In our presentation we will discuss our audiences and their needs, while exploring their expectations of a leading academic institution. This will be tempered with a practical look at how this has been resourced, focusing on the key elements of harnessing existing professional expertise, knowledge and workflows. Resources that will be discussed include: cross collection search facilities, backed up with mapped metadata, and the harvesting of our data by pan-European projects. Moreover, we intend to demonstrate that this approach is applicable not just in this institution but across the library, museum and gallery sector.

We will provide a perspective based collaborative paper which shows how disciplines interlink and work towards the same connected output to achieve a user experience that is both inspiring and engaging. This will be presented from three perspectives: curatorial, systems development and approaches to project management and will lead to a forward-looking aspirational conclusion highlighting the ongoing work at the University of Edinburgh.

Keywords: Engagement, Digitisation, Metadata, Systems Development, Collections

Introduction

The development of best practice in managing collections data, collections related projects and people at the University of Edinburgh demonstrates a collaborative approach to how all of these need to be identified and mapped. There are clear benefits of doing this within a converged culture of professional archivists, curators, librarians, project managers and software developers. High level skill sets for data management within teams housed in Universities are often seen, however the most successful output can be difficult to achieve when too much focus is placed on separate professional disciplines. This can stifle effective communication and collaboration for project work. The linking of complementary collections management thought (archives, libraries, and museums science) and technical expertise of software development teams with overarching project managers aware of the cultural needs and requirements of collections and their users has proved its worth. This is demonstrated through two case studies here and the successful launch of a number of projects using and making collections and collections data available in a creative way at the University of Edinburgh. The contextual background to these developments includes working in an ambitious world class university, which has collections of world class importance. These collections relate directly to high-level academic research with impact on our understanding of health, welfare, culture, society, and education. This provides a requirement to look outside our own institution and adopt an open, flexible approach to working in collaboration and exploiting opportunities for the advantage of the University, collections, education and research.

There are a number of national and international institutions and project comparators and collaborators that we became involved with. This allowed us to have external checks and balances and prevent too much of an internal focus. The University of Edinburgh led the Musical Instruments Museums Online (MIMO) project [1], has worked on other Europeana [2] projects and work and been proactive members of UK The Archives Hub portal [3] and ArchivesSpace [4], with information from this feeding through to Europeana and the Archives Portal Europe [5].

Culture Shift: Making Best Use of Expertise and Skills

In 2012, the University of Edinburgh brought all its library and museum services under one division: Library and University Collections (L&UC) and, within this division, staff were split into four sections: Research and Learning Services, Collections Development and Access, Special Collections and Centre for Research Collections, and Museums). [6] Out of this restructure came a vision of an ambitious and dynamic service with discovery of the collections at its heart.

This led to a changes in working culture and practice with an enthusiasm for working cross-sectorally, feeding both professional requirements and user needs. The L&UC Vision and Values statement [7] that was developed and signed off in spring 2013 provided a focused look at that ethos. The core vision was to make all collections accessible and some of the most difficult to find were the archival collections.

Along with the four sections, cross cutting groups were formed in October 2013: made up of staff from all of the sections to look at four key areas of work: **Digital Asset Management, Resource Description and Discovery, Academic, Student, and Public Engagement; Projects and Fundraising.**

Within the Resource Discovery group we undertook a metadata mapping exercise to analyse the workflows surrounding archive, library and museum collections' content, the associated metadata (compliant with recognised national and international standards), the online discovery systems and resulting accessibility for users. A core objective of this review was to establish a standard set of key information for collection level descriptions in order to map between collections, identify interoperability and link the data within the catalogues for these collections, thus increasing their visibility to users. In so doing acceptable compromises had to be made to our current approaches, especially to bring users who find information on other sites, e.g. Google and Amazon back to University of Edinburgh resources. However, this had to be done with reference to professional standards such as ISAD(G), SPECTRUM, MARC amongst others. A set of mapped key fields were agreed upon that could be pulled from catalogues for all types of content with the basic, core question being "how much metadata do users initially need?" We recognised that were are gaps in our provision that needed to be filled and had to seek ways to identify and address them. The result of this was a document that mapped the fields we used, associated professional terminology and the standards we refer to. This document now displays the converged approach to this information, whilst retaining professional standards.

As part of this changing culture it is useful to note the cataloguing, intellectual arrangement and descriptive practices, in use before standards evolved, which have the stamp of the individual on them, with approaches that had a unique interpretation of what was required, but without the guidance framework provided by standards. Standards and developing collaborative approaches to systems provide for a collective understanding and recognition to make them easier to communicate and have a broader sense of relevance.

The following case studies demonstrate this collaborative approach using best practice and developing standards that informed the application of professional cataloguing and descriptive standards as well as wider user access and understanding of the collections.

Case Study 1

Musical Instrument Museums
Discovering Hidden Collections: Musical Instruments Museums Online

The University of Edinburgh has two musical instrument museums and a world class collection of instruments contained within them. However, until this project there was no way to comprehensively search those collections online. We had online catalogues, which were not fully searchable, and we had images and sound files that weren't linked to that text. The search facility we did have relied on specialist knowledge of the Hornbostel Sachs Classification system, which classified musical instruments by number, developed in 1914 and not updated since.

The same problem existed in other musical instrument museums around the world and various discussions had taken place over a number of years about the need to find a solution. When the concept of MIMO was proposed in 2008 we were therefore able bring together some of Europe's most important musical instrument museums.

Essentially, what we set out to achieve was to create a single access point to digital content and information on the collections of musical instruments held in European museums. So, by bringing together the specialist knowledge of the museum curators and the technical expertise of development teams, the MIMO project enabled the digital content of nine major musical instrument museums from across Europe to be harvested from their collection databases and made available to all, through Europeana and our own MIMO website. Information was harvested from each museum using OAI-PMH and was mapped to the central MIMO database using LIDO (Lightweight Information Describing Object) and, in turn to Europeana using EDM, *(the Europeana Data Model).* Alongside that the project developed classification and thesauri to underpin multilingual searching. [8]

The project was a huge success and since it ended the partnership in August 2011 has grown to 22 museums. The aim now is to continue to attract other museums to add their collections and ultimately to reach a point where MIMO can become the recognised access point for information on musical instrument collections for the entire world.

Local Reflections on MIMO's Success

Locally however, the end of the MIMO project brought into focus the inadequacies of our own system. Anyone coming to the musical instrument site at the University of Edinburgh was still faced with seriously outdated provision which had failed to make use of the technology and resources that had been developed for MIMO and Europeana.

These deficiencies in our existing site, along with a Repository Review Away Day in April 2013 [10] where we assessed our capability and provision for making our collections of born-digital and digitised items discoverable and accessible, led to the decision to adopt a new repository infrastructure within L&UC. This would enable a more rapid release of digital content online, with collections having their own branded web presence, and adopted the cross disciplinary ethos of the MIMO experience in order to achieve this. Due to the knowledge and expertise that already existed within the Library Digital Development Team for DSpace, it was decided to use this open source repository platform for the storage of digital items.

Items harvested for MIMO were already stored in a DSpace repository, which was populated from the Vernon collections management system. However, this did not have the functionality we required and this meant it was difficult to discover groups of instruments; title and headings were generic and not specific to the type of

object; the images and audio-visual content could only be viewed through download. There was also no collection branding or identity on the site, which diminished the collections web presence and the ability to link the data about collections with related material in our collections and elsewhere.

The results of the Repository Review were fed into the Resource Discovery Cross Cutting Group (October 2013) and this resulted in the establishment of collections.ed.ac.uk, a single access point for information on the collections held by the University. This involved agreeing fields for collection level descriptions, as well as clear definitions of what was meant by 'collection' and, importantly, user expectations. One of the first collections to be tackled was the musical instrument collection which had already been worked on for MIMO.

The infrastructure adopted hides the DSpace repository using it for administrative functionality only and has a configurable user interface built in PHP on top of the Apache SOLR search [11] used by DSpace. The public user interface, Skylight [12], was developed by the University of Auckland, Library Applications, Development and Support team [13], who have assisted the development team in their adoption and customization of the Skylight application as used for http://collections.ed.ac.uk/mimed.

The use of SOLR provides search, faceted-search and browse functionality allowing users to quickly discover or drill-down search results. SOLR is configured to enable rapid discovery of an individual item for those who have a particular instrument in mind and also enable browsing for those who wish to view a subset of the collection.

The design of the item pages was undertaken in collaboration with the curators, within the bounds of University branding regulations. [13] Musical instruments within the collection come in many shapes and sizes and this proved to be one of the greatest challenges with the design, e.g. making the individual view for a clarinet as visually appealing as a harpsichord.

The musical instrument data is described in the Vernon [14] collections management software, using the SPECTRUM metadata standard; it is then exported and converted into Dublin Core for import into DSpace. The MIMO harvester aggregates the data in the LIDO format and it is then converted into the Europeana data model for inclusion in the Europeana portal. The original data creators are integral to the testing at each stage to ensure the data integrity following the data transformations.

Collections.ed.ac.uk/mimed, launched in spring 2014, is the public portal to the items catalogued in the Vernon CMS and harvested by MIMO. It allows L&UC to showcase this internationally recognised collection and create its own online identity. It is the result of collaboration with external partners in MIMO and the University of Auckland, and internally through museum curators and the Projects and Innovations team. This model has already been repeated with the Art Collection collections.ed.ac.uk/art and other rare and unique collections will be added over the coming months.

Case Study 2

Collections Management (ArchivesSpace)

The Special Collections (manuscripts, archives and rare books) department at the University of Edinburgh, as with many long established Universities, inherited a variety of methods and approaches to capturing, describing, finding and accessing its collections. These ranged from 19th century imposed systems translated throughout the 20th century to project based cataloguing approaches in the early 21st century. The array and diversity of these approaches meant that much of the ability to access the collections was based on the knowledge of individuals and experience of these systems.

The will to ensure the University had high quality professional, authoritative and user friendly descriptions of its unique and world renowned collections has been a constant since the first University Archivist was appointed in 1994. By 2007 a fairly robust MySQL/PHP web-delivered collections management system had been built in-house by the Deputy University Archivist, but this even had its limitations despite being able to provide access to some of the collections detail and authority control. It could not, however, provide the functionality of describing collections in EAD directly.

Change, Ambition and Vision

With the discoverability of the collections still being limited, a more user friendly approach was still the ambition. The standards were present but often there were only top level descriptions (Fonds) or, if lower level description was present, it was constructed with multiple layers and therefore made fairly complex. Some of this was through rigid application of the standards and an element of flexibility was required. It was recognised that treatment of different types of collection from corporate and institutional records to personal papers (with the inclusion of objects) and published work or academic research all had different requirements, users and contained different types of data.

Analysis of Systems and Requirements

As a top UK University the desire to have world renowned collections that reflect that status in research and learning was another influence on developing a world class catalogue. Investment had been made in the physical environment for the collections and this needed to be reflected in the intellectual access to them.

Members of the special collections team had made ongoing improvements to the in-house bespoke system to manage the metadata and collections descriptions, however this was not fully supported, difficult to maintain and reliant on one person. For an institutional service this was too risky and by 2013 it was recognised that there was an urgent need for cross-collections cataloguing and management.

With the expertise held at the University and the diverse nature of the collections, there was a desire to be involved in the development and to influence a collections management system to suit the specific needs of the institution, while playing a constructive part in our professional communities. In 2013 Special Collections had around 6,000 accession records, about 1,300 collections, with hundreds of lower-level descriptions beyond that. There was also a very conservative estimate of over 17,000 authority terms. These figures only show part of the picture. As previously described, this data was scattered around different systems and was very difficult to measure output in quantitative terms. The desire to bring all of this data together and link it was clear and, after much research, in August 2013, we settled on ArchivesSpace as the system that would allow us to do this.

ArchivesSpace

Although ArchivesSpace [15] is provided as open source software and can therefore be used for free, the ArchivesSpace membership model allows users the opportunity to get access to systems support, members-only mailing lists, and participation in the setting of user, technical and services roadmaps. The University of Edinburgh became the first European member.

In the past archive and special collections cataloguing had not been counted at lower levels and ArchivesSpace would make provision for this knowledge and control of what data we would have and the information about our collections (following on from the work begun in Archivists Toolkit, the system that preceded ArchivesSpace).

From a technical perspective, ArchivesSpace, being open source, is built in reasonably ubiquitous and reliable technologies. It utilises a MySQL database, SOLR indexing and it can be run under Tomcat or Jetty. The code is written in JRuby, with Bootstrap web clients. Rather than having to install lots of web clients for different users, four webapps provide the public access, admin area, SOLR search functionality, and backend REST API. The ArchivesSpace code is openly available to download in a GitHub repository. [16]

The 'backend' keeps the bird's eye view on everything; the 'admin area' is where all the cataloguing and imports take place; the 'public site' is where an anonymous user can come in and search the archive at a reasonably detailed level. The SOLR webapp is essential for the population of the public site. This all means that the practice of creating information in a bespoke collections management tool whilst also generating EAD records in an XML editor is brought all together in one place.

We also needed to ensure it mapped to our known user needs and requirements, which were to find the data about our collections, for it to be easily understandable and clear, and to find it easily again if they needed to search for it. An academic environment also requires the information to be accurate and authoritative and include references to further collections and information that was known about. This linked data needed to be easily navigable for users. We derived this information from project feedback, analysis of user activity and the nature of enquiries we received with a significant proportion reliant on special collections staff to undertake basic signposting to collections. The combination of this evidence provided us with real issues users faced while undertaking their research.

All of the cross discipline team have been involved together in the set-up of an internal mailing list for discussion, attendance at workshops for focused testing and data loads, and development of tools for data migration from the existing bespoke authorities database.

Conclusion

In conclusion Library and University Collections at the University of Edinburgh has experienced a cultural shift in the way its data is linked, managed and made available. The ambition with these projects which has been embedded in working practice to showcase the world class collections that range from manuscripts detailing Scotland's role in international affairs, those that present literary and cultural icons such as Robert Burns and Sir Walter Scott, unsurpassed musical instrument collections to archival collections of scientific significance of genetic research and health and welfare developments is now a sustainable part of our work. This extends to linking these to library, archival, art and museum collections across the university and wider afield to make our data truly linked and interoperable. This has only been achievable through the combining of skills, standards, expertise, flexibility, and open-minded professionalism to create a working of culture of positive compromise. This culture of communication includes archivists and collections staff learning a little more of the 'dark' side of digital development work and systems, and the digital library developers learning about collections and the sensibility of the care for those collections and what we know about them. The overarching project management provided the core structure for project focus and movement to free up the creativity and technical skills of both these groups to work together to achieve platforms of authoritative linked data about the collections at the University of Edinburgh.

The next question we will be asking ourselves is how far this convergence will extend. By the end of 2014 a new library management system will be rolled out for library materials. Work has begun to map ArchivesSpace with this system and staff from the projects referred to in this paper have led on aspects of the metadata mapping. We hope that this will inform and standardise a library and university collections wide authorities database. We also will map our digital image collections through this to provide more of a visual element to our catalogues. Through all this work we have learnt that all kinds of standards, skills and good practice can be used and inform

conjointly to allow for the mapping and interoperability. Future projects are extending this integration of data for the good of the collections discovery and ease of use for researchers. This includes a Wellcome Trust funded project which will work with the National Library of Scotland on the archives and library of W. R. D. Fairbairn held across our two institutions making collection data about them linked and easily cross searchable.

Acknowledgements

The authors would like to thanks the Library and University Collections Senior Management Team members Dr John Scally, Stuart Lewis, Jackie MacBeath, Dr Joseph Marshall and Arnott Wilson for their support and help in writing this paper. We would also like to thanks colleagues Grant Buttars and Scott Renton for extra information which informed the process. Final thanks goes to project and development partners ArchivesSpace, Archives Hub, MIMO and University of Auckland Library Applications Development & Support.

References

1. MIMO website http://www.mimo-international.com/MIMO/
2. Europeana website http://www.europeana.eu/
3. Archives Hub website http://archiveshub.ac.uk/
4. ArchivesSpace website http://www.archivesspace.org/
5. Archives Portal Europe website http://www.archivesportaleurope.net/
6. Staffing structure of Library and University Collections, University of Edinburgh. 2013 http://www.ed.ac.uk/polopoly_fs/1.17448!/fileManager/L%26UC%20ORG%20CHART%20JULY%2014.pdf
7. Library and University Collections, University of Edinburgh. 'Vision Values, Strategic Goals and Key Performance Areas, 2013 – 2017' http://www.docs.is.ed.ac.uk/docs/library-papers/LAUC%20Vision%20Values%20and%20KPAs%20Final%2018%2012%2013.pdf
8. MIMO documentation on classification and thesauri http://www.mimo-international.com/vocabulary.html
9. Repository Review documentation http://www.docs.is.ed.ac.uk/docs/Library-Collections/Repository%20Review%20Infrastructure.pdf
10. DSpace Discovery https://www.youtube.com/watch?v=abRSXTUEwws
11. Apache SOLR http://lucene.apache.org/solr/
12. Skylight development and technical documentation https://github.com/skylightui/skylight,
13. Repository as a Service https://researchspace.auckland.ac.nz/handle/2292/17764
14. University of Edinburgh branding and logo guidelines http://www.ed.ac.uk/polopoly_fs/1.16489!fileManager/university-of-edinburgh-logo-guide.pdf
15. Vernon Collections Management System website http://www.vernonsystems.com/
16. https://github.com/archivesspace/archivesspace.
17. ArchivesSpace members brochure and membership pages http://www.archivesspace.org/sites/default/files/ArchivesSpace-Inline-Brochure.pdf

ArtMaps: Framing Public Engagement

Gabriella Giannachi
Exeter University, United Kingdom
http://humanities.exeter.ac.uk/english/staff/giannachi/

Rebecca Sinker, John Stack
Tate, United Kingdom

Rebecca Ward
Tate, United Kingdom

Cristina Locatelli
Tate and University of Exeter, United Kingdom

Laura Carletti, Dominic Price, Derek McAuley, Tim Coughlan, Steve Benford
University of Nottingham, United Kingdom

Abstract: *Art Maps was developed as part of an interdisciplinary collaborative project between three departments at Tate (Tate Learning, Tate Online and Tate Research) and researchers in Computer Science (University of Nottingham) and Performance and New Media (University of Exeter), funded by RCUK Horizon Digital Economy Research Institute (2012-14). Art Maps consists of a web app that allows users to explore artworks in the Tate collection through a map interface which facilitates their analysis in relation to the places, sites, landscapes and environments that informed or led to their geotagging. The app can locate their user and bring up works in the Tate collection that are geotagged in relation to places near them. Users can then look at these works on the map and/or explore them in situ, reflecting on how what they see in the works relates to their surroundings. Alternatively, through a search function (by artist and by location), users can explore works in any locality. Users may then change the location of an artwork and add a comment reflecting on the reasons behind this change and/or what they think may be the relationship between a place and a work. In this paper we will describe aspects of the research that led to the development of Art Maps between 2012 and 2014; analyze findings from observations of the user experience during the same period; and present our hypothesis as to the broader significance of this platform in terms of how to interpret and capture how we look at and place art in a world that is increasingly dominated by ubiquitous computing.*

Keywords: art, place, mapping, interpretation, geocoding, crowdsourcing

We know that museum experiences are becoming increasingly collaborative and that museums are more and more interested in giving voice to their visitors (Richardson 2012) even through the curation and preservation of their memories and contributions (Graham 2012). This has led to a notional shift for Tate from being keeper of knowledge to being a co-creator of knowledge (Cutler 2010). The burgeoning interest in co-creation of knowledge has led Tate, among other museums, to experiment with crowdsourcing, through which the public is enlisted, often via an open call, in the task of logging, classifying, translating, transcribing, tagging or contributing data, to enrich and diversify users' understanding of complex collections or cultural phenomena (Carletti 2012). Science museums and so-called citizen science projects have led the way, for instance in the Old Weather project by Zooniverse, where meteorological information is collected, compiled and transcribed by volunteers to broaden and deepen the public's knowledge of weather patterns over time. Digital humanities initiatives such as University College London's Transcribe Bentham and the British Library's UK Sound Map

were also influential initiatives for suggesting novel ways of working with volunteers to unlock knowledge on historical materials, thus contributing a richer understanding of contemporary Britain and offering new forms of public engagement (Carletti et al 2013). Here we introduce ArtMaps, which was developed as part of an interdisciplinary collaborative project between three departments at Tate (Tate Learning, Tate Online and Tate Research) and researchers in Computer Science (University of Nottingham) and Performance and New Media (University of Exeter), funded by RCUK Horizon Digital Economy Research Institute (2012-15).

ArtMaps consists of a web-based app for both desktop and mobile use that allows users to explore artworks in the Tate collection through a Google Map interface which facilitates their viewing in relation to the places, sites, landscapes and environments that informed or led to their geo-tagging. Using GPS in a mobile device and IP tracking on the PC, ArtMaps can locate their users and bring up works in the Tate collection that are geo-tagged to places near them. Users can then look at these works on the map, on a desktop or on a mobile device, and reflect on how what they see in the works relates to their surroundings. Alternatively, through a search function (by artist and by location), they can explore works in any locality. In this paper we describe aspects of the research and development for ArtMaps between 2012 and 2014, and analyze findings from observations of the user experience during the same period, focusing in particular on ArtMaps' use of tasks. Finally, we present our hypothesis as to the broader significance of this platform in terms of how to interpret and capture how we look at art in a world that is increasingly dominated by ubiquitous computing.

ArtMaps was conceived in response to the need to visualize Tate's collection in relation to a number of geo-tagging-related activities that took place before the beginning of the ArtMaps project. In 2012 Tate had 69,775 artworks in its collection and over 23,000 of these had been indexed with one or more places against a number of available databases to return latitude and longitude information (e.g., GeoNames and Google Places). While this process captured a large number of the relationships between artworks and locations, the location information was often quite limited (e.g., 'India', 'London') and a number of works could not be located. To geocode the remaining terms, a first crowdsourcing initiative was conducted, though the mapping of subject index terms proved problematic. These index terms were subsequently mapped by hand, and the resulting dataset from this phase constituted the foundation for the ArtMaps project. An early experiment drew attention to some challenges, including the fact that an artwork could show a number of landmarks; that it may not be associated with an explicit location; that the perspective from which a work is represented may be more significant than the place represented; and that a work may be associated with a plurality of locations. At the time it was felt that capturing users' reflections about these realizations could provide Tate with insight into how users experience their encounter with an artwork in the collection and how they may reflect on, document and share this experience. This realization led to the development of ArtMaps as a crowdsourcing and a documentation tool. An additional functionality was thus added, making it possible for users to contribute text freely.

A two-day workshop was held on 21 April and 28 April 2012 at Tate Britain, testing how users would engage with art to map and document their understanding of an artwork's relationship with place, space, landscape, and environment, and to explore how people may use the functionality of smartphones to support mobile learning. Taking inspiration from the Tate collection and Patrick Keiller's commission The Robinson Institute (2012), the first workshop set a series of tasks called 'steps' which were communicated to users via SMS that had to be carried out within a period of time. Participants were encouraged to explore their surroundings and document their journey, through different techniques (e.g., drawing, sound maps) and technologies (e.g., Google Maps, EveryTrail). The task below illustrates how users were prompted to explore the area around them in relation to artworks in the collection and document their experience:

> Step one. Photography & Tate Collection. You have been given a work from the Tate Collection showing somewhere near Tate Britain. Find the location and see how close you can get to the scene depicted. Try to stand in the artist's shoes or maybe locate yourself within the work. Take and post a photograph to show this view or to mark what you have experienced.

Figure 1.

Feedback to the first workshop suggested that participants felt they were on a journey, acting as art explorers or researchers, and felt 'licenced' to carry out specific actions at particular moments in time and in determinate locations whilst documenting themselves doing so. Users responded well to the setting of this task, comparing what they saw in the work, the place the work represented, and the location of the work as it was when they encountered it (see Figure 1). Consequently, it was found that the tasks could be used to prompt time-based events set around a particular exhibition, a learning task, or an artist-led workshop, and that they constituted useful strategies for building or sharing knowledge about specific areas of the collection. Functionality was thus added to support the creation and sharing of varied challenges in the final design of ArtMaps.

The second workshop encouraged participants to develop their own journey, taking inspiration from an artwork in the Tate collection. Whilst participants were, again, set tasks, the overall frame of the second workshop was looser, as can be seen by the example included below:

> Task 5. Travel N for 100 metres. Take the first left in the direction you're facing, then the second right again, then cross the road, take your first left and walk for 100 metres. Re-start your journey from this point, documenting something from your surroundings to inspire your next movement.

Feedback to this workshop confirmed that through the setting of tasks, ArtMaps could operate as an event. So, for example, participants felt that they could perform 'ArtMapping' and become 'ArtMappers'. Feedback also indicated that ArtMaps could act as a knowledge-generation and mapping tool. Thus participants enjoyed searching terms, finding connections, generating routes and exploring those generated by others. It also became apparent that ArtMaps could operate as a learning tool, facilitating free style, mobile learning. Finally, it was noticeable that ArtMaps could be used as a sharing tool, setting up the museum as a social space. Users in fact had not only shared their thoughts through ArtMaps, even after the workshop finished, but also shared their findings through other social media.

The second ArtMaps public event was held in October 2012 in and around Tate Britain. As the app was further advanced, functionality tests could be conducted and an investigation into the possibilities for collaborative and creative work was carried out. For this reason, this event was aimed at family audiences. At this stage in the development, a customised Google Map showed collection works as pins and allowed users to search, by location or key words, view the artworks, and suggest new locations. Using the app, they could respond to

tasks and add comments. Tasks set prompted users to share their thinking about art, adopt relational aesthetic strategies to move beyond initial reflections and minimal role-play to reflect about the artist's perspective when generating the work:

> YOUR FINAL DESTINATION. <Insert image and title/artist of the artwork here>
>
> When you have reached your final destination try to find the viewpoint of the artist. Take a photo inspired by the artwork. Is this artwork marked on the Art Map? If it is, confirm the location or move the pin to change it if you think it is in the wrong place!

Feedback to this workshop showed that families worked well collaboratively and enjoyed responding to art creatively outside the museum (see Figure 2). Participants also indicated that being engaged in ArtMaps illuminated and extended their knowledge of the area and facilitated communication between them. Finally, as had been found in the case of the first event, participants expressed an interest in taking a closer look at the original artworks at Tate after using ArtMaps, which suggests that ArtMaps may not only complement, but also prompt museum visitation.

Figure 2.

The crowdsouncing potential of the platform was subsequently tested online by Laura Carletti, three times, between 2012 and 2014 as part of Telling Tales of Engagement Prize, an RCUK Digital Economy Theme grant designed to help capture the impact of digital economy research, and engage a wider audience. Tasks set online differed substantially from those set at the public engagement events, as can be seen by the two example listed below:

> First Online Study. Looking at the View collection display at Tate Britain looks at how artists have framed our vision of the landscape over the last 300 years. Julian Opie's Radio Wind Tyres is among the artworks displayed within Looking at the View. The artist describes it as a 'drawing of one of these motorways with a very thin strip of land, so thin you can't really tell which country you're in' (Source: http://www.tate.org.uk/context-comment/video/tateshots-julian-opie-on-landscape). Please search Radio Wind Tyres in the Art Maps website, and suggest a location for this artwork related to your personal memories of a similar landscape that you encountered in your life, and tell us something about your personal association between this artwork and your proposed location.

These tasks, however, still prompted quite personal replies that revealed participants had reflected on the relationship between a work and the location they were in:

Based on the visual clues I am reminded of driving in France. With that lodged in my mind, the more emotional side of the image narrows it down to long treks to the south along the motorways through middle of France, heading off with a fully loaded car on a family camping holiday. Are we nearly there yet?

> Even though much of the landscape is wrong, the first place I thought of when looking at this road was Canada, when friends took me for a drive up through the Rockies. The highways and landscape are so different to home I was quite taken with them. Location obviously not 'correct', landscape doesn't even match, but was the first road that came to mind when I saw the work.

Carletti's third online study specifically aimed at researching how users dealt with the illustration of multiple locations by looking into how they would geocode artworks representing more than one place such as Capriccio by Marlow, and Various Steeples, Salisbury, Oxford and London by Turner. The task also looked at locating the same place in multiple representations by showing how users may assign a location of the same site in several artworks. Artworks listed here included Waterloo Bridge by Constable, Turner, and Kokoschka; Big Ben by Steazer, Kokoschka, and Topolski; Tate Britain by Lavery, Beerbohm, and Methuen. Feedback from these studies showed that more than the majority of the participants who completed all the tasks and the final questionnaire 'agreed/strongly agreed' that using ArtMaps facilitated new ways of engaging with locations and artworks (85%); increased their understanding of a particular artist's work (71%); facilitated new ways of exploring the Tate collection (95%); enabled them to interpret artworks in new ways (71%) and learnt something new (95%).

A public engagement event held in March 2014, built on findings from the first workshops, re-examining how people can explore places through art by creating mobile journeys for others to experience. This event used another WordPress-based platform developed at Horizon, Wander Anywhere, and structured the event as a collaborative design for user experiences on location. The starting point was the Ruins Lust exhibition at Tate Britain (March-May 2014), which examined the fascination with ruins, past, present and future as a subject for art. Participants were divided into interest groups around three London-based artworks, selected from the show: Keith Coventry's Heygate Estate (1995), Rachel Whiteread's Clapton Park Estate, E5 from the series Demolished (1996) and Joseph Gandy's An imagined view of the Bank of England in ruins (1830). The event, run by artist Ania Bas and Tate curators, confirmed findings from previous workshops and provided further evidence that people's understanding of the locations where they devised their trails, as well as those they explored on other's trails, were subsequently seen in a new light. Participants, who had been prompted to reconsider the overlooked within the urban landscape, in light of its history, were then motivated to revisit the work of artists who had been the starting point for their ideas. Feedback indicated that participants felt that they were involved in a social activity and employed various forms of social media to plan, share, test, prompt engagement and disseminate experiences, throughout and beyond the event.

In July 2014 Rebecca Ward from Tate charted how artists represented or interpreted the terrain that the Tour de France cyclists passed through, focussing in particular on the UK stretch between Leeds and Harrogate. She noted that the following works are on route: Harold Gilman's Leeds Market; Turner's Addingham Mill on the Wharfe; John Piper's Buckden in a Storm; Turner's Grinton, Looking West; the painting after Thomas Girtin, The Rivers of England ('River Scenery'): Ripon Minster on the Rivers Ure and Skell, engraved by T. Lupton; and Peter de Wint's Knaresborough Castle. Users responded well to this juxtaposition, which suggests that ArtMaps could be used more widely to reach new audiences (see Figure 3).

Figure 3.

In parallel, other challenges were set on the ArtMaps site which were specifically linked to artworks, such as the below which was also part of Carletti's third online study:

> ArtMaps Challenge #4: Imagine you are driving. On Art Maps, you will notice users have so far pinned two different locations to the map for Julian Opie's Imagine you are driving. One pin is on the vast Aerospace Highway of California and the other is on the route between Venice and Milan, Italy. Since the geographical location of this artist's minimal landscape appears to be anonymous, maybe the users are mapping a scene of personal recollection or an imagined journey. Of this piece, the Tate website says that the artist 'derives his images from his personal experiences, but depersonalises them in order to offer us a commodity, that of being able to make our individual imaginative journey.' Look at the piece Imagine you are driving on Art Maps. And now imagine you are driving. What journey are you taking? Are you travelling alone or with a passenger? What memories, locations or situations does the piece evoke? Log in, comment and share your real or imagined journey.

This challenge prompted the following very personal reply:

> I'm driving from Venice to Milan on the highway. There is a lot of traffic. Drivers are all involved in their own business. The filling is that of loneliness. The grey industrial building along both side of the highways get the alienation strong.

We know from Richard Schechner's forty-year-old analysis that 'audience participation takes place precisely at the point where the performance breaks down and becomes a social event' (1973: 40, original emphasis) and

that 'to encourage participation is to demand changes in the social order' (1973: 82, added emphasis). Looking at an artwork can be described as a kind of 'performance', in that the act of looking is conducted largely by observing a certain type of behavior in a given time and at a certain location. ArtMaps aimed to break down the established rituals associated with the act of looking at artistic collections by facilitating the encounter with art outside of the museum and making it possible for users to document and share their findings on the go.

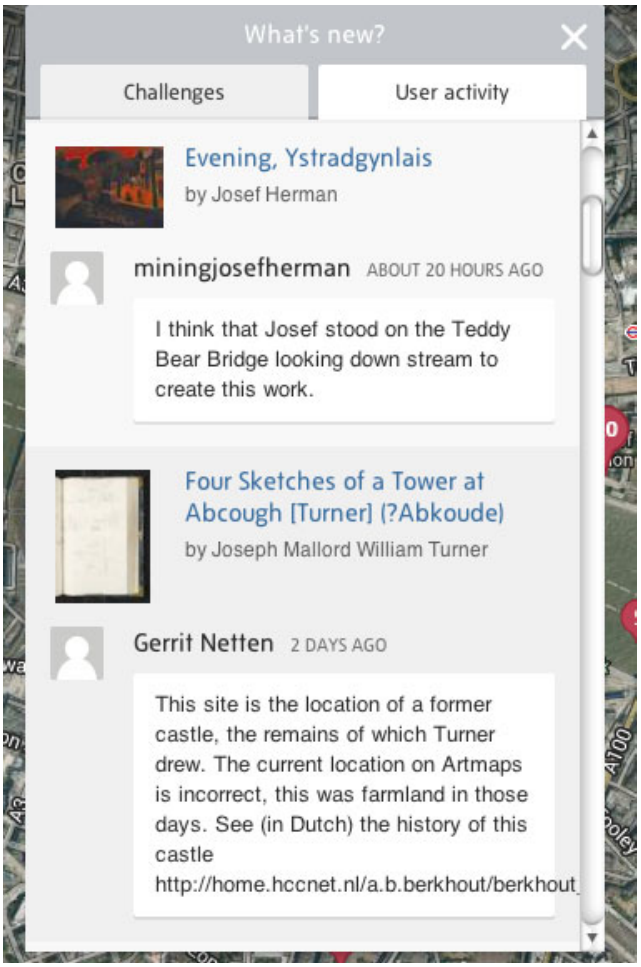


Figure 4.

Elements from Sociology and Performance Studies were used to create the performance frame necessary for users to feel empowered to act as ArtMappers. This was generated utilising Erving Goffman's Frame Analysis (1974). Goffman suggests that 'actions framed entirely in terms of a primary framework are said to be real or actual' (1974: 47). This feeling of a 'reality' or an 'actuality' were crucial as we aimed to extend the museum experience socially as well as spatially and temporally (see Figure 4). Strategies from Performance Studies and Games Studies were then adopted to build a scaffolding that could signal to users they were involved in a social performance frame that made it possible for them to relate 'natural' elements (i.e. the environment) with 'cultural' ones (i.e. the artworks). This scaffolding was essentially generated through the design of the site and the use of tasks, which deliberately adopted second person narration ('you are') to evoke first person participation ('I am') so as to facilitate participation, identification, and immersion (see also Douglas in Harrigan and Wardrip-Fruin, 2007: 135).

Figure 5.

Elements from Games Studies were concurrently used to make the ArtMaps experience rewarding. We know that to generate a world, an interactor needs to be scripted (Murray 1997: 79), and for this interactor to be engaged, a situation needs to be created that is motivating for them, even though no script or role may be given (Montford in Harrigan and Wardrip-Fruin, 2007: 140). This interactor, Nick Montford suggests, operates as a 'sort of vehicle from which a world can be seen and otherwise experienced' (in Harrigan and Wardrip-Fruin, 2007: 140-141). We also know from Jane McGonigal's description of her massively multiplayer roleplaying game I Love Bees in which 600,000 players were given a mission in early August 2004 from a website, in which 'players were given no goal, no rules, no choices, no resources to manage, no buttons to press, no objects to collect – just a series of very specific, physical locations and an impeding cascade of actual, real time movements' (in Harrigan and Wardrip-Fruin, 2007: 251) that users are willing to visit locations, take photos, upload them online, discuss them through social media, and also, literally, that they are prepared even just to 'wait for something to happen' (in Harrigan and Wardrip-Fruin, 2007: 251, original emphasis). Finally we knew that performers, particularly those involved in roleplay, tend to be aware that the line between the performance frame and the primary frame can be very thin (Choy in Montola and Stenros 2004: 60). So we used tasks to generate a motivation, but these were left open enough for users to engage with them in whichever way they deemed appropriate. This included and in fact sought the correction of information on the Tate site (see Figure 5). Whilst we used elements of gamification, we did not wish to create a game, as we did not want users to feel they had to deliver a 'quantifiable outcome' (Salen and Zimmerman, 2004: 80), be engaged in 'a subset of reality' (Crawford 1982), or 'struggle toward a goal' (Costikyan 2002). Rather, we wanted to create a juxtaposition based on the model of a mixed reality (Benford and Giannachi 2011), overlaying digital, cultural and physical elements. We know that, among other games, role-playing games, lack the winning conditions and fixed rules (Heliö in Montola and Stenros 2004: 66) and include mixed reality games 'which are played in spaces with both physical and virtual components'; crossmedia games which are 'played across a variety of media'; alternate reality games use temporal, spatial and social expansion 'to create the illusion of games not being games' (Montola 2005: 3). So we knew that we could adopt aspects of roleplay, turning users into researchers, detectives or flaneurs, to encourage exploration, including psychogeographic meandering, stimulate creativity and widen participation.

Our findings showed that, overall, users noted that ArtMaps facilitates access to publics who do not habitually visit museums, extends the gallery experience outside the museum, allows for encounters with items not ordinarily on display, stimulates collaboration and group discussion, facilitates mobile learning, and, through crowdsourcing, potentially, produces valuable and original knowledge for the museum. In fact ArtMaps pro-

motes a new way of looking at art through its relationships with places, and, viceversa, facilitates the perception of places through their relationship with art. In this sense, ArtMaps encourages the production of relational knowledge through observation. In conclusion, ArtMaps brings together the desire for the production of information that is characteristic of the information society with the idea of prosumption that defines the proactive consumer of the digital economy, within what has been described as a form of 'experience society' wherein 'the real currency is the value of the experience people derive from the activities they engage in' (Mayra 2008). Finally, ArtMaps creates the frame within which users can map their environment through art and describe their experience so that we too may be able to see not only what an artist may have seen, but also what ArtMappers thought the artists saw. This 'mixed reality' is one where art, brought to us through technology, may affect our capacity to map what we see, and perhaps even who we are, in our everyday lives.

Acknowledgements

The research on which ArtMaps is based is funded by RCUK (EPGO65802/1) and EPSRC (EP/G065802/1). The research on which games analysis is based on is funded by AHRC (AH/L009080/1).

Bibliography

Benford, S. and Giannachi, G. (2011) *Performing Mixed Reality,* Cambridge, Massachusetts, the MIT Press.

Carletti, L. (2012) 'Art Maps: A Crowd-Resourcing Project', www.tate.org.uk/context-comment/blogs/art-maps-crowd-resourcing-project (accessed 15/2/2013).

Carletti, L., McAuley, D., Price, D., & Giannachi, G. (2013) 'Digital Humanities and Crowdsourcing: an Exploration', *Selected papers from Museum and the Web 2013*, 223-236.

Crawford,C.(1982)'*TheArtofComputerGameDesign*',http://www-rohan.sdsu.edu/~stewart/cs583/ACGD_ArtComputerGameDesign_ChrisCrawford_1982.pdf (accessed 22/8/14).

Costikyan, Greg. (2002) I Have No Words but I Must Design: Toward a Critical Vocabulary for Games. In: Mäyrä, Frans (Ed.). *Computer Games and Digital Cultures.* Tampere, 6-8 June, Tampere University Press.

Cutler, A. (2010) 'What Is To Be Done, Sandra? Learning in Cultural Institutions of the Twenty-First Century', *Tate Papers*, issue 13, Spring 2012. Available from: http://www.tate.org.uk/research/publications/tate-papers/what-be-done-sandra-learning-cultural-institutions-twenty-first (accessed 15/10/12).

Goffman, E. (1974) *Frame analysis: An essay on the organization of experience,* London: Harper and Row.

Graham, H. (2012) 'Modesty against the cuts: museum+public+democracy+personal', http://www.opendemocracy.net/helen-graham/modesty-against-cuts-museums-public-democracy-personal (accessed 8/2/2014).

Harrigan, P. and Wardrip-Fruin, N. (2007) *Second Person: Role-Playing and Story in Games and Playable Media,* Massachusetts: MIT Press.

Mayra, F. (2008) *An Introduction to Game Studies: Games and Culture*, London: Sage Publications.

Montola, M. and Stenros, J. (2004) *Beyond Role and Play,* Helsinki: Ropeconry.

Montola, M. (2005) 'Exploring the Edge of the Magic Circle: defining Pervasive Games', Proc. Of Digital Experience: Design, Aesteth-ics, Practice conference, Copenhagen, 2005.

Murray, J. (1997) *Hamlet on the Holodeck,* New York: Free Press.

Richardson, J. (2012) 'Museums of the future: providing the personal, collaborating with the crowd', *The Guardian*, 15th May, http://www.guardian.co.uk/culture-professionals-network/culture-professionals-blog/2012/may/17/museum-development-future-debate (accessed 15/2/3).

Salen K. and Zimmerman E. (2004) *Rules of Play: Game Design Fundamentals*, Cambridge Massachusetts and London: The MIT Press.

Schechner, R. (1973) *Environmental Theater*, New York: Hawthorn.

Thresholds of Technological Remembering

Dirk de Bruyn
Deakin University, Australia

Abstract: *This paper analyses a short documentary Threshold (20 minutes, 2014), constructed to document the history and childhood remembrances of the Geelong Waterfront area and its Western and Eastern Beach-fronts for exhibition at local tourist sites and at Deakin University's waterfront campus. The City of Geelong is a regional center situated close to Melbourne critically expanded through post Second World War Migration and on the back of now disappearing manufacturing industries. This paper discusses the use of photographic material gleaned from the Geelong Heritage Centre, the Victorian State Library, the National Film and Sound Archive and other Archives. The searching for photographic material is itself experienced as a simulated Situationist* dérive *similar, yet experienced as idiosyncratically different, to a material exploration of the city itself. Using examples from the video, it is argued that the gap with what is verifiable and what is remembered has affinities with the way memory itself gets things 'wrong' with what Janet Walker has called disremembering in which memories are often reshaped by their emotional charge.*

Keywords: technical image, disremembering, photography, archive, documentary

Introduction

It is asserted that performing childhood remembrances 'digitally' implicitly maps the periodic shifts in recording devices of the periods of time recalled. The clean and stylized black and white photography of industrial and design photographer Wolfgang Sievers (1913-2007) and the highly detailed imagery of aerial photographer Charles Daniel Pratt (1892-1968) both reflect in form as well as content the social context of the times. Their work is now digitally accessible in online archives, more complex and multifaceted to the ones these artists originally assembled. From their originating form, historic image technologies have now migrated into the hyper-malleable digital form of Vilem Flusser's 'technical image' as is demonstrated by Google Maps, where they re-perform many aspects of Siever's and Pratt's earlier 'real' migration. The value of animation is also discussed to depict aspects of the past which remain more inaccessible to recall or unspeakable. For Flusser 'technical images are meaningful surfaces. Created by programs, they are dependent on the laws of technology and the natural sciences.' (Ströhl, 2004, p. xxiii).

There are four historic strands weaved through *Threshold*. One offers an archaeology from the 1920s to the 1950s, another spans the 1950s to the present, a third from the 1960s to the 1980s, whilst a fourth contemporary digital strand references the last decade. Jim Demetrious's oral history of growing up in Geelong from the late 1950s provides the film's spoken narrative spine. Pratt and Siever's photographs are embedded in the visual grazing of the Geelong waterfront site that illustrates this remembering. Their images are placed in relation to more contemporary recordings from Google maps and surveillance-like time-lapse recordings of the Beach areas today.

The earliest thread is the aerial photography archive of Charles Daniel Pratt surveying Geelong's provincial metropolis from the 1920s to the 1950s. The celebrated industrial photography of Wolfgang Sievers docu-

ments the Ford Factory and Geelong Wharves in the 1960s and 1970s. Each history is incorporated into the narrative as an a-historical aesthetic trace, implicitly communicating its period through the idiosyncrasies of the recording devices accessible in each period, of which the malleable digital form of Google Maps and the field dominant aesthetic it offers, is it's terminal container. Each of these strands contains within it the period's aesthetic trace, which is further reflected in the personalities at their core, also shaped in part by the dominant technologies at play in their personal development. A version of the documentary can be viewed online at: https://vimeo.com/87764985

Pratt

Charles Daniel Pratt (1892-1968) started working life as a New Zealand grocer in Helensville coming to Geelong after the First World War. He had enlisted in the army from 1914-18 and served in the Gallipoli campaign, where he was wounded, as well as the Egypt and Palestine campaigns, serving in the New Zealand Engineers, in the motor dispatch riders. He received a Victory Medal. His final service was in the Royal Flying Corps. He rose from private to Lieutenant during his service. There are a number of photographs in the New Zealand Archives of crashed and captured planes from campaigns attributed to Pratt. After his war service Charles and his brothers established a factory in Geelong, "Geelong Air Service Pratt Bros." where they assembled De Havilland planes and offered joyrides to the public as well as providing flying instruction. Charles taught his three brothers to fly.

Geelong was accidently chosen as a place to live. Charles had bought a shipment of planes in Egypt after the war in the early 1920s and found difficulty in moving them from the docks in Melbourne in transit on to New Zealand due to an industrial dispute. As a result he assembled his De Havilland plane there and flew the bay area of Port Phillip Bay, discovering the Belmont Commons as a good place to offer joyrides around the area, leasing it in 1919 with residence established at 200 Latrobe Terrace, Geelong. The Pratt Brothers also ran a Sunbeam motorcycle business in Geelong from 1932. Brother Frank Pratt became a successful motorbike racer at Phillip Island, which Charles recorded on film.

The photographs used in *Threshold* are attributed to Charles Pratt and his company Airspy. The First World War trained many pilots in air photography with improved technologies requiring both a pilot and photographer. Aerial photography had come of age in the Palestine campaign by augmenting inadequate maps of the Turkish Front. From the 1920s to the 1960s Airspy was a significant innovative enterprise in regional Victoria, Geelong and Melbourne. Independent researchers Ken Mansell and Michael Riley indicate that Major Harry Turner Shaw (1889-1973) and William Herbert Hansom (1862- 1939) were central figures and they note 'It is unclear when Pratt became involved with Airspy. Nor is it clear his involvement was ever as photographer.' (Mansell, 2013)

However, Charles Pratt's Estate donated the extensive 'Airspy Collection' of aerial photos to the State Library of Victoria under Pratt's name in 1972 and the collection was consequently digitized in the early 2000s. Pre 1950s photographs are legally out of copyright and so freely downloadable as 4k image files (.tiff) from the Library website. This access is available to all members of the public and there is no log on required. These images were originally located through a simple online search using combinations of "Waterfront", "Eastern Beach", "Western Beach" and "Geelong", with Pratt's critical history unearthed by co-incidence and expanded through further online enquiry. In some ways this digital search reiterates in digital form Pratt's own situation with his aircraft immobilized on a Melbourne wharf and his consequent pragmatic searching flight landing him in Geelong.

Akin to Pratt's encounter with the Melbourne wharves, research at the Geelong Heritage Centre had proved much slower than at the Victorian State Library and Victorian Museum, as it required searching through a physical filing system and microfiche during opening hours that gave uneven written descriptions of the images involved. At least a day's notice was then required to view any images on site and then further negotiation on their use. This appeared to be a system designed for efficient pre-digital use, one that had not yet incorporated

the efficiencies of online archiving. This necessary but time consuming process was of course much more difficult to execute than going online after completing a list of other teaching and academic tasks during the day; the reality of an information rich but time poor professional environment. Within the digital, ethical constraints as well as copyright considerations can slow image acquisition as well. Though executed online, the use of culturally sensitive images of Geelong's early indigenous inhabitants has understandably had to undergo an ethical but obscure clearance process within the State Library system that has so far taken 10 months to finalise.

Pratt's war hero status in a military campaign that defined Australian and New Zealand's key ANZAC identity, combined with the eminent role of aviator and a continued association with the technologies of progress and speed, all marked Charles Pratt with distinction, markers successfully converted to commercial success in a provincial setting. The prominent high definition vistas of Airspy's black and white aerial photographs speak to this cultural elevation, further offering a domesticated visual trace of the brutal military operations that spawned its technology and technique, situations experienced directly by Pratt during his World War I service.

Sievers

Wolfgang Sievers' (1913-2007) photographs were also sourced from the Victorian State Library Online Catalogue. His story and practice were more visible inside Australian cultural debate than Pratt's. Sievers landing in Australia in 1938, uncannily avoiding conscription as an aerial photographer for the German Luftwaffe, to become the pre-eminent industrial and architectural photographer in Australia. Sievers himself 'claimed to have been instrumental in changing the image of Australia as a country of wheat and wool to one of industry, craftsmen and scientific achievements'. (Zuker and Jones, 2007) His father was an art and architectural historian dismissed by the Nazi government in 1933 and his mother a Jewish writer and educator. From 1936 to 1938, Sievers studied at the Contempora-Lehrateliers für neue Werkkunst in Berlin. After war was declared, already in Australia, he served in the Australian Army from 1942 to 1946.

While Helen Ennis asserts that Sievers' photographs could have been taken anywhere in the industrialised world (Ennis, 1997, p. 116) for Dunja Rmadic 'the full effect of the photograph lies in its context' (Rmadic, 2007, p. 7), communicating an in-between that is part of being a migrant in Australia, performing Paul Carter's 'constant arrival'; 'the migrant does not arrive once and for all but continues to arrive, each new situation requiring a new set of responses, almost a new identity'. (Carter, 1992, p. 3) For Rmadic images like the Geelong Ford Factory parking lot, surrounded by established suburban houses ask 'are we looking at an abandoned project or one newly begun?' (Rmadic, 2007, p. 7) This is a question that now returns, predicting Geelong's contemporary waterfront, morphing from industrial node to public entertainment precinct.

Sievers' images communicate beyond a modernist aesthetic, suggesting an in-between space that delivers an aesthetic of displacement to the viewer. European migrants, upon arrival in Australia often lamented the provincial state of their new location. (Rmadic, 2007, p. 8) Echoing Rmadic's query on abandonment and renewal, Sievers 1960s images of Geelong's Cunningham Pier, for example, though respectful of the workers recorded, have the now refurbished Lascelles Wool Stores in the background, before their transformation into Deakin University's Waterfront Campus; an image containing both abandonment and renewal in this way. Jim Demetrious' childhood reminiscences also noted a working waterfront in decline.

Being post 1950, Sievers' photographs, though available online in thumbnail form are not copyright free like those of Pratt's, but can at the discretion of the library services, under the stipulations of Sievers' donation, be freely utilized for educational or research purposes, enabling their use for the *Threshold* project. Within these guidelines each image is available in high quality digital form for a nominal $23 fee, a process negotiable online. In a further, even more emphatic moral framing, in 2006 Sievers submitted all his remaining photographs in benevolence to human rights activist Julian Burnside, QC, to be sold to benefit human rights causes. This is

a further iteration of Sievers' open and ethical professional practice, borne out of his laudable evasion of the Holocaust and its consequences.

Demetrious

The narrative spine of *Threshold* is a roaming recounting of Jim Demetrious's childhood and youth, of Geelong's changing waterfront spaces, earlier recorded physically by Pratt and Sievers, the recall of events and beach vistas from the 1960s and 1980s. Jim's voice contains those searching pauses and hesitations of retrieval, that oral rhythm and tone signifying the act of a searching remembrance. There is a randomized rhythm here akin to that grazing mode when image trawling the internet or aimlessly wandering through a city's streetscape, something that now gets simulated at the other side of the world with a dérive through Google maps, the latest reincarnation of what Vilem Flusser has called the 'technical image'.

Jim Demetrious's Greek parents migrated in the 1950s, slightly later than Sievers, post Second World War. They met and married in Australia. After working at the Ford Motor Factory the family started its own fish shop in the early 1960s, buying fish from the local fishermen. Demetrious recounts going to Eastern Beach as a child with his father and later his friends, the games they played. As a youth he recalls the platforms and diving boards of the more popular Western Beach, its vanished dodgem cars, carnival rides and bowling alley, moving as a group of boys through the now obsolete railway yards servicing a working port in decline. He recounts a disappearing scallop industry through overfishing, a diminished wool industry relocated elsewhere and the pleasures of fishing for large schools of whiting now also absent. He mentions the emptying of crowds from Eastern to Western beach and then to the nearby surf beaches facilitated, ironically, by the new mobility of the affordable family car manufactured in the very factory that had sustained Geelong but is now also set to close by 2016.

An important anomaly is Jim's recall of a display of Elvis Presley's pink Cadillac. This was a stand-out memory from his youth: 'The honey pot that brought people back to Hi-Lite Park'. Awkwardly, research confirms that the Cadillac was actually gold, not pink. How could he get it so wrong? Judith Walker coined the term 'disremembering' for such a synthesis of embellishment and blunder (Walker, 2005, p. 80). Such mistakes do not discount a core experience at the memory's base but power an emotive force for transforming the real into metaphor. Does a similar architecture of anomaly and 'truth' hold true for the authorship of Airspy's archive, or Sieverts' view of his own achievements? Also, is such dis-remembering new embedded too seamlessly through the malleability of digital media, into the surface of Flusser's 'technical image'?

Amalgam

A digital amalgam of these historic traces form *Threshold*, enmeshed in imagery and sounds from contemporary Geelong. These contemporary traces are sourced from Google Maps, with added sound effects of dodgem cars, bowling alleys, time lapse images of Geelong's current Ferris Wheel and traffic plus images of an Eastern Beach, an area converted from beach to a public recreation area and walking track through its history. A gentrification from industry to recreation and tourism is also evident at Western Beach, recording Cunningham Pier as commuter and restaurant parking space that empties every evening. The waterfront generally is depicted as a public recreational space populated with coffee shops and restaurants, surrounded by sculptures and community art.

The layering technologies of editing software like "Photoshop" and "Final Cut Pro" and phone apps like "Motion Pics" and "Stop Motion", that allow HD time-lapse and animation on the run, all transform the documentary

image into the endlessly plastic and pliable, a shift from the a witnessing of the real associated with the traditional analogue chemical photograph. Yet this new situation delivers a trace of the moment for anyone walking along the waterfront with their i-phone, to mark a real or imagined journey. These situations produce levels of accessibility that some traditional archives have embraced more seamlessly than others, migrating Sievers' and Pratt's recording practices to instant download and locatability for research and to the finger-tip access of the mobile phone globally.

The situation that produces this amalgam demonstrates what Lev Manovich has referred to as the shift in visual culture from a photographic, to a malleable painterly digital medium with animation practice at its core. (Manovich, 2001, p. 302) This is a flexibility demonstrated by the annotated Google Map, an example of Flusser's 'technical image'. (Ströhl, 2004, p. xxiii). For Flusser the means of constructing these meaningful surfaces are rendered invisible, creating a form of amnesia in its audience requiring analysis:

> The technical images currently all around us are in the process of magically re-structuring our 'reality' and turning it into a 'global image scenario'. Essentially this is a question of 'amnesia'. Human beings forget that they created the images in order to orientate themselves in the world. Since they are no longer able to decode them, their lives become a function of their own images: Imagination has turned to hallucination.' (Flusser, 2000, p. 10)

> … any criticism of technical images must be aimed at an elucidation of its inner workings. As long as there is no way of engaging in such criticism of technical images, we shall remain illiterate. (Flusser, 2000, p. 16)

My rationale in identifying the personal histories embedded in Sievers' and Pratt's images, and suggesting that these can be retrieved a-historically through their texture, form and structure, returns to Flusser's call to elucidate the technical image's inner workings and essentially incorporates McLuhan's insight on the primacy of the medium over its content.

Flusser's 'global image scenario' is not as utopian as Marshal McLuhan's 1960s manifestation of a 'Global Village', incorporating the insights of migrant displacement that Rmadic identifies in Sievers' photographs. McLuhan's 'Age of Anxiety' (McLuhan, 1964, p. 12), brought on by electric speed, and evident in the mobility performed by Pratt's heroic engagement with the machine, becomes for Flusser a problem of hallucination and amnesia, of forgetting, which Demetrious's oral remembering valiantly attempt to counter.

For Flusser, the experience of displacement, a dissociation experienced directly and viscerally in real physical migration, which grounds the migrant's experience, is now experienced by all through the digital hyper-mobility of capital and media, bringing about a preoccupation with surface and a proliferation of technical images that communicate concepts rather than phenomena and events (Flusser, 2003), a more ambiguous reincarnation of McLuhan's 'The Medium is the Message'.

What remains embedded in the seamless transitions to digitized archives is the implicit aesthetic trace fashioned by the recording devices of each historic period. Within the expanded malleable aesthetic fields enabled by digital technologies, named by Flusser as 'technical images', the possibility emerges for the image to reflect directly the flawed but real processes of remembering, which for Walker includes disremembering, identifying forces operating in the complex narratives of daily life, that migrated both Pratt and Sievers to Australia. Does this new situation enable the archive to communicate a more "accurate" view of the past? Or is this question merely a trace of a way of critical thinking no longer available in our new technological situation? This re-search suggests that it is a bit of both.

Bibliography

Carter, Paul. (1992) *Living in a New Country: History, Travelling and Language*.
London and Boston: Faber and Faber, 1992.
Ennis, Helen. (1997) "Blue Hydrangeas: Four Emigré Photographers", In *Emigré Artists in Australia 1930-1960*, edited by Roger Butler, 109-18. Canberra: National Gallery of Australia.
Flusser, Vilem. (2003) *The Freedom of the Migrant: Objections to Nationalism*. (ed) Anke Finger. University of Illinois Press.
Flusser, Vilem. (2000) *Towards A Philosophy of Photography*. London: Reaktion.
Manovich, Lev. (2001) *The Language of New Media*. Cambridge: MIT Press.
Mansell, Ken. (2013) "Boyles Football Photos." Accessed June 15, 2014. http://boylesfootballphotos.net.au/tiki-read_article.php?articleId=33
McLuhan, Marshall. (1964) *Understanding Media: The Extensions of Man*. New York: Signet.
Rmandic, Dunja. (2007) "Wolfgang Sievers and the Revisionism of Australian Migrant Art", emaj, no.2, 1-9.
Ströhl, Andreas. (ed.) (2004) *Vilem Flusser: Writings*. Minneapolis: University of Minnesota Press,
Walker, Janet. (2005) *Trauma Cinema: Documenting Incest and the Holocaust*. Berkeley: University of California Press.
Zuker, David and Barry Jones. (2007) "Titan's Lens and Moral Compass Enlightened All." The Age, August 17.

The Rotterdam Heritage Coalition: Cooperation between Heritage Institutions

Gwenny van Hasselt
Museum Rotterdam, Netherlands

Abstract: *The Rotterdam Heritage Coalition was founded in 2013 with the aim to improve cooperation between the eight biggest heritage institutions in the city and to develop educational content through an intensive dialogue driven approach with one of their main target groups: primary schools. Together these eight institutions have obtained a grant within the ´Cultural Education with Quality program´ supported by the Fund of Cultural Participation and the city of Rotterdam for a heritage education project of four years (2013-2016).*

This paper will examine two of the challenges the Coalition has been facing during its first year: gaining the schools´ commitment to the project and establishing a constructive working relationship among the eight institutions.

In order to work well with secondary parties such as primary schools, the Coalition had to ensure a high level of internal cooperation. Therefore, the first part of the paper will examine how these eight institutions have decided upon a common strategy, without compromising the integrity of the individual institutions. The paper will discuss both the strategies for enabling cooperation and the strategies for sustaining that cooperation. Once the internal cooperation was ensured, the Coalition could focus on the next target: creating educational content through a dialogue driven approach.

This approach requires at the very least the cooperation of primary schools. Teachers are notoriously time-consumed by their teaching tasks and it was thus difficult to gain their commitment to the project. Yet without their contribution, the Coalition would be developing content without a real insight in the needs of their customers. The second part of this paper will discuss both the successful and less successful strategies the Coalition employed to make contact with schools and teachers. It will also explicate the strategies the Coalition is currently developing for sustaining these relationships and ensuring all parties actively keep participating.

Keywords: heritage, education, collaboration

Introduction

The Rotterdam Heritage Coalition (RHC) was founded in 2013 with the aim to improve cooperation between the eight largest heritage institutions in the city and to develop educational content through an intensive dialogue driven approach with one of their main target groups: primary schools. This paper will examine two of the challenges the RHC has been facing during it´s first year: gaining the schools´ commitment to the project and establishing a constructive working relationship among eight institutions, each with their own educational programs, websites, exhibitions and staff.

In order to work well with secondary parties such as primary schools, the RHC had to ensure a high level of internal cooperation. Therefore, the first part of the paper will examine how these eight heritage institutions have decided upon a common strategy, without compromising the integrity of the individual institutions. The second part of the paper will discuss both the successful and less successful strategies the RHC employed to make contact with schools and teachers. It will also explicate the strategies the RHC is currently developing for sustaining these relationships and ensuring all parties actively keep participating.

Internal cooperation

The first part of this paper presents the strategies the coalition used in order to enable and sustain internal cooperation between its members. Beforehand, we will explicate the background and structure of the RHC, in order to get a clear grasp of the internal relationships of the coalition´s members.

The RHC has eight members: Museum Rotterdam, The City Archive (Stadsarchief), The Foundation of Archeological Research Rotterdam (BOOR), The War and Resistance Museum (Oorlogs en Verzetsmuseum, OVMR), The Maritime Museum (Maritiem Museum), The Harbor Museum (Havenmuseum), The Photo Museum (Fotomuseum) and Centre for Cultural Education Rotterdam (KCR). Together they have obtained a grant within the ´Cultural Education with Quality´ programme from the Fund of Cultural Participation and the city of Rotterdam for a heritage project of four years (2013-2016).[1]

The institutions cooperated on multiple joint projects throughout the city before the founding of the RHC. Some institutions have ties that go back a long way and are even in the process of a merger as this paper is written.[2] The one thing they all have in common is an expertise in the heritage of the city of Rotterdam, with the exception of the Photo Museum, which focuses on national heritage.

The main target of the RHC, as stated in its mission statement called the ´Masterplan´, is to "[offer] a broad and coherent heritage education curriculum, which stimulates the active participation of children within the ages of 4 to 18 years old." Furthermore the RHC intends to create this curriculum "together with schools" to "enrich students and alleviate teachers" (Heritage Coalition, 2012:11-12).[3]

In other words: the lessons have to be useful in the practical sense, in other words it has to be congruent with the rest of the curriculum and pedagogical instruments and should not add to the workload of the teacher; therefore they ought to be easy in the preparation. In other words: the more practical and ready made the lesson, the better. Moreover, in the eyes of children the lessons should be intellectually inspiring and challenging.

All heritage institutions have an equal part to contribute to the project. This means that on a management level, all directors have an equal say in the project and all decisions must be approved of by all the members. The Centre for Cultural Education Rotterdam (KCR) also has a supportive and evaluative role, as requested by the Fund. This is due to the fact that the KCR is not a heritage institution like the other members. The KCR supports schools and art educators in formulating and implementing individual long term plans for cultural education. KCR aims to give schools the opportunity to become leading in their contacts with cultural institutions and not just consumers of readymade projects.

The organisational structure is more complicated than the structure on the executive level, however. Since every institution has a different internal structure, their educational departments are different. For instance, the Foundation of Archeological Research Rotterdam (BOOR) does not have a separate educational department. The City Archive (Stadsarchief) has a one person educational department, as does the The War and Resistance Museum (Oorlogs en Verzetsmuseum). The Centre for Cultural Education Rotterdam (KCR) does not develop educational content, as explained above. The other institutions all have an educational department, with several staff members. How then does the RHC enable internal collaboration between all these different educational departments?

When we look at the execution of the project so far, three strategies can be distinguished. First of all, the members formulated a Masterplan. In this mission statement, the members explicated their long and short

[1] The so-called matching rule. The Fund and the city both contribute 50% of the grant.

[2] Museum Rotterdam and The War and Resistance Museum are in the final stages of a merger and the Harbor Museum and the Maritime Museum are in the first stages of a merger.

[3] Translation by van Hasselt, G.

term vision and their common goals. The Masterplan thus serves as a binding foundation for the cooperation between all the members of the RHC.

Secondly, the RHC hired an external project manager. This project manager has no affiliations with any of the members and is a neutral party. He has his office with the KCR, the only member that does not develop educational content nor has its own collection or expositions. He receives support from the employees of the KCR, which is useful as they are specialised in the relationships between cultural institutions and schools.

Lastly, the members had to decide how to divide the actual development of the tasks. The available funds and hours were allocated by the project manager according to the expertise of each institution. In order to best fit into the existing curriculum and accommodate teachers and pupils, the choice was made to use the same pedagogical instruments as the teachers. This meant the use of the so-called ´periods of De Rooij´, which divide the history of the Netherlands in ten periods. Each member had to indicate to which of these ten periods they could contribute.

After the hours were divided according to this schedule, four of the members concluded they did not have enough time to dedicate to this time-consuming task.[4] Next to this practical issue, there was a need for an experienced educator with knowledge of both the heritage and the educational sector. So the four members decided to combine their allocated hours and hire an external educator. This educator got the extra task of coordinating all the development efforts. As she has a background as a teacher, she also got appointed with facilitating the communication between the RHC and the primary schools. Her appointment has two advantages. First of all, she is able to provide the educators of the RHC with inside knowledge of schools and the work of teachers, as well as pedagogical instruments and methods used in the classroom. Secondly, she is able to communicate to teachers what the main benefits are of participating in the project of the RHC, on a level they can relate to directly; 'how does this benefit my students?'.

So the three strategies for enabling internal cooperation were: a shared mission statement, a neutral project manager and an experienced educator. So far, these strategies have worked well. The vision statement gives the project meaning, stability and a clear goal. In the event of a conflict, the statement enables the project manager to refer to the document as a contractual reminder of the shared obligations of the RHC. Since the project manager and the educator are external employees, they are able to focus one hundred percent of their time and energy on the project. Furthermore, they are neutral parties and therefore are not hindered by bias or affiliation to any particular member of the RHC. To sum up: the strategies the RHC employed to enable internal cooperation were successful.

Once this internal cooperation was established, the RHC employed two strategies to sustain their collaboration: incorporation of the common goals of the project into the institutions' individual programmes and the use of a website. Incorporating the common goals of the project into the institutions' individual programmes has not been successful yet. This meant that the institutions would slowly have to merge their own existing programmes with that of the RHC. This process is still going on and it has proved to be difficult, though the problems vary. For instance, the Foundation of Archeological Research Rotterdam (BOOR) does not have its own educational programme. By contrast, it has short projects and assignments at the requests of clients, whereas the Photo Museum has its own educational programme with a broad range of activities and very specific content.

The members of the RHC realize this will take time. The next years of the project will show whether this strategy is going to be successful. In order to ensure it is successful, each member will have to evaluate their current educational programme and plan the process of merging their programmes with that of the RHC.

[4] Museum Rotterdam, The City Archive (Stadsarchief), The Foundation of Archeological Research Rotterdam (BOOR), The War and Resistance Museum (Oorlogs en Verzetsmuseum)

The second strategy to sustain collaboration is the website. There was an immediate need for a common platform to communicate and share content. The RHC members decided to build a website, keeping in mind that this will also be useful as a platform for cooperating with primary schools. This website is still under construction.

External cooperation

Enabling external cooperation

Any hurdles the RHC faced concerning the internal cooperation notwithstanding, the most challenging assignment was enabling the cooperation between the RHC and the primary schools. Although heritage institutions and primary schools often visit each other's workspaces as clients, it is very different when the goal is to develop content together as equal partners. This process can be described in three steps: initial contact, personal contact and consolidating the contact.

The first step was to make the initial contact with schools, to ask them if they were interested in the project and convince them to participate. In order to do this, four different communication strategies were used: e-mail, phone, letters and personal connections. None of these worked extremely well. There was not one strategy that worked better than the other. Of the 180 primary schools, only five consented to participate in the project. The reasons for which schools rejected the RHC's proposals were threefold: not enough time, not enough money, and having other priorities. There were no exceptions to these reasons.

It is worth mentioning here that a possible cause of the failure of these communication strategies were not solely the rejection of the schools. In advance, the RHC hypothesized that schools that visited heritage institutions often would be interested in participating in the project. What they did not realize was that they were asking for a big commitment in the eyes of the schools and teachers which required creating material costs, valuable time and effort. Thus the RHC had to adjust their idea about forming relationships with primary schools.

These practical issues aside, the RHC hypothesizes that there is an underlying reason for this failure in the initial contact phase: the parties involved did not speak the same language. The RHC, for instance, would approach the schools with a ´heritage project´. However, the concept ´heritage´ is difficult to define and operationalize for teachers. Teachers did not have a clear view of what heritage is and what they could do with heritage in their classrooms. This theory was supported by the fact that many schools admitted that they did not really know how to approach heritage education. Once the RHC members offered teachers practical examples of lessons (ideas), a dialogue was established. Now, one of the focus points in the communication strategy of the RHC is using the right key words when speaking with teachers.

Other methods could have been used to gain the commitment of primary schools. For instance, the RHC could have employed a more top-down strategy, through principals or higher managing directors. They chose not to do this as it would have inevitably met with resistance at the executive level of the teachers. Since it was the RHC's goal to create a dialogue with teachers, this would not have sufficed.

Another strategy could have been through legislation or policy. But the same concern applies: the RHC could have worked together with council members of the city of Rotterdam and enforced a policy in which every primary school in the city would have had to participate, but that would have created the same resistance.[5] So it was important for the RHC to sustain the contact with the five schools that showed interest.

[5] In Amsterdam, this was the strategy that was used to stimulate cooperation between heritage institutions and primary schools. Although more schools participate in the project, which can be compared to the project of the RHC in scope and goals, it is not clear whether this strategy is more sustainable and/or will lead to a lasting relationship with these schools/teachers.

So although the communication strategies the RHC employed to make the initial contact with primary schools were not successful, the RHC did not find a better strategy to convince schools to participate in the project.

The second step in the collaboration with these schools was a personal visit from the project manager and educator: personal contact. These conversations with the teacher that was responsible for cultural education at a given school took place at the schools.

These conversations had two goals: establishing a personal working relationship between a particular teacher, the project manager and the educator; and starting the dialogue with the schools as part of the dialogue driven approach to develop heritage education. This personal contact turned out to be crucial. The teachers were grateful for the personal time they got, and it was pivotal for them to relate to the project on a pedagogical level, in relation to their teaching tasks. In other words: the project did not live for teachers until they had a live conversation with the RHC. More specifically: heritage did not live for teachers until they had a chance to discuss all the pedagogical possibilities of heritage education with the educator and the project manager. It also gave the RHC a chance to find out what teachers expected from heritage education and on which subjects or methods to focus on, in their first development efforts.

In other words: it is our strong conviction that when heritage institutions want to collaborate with primary schools, they should have personal contact with teachers. It is important that there is a working relationship and shared vision on the executive level, more so than on the management level. This prevents heritage institutions from developing products that are not purchased or used by teachers.

Sustaining external cooperation

The third step is consolidating the contact with the schools and teachers. The RHC is still working on this third step as this paper is written. The RHC employs four strategies to do this: agreements with schools, heritage scans, the website and personal contact. First of all, a formal agreement had to be reached between the RHC and the participating schools. More specifically, the following had to be established: the hours the RHC expects the schools to put in and what the school can expect in return in terms of services.

Secondly, the KCR will offer the schools a so called heritage scan. This scan can be seen as small scale qualitative research into the current status of heritage education at the school. All teachers and staff will be interviewed and the KCR will offer the school a report on the current status of heritage education and the possibilities in the near future for heritage education at their school. This way, both the schools and the RHC have a baseline from which to work. At the midterm and end evaluation, it can serve as a point of comparison.

Thirdly, the RHC will use the website to enable direct communication between all parties involved. As mentioned in the first part of this paper, the website is built to be a forum to exchange information and comment directly on the developed material. The website offers the teachers lessons and the ability to give immediate feedback once they tested the material. Teachers will have the option to request lessons as well.

Lastly, the RHC will employ its most successful strategy: personal contact with schools. Of course, the RHC will have digital contact with the schools through the website for the sake of efficiency, but as personal contact has turned out to be crucial, the RHC will continue investing personal time. For example, each school can expect a presentation for its team from the RHC. This can be in the form of a short seminar or training. The schools can request certain information or methods. The function of this presentation is twofold: the RHC gets to make direct contact with the entire team of a school, and the teachers get a feeling for what the RHC and heritage education has to offer. In light of the success of the personal visits from the project manager and the educator in the earliest stage, we consider this strategy the most important way to ensure collaboration between the RHC and the schools.

Conclusion

This paper examined how the Rotterdam Heritage Coalition gained primary schools´ commitment to the project and established a constructive working relationship among eight heritage institutions. When we look at the strategies the RHC employed for the internal cooperation, we can conclude that the three strategies of a shared vision statement among the various parties, a neutral project manager and an experienced and neutral educator were all necessary and successful. It ensured that the cooperation was consolidated on both a formal and informal level and on the managing and executive level.

The two strategies for maintaining cooperation were: incorporating the common goals of the project into the institutions' individual programmes and the use of a website. At this stage, we can conclude that the first strategy has not been successful yet, but the RHC members intend to commit to the process of incorporating the common goals of the project into their programmes. As the website is still under construction, it is not possible to evaluate this strategy.

Finally, the strategies to ensure external cooperation with schools were a different matter. The RHC has found that there is no perfect cocktail to approach schools. Once there is contact, however, personal contact between the heritage institutions and schools is pivotal. It cannot be stressed enough how crucial it is for the active involvement of primary schools in heritage projects that individual teachers be contacted personally and become involved with the project on a micro level. This will understandably take a huge time and monetary investment, but the payoff in terms of the amount and the quality of the involvement of the teachers is, in our opinion, worth the effort. The RHC has therefore adjusted its strategies to sustain collaboration with schools accordingly.

Of course, the RHC is only one of the many heritage projects in the Netherlands that call for cooperation with primary schools. It would be interesting to research the differences and similarities between those projects. Further analyses should concentrate on the educational content developed through the projects as well as the strategies used to ensure cooperation between heritage institutions, and heritage institutions and primary schools.

"You could have told me!" Collaboration on the Design of Interactive Pieces for Museums. A case study

Teresa Macchia
University of Trento, Italy
teresa.macchia@unitn.it

Mariana Salgado
Aalto University, Finland
mariana.salgado@aalto.fi

Abstract: *In this paper we seek to disentangle the reasons that limit collaborations between museums and universities. Our standpoint is that collaboration is desired by both organizations as it could lead to richer outcomes in the design and research of new technologies in museums. However, little attention is paid to how this kind of collaboration actually happens and how it could be enhanced. This is why our focus is on teamwork, especially in the particularities of the collaboration of external design-researchers and museum professionals. This paper examines the collaboration between a university and a museum, in a situation in which these institutions collaborate in the production of interactive artefacts for exhibition space. As in other cases, collaboration between museums and other institutions is not always easy: participants of collaborations have expectations and needs that are far from obvious to everyone. In this paper, we present a case study on a course on Public Space and Social Inclusion, organized by the Museum of Science in Trento (Italy) and the EIT ICT Labs Doctoral School. During the course, the participants developed a set of original ideas to explore possible ways for the museum to become a cultural hub, and to look into the role it can play for community building. This case study gave us the opportunity to delve deep into the dynamics of the interactions between museum and university partners involved in a collaborative process. We conducted and analysed interviews with university representatives and museum staff to discover how they experienced the collaboration and what they were expecting from it. Analysing these interviews, we observed the need to follow three principal elements for a successful collaboration. Partners have to start together a collaboration planning in advance their intention and moments for exchanging mutual feedback and systematically review the project. Partners should plan their collaboration in advance, explicating their expectations for the project and setting dates for exchanging mutual feedback to review the project systematically. Time management is crucial. It is important to make clear which deadlines are fixed and which flexible, when it is time for deep reflection and when there's a need for hurried action. In general, the participants would benefit from communicating their working practices and talking frankly about their expectations.*

Keywords: collaboration, museum, university, design, interaction design.

Introduction and background

The creation of digital and interactive technologies for museums can often benefit from collaboration between museum personnel and external designers, who have the latest knowledge about advanced technologies. However, little attention is paid to what in fact happens in these collaborative projects and how the co-operation could be enhanced, considering the diverse goals of the partners. While museum personnel might be mainly interested in exhibition design and in the way it could be enhanced with the cutting edge technologies, the design-researchers could be seeking an opportunity to experiment and test new practices and artefacts in

real context. Thus, in a case like this, it is likely that these differing goals and expectations affect the dynamics of the collaborations. As Berry outlines (1998), collaborating on projects that involve different communities is a complex process that implies sharing interests and scopes, commitment on schedules, personal and social skills, as well as patience and persistency.

In the context of educative and creative environments that imply mutual learning and sharing of experience and resources, collaborative experiences are recommended and even desirable (Fischer, 1999). Following similar reasoning from Binder et al. (2013), collaboration is about reflecting and participating on design activities and actions, realizing outcomes, fulfilling and responding to common and divergent expectations in a joint effort, in a group. However, communities of people have different, if not opposite needs, and require practices, processes or objects to support and allow communication in shared spaces (Robertson, 2002). As Berry underlines (1998), collaborative activities and projects are tough experiences with a potential for success, where major problems often arise from a lack of cultural understanding and from digression to unrelated themes.

To understand collaboration more deeply it is helpful to step back and distinguish between *cooperation* and *collaboration*. While cooperation occurs between individuals, groups, and organizations working together on a specific task for a limited amount of time, collaboration focuses on present and current projects and future possibilities (Hord, 1986).

Currently there are several reasons for the museums to collaborate with various cultural institutions. For example, the recent introduction of web services and digital interactive artefacts that modify the museum visits increases the need for including new actors in the museum environment (see for example Cole, 2004; Stogner, 2009; Kaptelinin, 2011). The evolution of the museum environment imposes a combination of knowledge, skills and competences between museum experts and interaction and heritage designers in order to develop suitable products and services for enhancing museum experiences (Proctor, 2010). Museums engage visitors and inspire everyday life through multiple inputs: proposing workshop and educational activities for visitors, providing devices for enhancing the visit and creating personalized museum-paths (Simon, 2010; Hooper-Greenhill, 2013). Therefore it is vital that museums play an active role in broadening the networks between local and international cultural, educational and entrepreneurial organizations to stimulate the creation of common endeavours within the cultural heritage domain.

The case study presented in this paper is an empirical analysis of this kind of an alliance. The collaboration started with a phase of enthusiasm, but did not progress beyond the initial phase. This is why in the study we seek to unknot the reasons that might influence and impede collaborations between museums and universities. Our belief is that collaboration is desirable for both organizations and could lead to richer outcomes in the application of new technologies in museums for both organizations that are regularly joining forces to design and research into possibilities of new technologies in museums. However, little attention is paid what happens in these collaborations and to the way they could be enhanced although many interaction designers have carried out fieldwork in the museum context see eg: Ciolfi & Bannon, 2002, Dalsgaard et al., 2008, Salgado, 2009 Stuedahl &Smørdal, 2011, Macchia et al. 2014).

Case study: collaboration in action

In November 2012, Salgado and Galanakis hold a course in Trento, Italy on public space and social inclusion for doctoral students. The course was a collaboration of the Doctoral school of Information and Communication Technology, the Museum of Science in Trento (Italy) and the EIT ICT Labs Doctoral Training Centre. It brought together students from different backgrounds and with a variety of competences to discuss and examine the theme of designing social inclusion *for* and *in* museums.

With the perspective of the opening of the new building for the Museum of Science in Trento, participants developed a set of original ideas to explore possible ways for the museum to become a cultural hub, and to understand the role it can play for community support. The outcome of the course was a varied set of design concepts, related to the impact of the museum on the cities surrounding them. The students produced a series of videos to show to the museum and university staff how their design concepts could enhance museum visits and connect Trento inhabitants to the new premises. The presentations were followed by a deep discussion on future possibilities of each of these concepts. Students received positive feedback from the museum staff, including the director of the museum. Despite this, the course did not generate further collaboration based on the development of the proposed ideas. After the course, certain designs that resembled the concepts presented by the students during the course have been introduced. This caught our attention, since none of the participants of the course had been asked to collaborate in developing and implementing the ideas created. Therefore, we asked ourselves: why didn't the museum call us to collaborate? Why, even if they knew we were interested and engaged in similar research topics, did the museum not invite us to participate in the development of these concepts?

To gain a better understanding on the dynamics of collaboration between museums and universities, we decided to organize a workshop, inviting participants from the course as well as the museum staff. As it proved difficult to organize time for a common meeting, we had to revert to doing interviews instead. This variation at first considered as a misfortune, was then said to be a good opportunity to discuss and freely investigate the different perspectives on the case. We conducted four semi-structured interviews that were built around three independent themes: firstly, we asked what the interviewees mean by the term of "collaboration" and how they see the relationship between the university and the museum; secondly, we inquired about present or past collaborative projects between these agencies; thirdly, we requested the interviewees to describe an ideal collaboration in the form of a future scenario; an finally, we opened the discussion on the case study at hand.

There were ten students who took the course and a museum producer that actively contributed and gave feedback during the work in process. We chose to interview the professor, who was in charge of the coordination of the course, two of the doctoral students who followed the course. Among these students one pursues her research in the museum field, while the other has previously collaborated with the museum. The fourth interviewee was a museum professional.

For the purpose of this paper we took notes of the interviews, and translated meaningful paragraphs from Italian, observing recurrent thoughts and themes. The data was analysed without predefined hypotheses or preconceived theories.

Data analysis

In this section we summarize the major themes, which arose from the interviews and that outlined different but overlapping opinions about positive and negative aspects of the collaboration. In the analysis of this set of interviews, we observed three main recurrent themes: sharing in the beginning, managing time schedules and speaking frankly.

Sharing in the beginning

A good start is the basis of a successful collaboration. In fact, all four interviewees stressed *the beginning of the project* as the cornerstone of the interaction. For example one of the interviewees described this phase as "a tough and delicate moment" in which the partners had to reflect on their corresponding needs and expectations. The museum professional, however, mentioned that there is an intrusive aspect on the universities'

approach to collaboration. He argued, that the communication from the university was inexistent, until *"they sent a report in which they already told what they planned to do […] but they do not know our public"*. He also emphasized the necessity for a transparent and equal communication between partners, starting before the actual project is launched.

Museums and universities are cultural institutions with similar aims of preserving; sharing and improving culture and knowledge, but the way in which they achieve their results differs. For example, while the university has structured procedures for educating through lessons and tests, the museums environment supports lifelong education and motivates the audience through engaging in a free form dialogue. These differences, in a collaborative situation, accentuate the need for transparency and clarity about mutual needs and expectations. In fact, one aspect highlighted by the interviews was the differences in perspectives. While museum staff has the aim of "*creating and offering something of quality every day*", as noted by the museum professional, academic designers tended to consider the museum as a test bed for experimental actions. This interviewee stressed the difficulties that the partners had in understanding each other's needs and aspirations. In addition, the interviews underlined the importance of sharing plans, concepts, ideas, and (co)involvement.

There are expectations that are not based on the experience of working together. This is exemplified by the quote by a museum professional. "*Ideal would be to work together in writing the project and diving the tasks. The university could do the theoretical part and the museum the implementation*". Even though the person is talking about dividing the work together, she already assumed which would be the role of each of the partners. In the specific case of the collaboration with doctoral students with a background in design, there is a need to consider their involvement in the design and development.

The challenge lies in committing different partners in the collaboration and making everybody feel that they are doing the project together – in contrast with this being a project that the students come to do, or that the museum personnel does with the support of designers. Sharing objectives, methods and work practices from the beginning could lead to the ideal situation, in which both partners have a sense of ownership of the project. This would be ideal, as both would then work hard to make it work and improve the outcome, not only during the construction and development but also in the phase of "design-in-use". However, the mutual interdependence that is created in the process of working together, might call for further discussion. In many cases, including the one analyzed in this paper, the partners have different funding sources; this in turn creates a sense of detachment of the others' needs and scopes. This is why drawing mutual points of commitment is important. In the very beginning both partners have unclear expectations and it is only within the interaction with the other that opportunities arise.

Managing time schedule

Time management is different when considering doctoral students, academic people and the museum staff. As matter of fact, most full-time funded doctoral students, the group of participants of this case study, can decide by themselves how to manage the projects and commit to them. They are autonomous in setting their own research agendas and developing them further. For example, one of the doctoral students told us that she had changed the focus of her research activities from museum context to other fieldwork because of time issues. She said: "*You need to understand, that problems in the collaboration made me change the topic of the doctoral thesis, and I had to ask for an additional year to finish my doctorate… because with all the schedule changes here and there I could not advance in my research*". This unfortunate experience highlights the importance of making binding decisions on the common schedule. On the other hand, museums have very tight time frames for the design and production of exhibitions. Teams are committed to the schedules and being late can cause dysfunctions in the whole team's collaboration process. People might be waiting for others' contributions, unable to advance their own part of the process. Both museum and university partners have strict deadlines for finishing certain objectives on time. Respecting each other's schedules and fixed dates is a priority.

The professional from the museum interviewed noticed that *"There was not a desirable integration of a reflection carried out by the university with the one carried out by the museum".* Even though the question of why this happens is still open, we think that proposing occasions for common reflection could be a proper solution. A common agreement is needed also in terms of constantly updating the state of the project. From the beginning partners need to clarify how these up dates will be communicated. In fact the rewarding projects described by one of the students and the museum professional, have common features. In both cases partners were transparent in their intentions and capacities. In addition they kept on updating their work in progress. The museum professional commented on the *way in* which the collaboration is to take place, emphasizing the importance of mutual understanding and the importance of understanding the competencies of each institution in order to plan activities and milestones. When discussing the organizing of the activities, one of the students said: "*there are people assigned* [to maintain the relationship with the museum] *we are getting all the information from them… Since we have a really small part on the project and the* [other] *partners have a bigger part of it, I think it's not creating any huge discrepancy, it is actually okay since they work in the bigger picture*". There is thus a need for communicative roles in the projects, with people responsible for keeping the whole team informed about the status of the work. If this is not possible, all the team members should communicate their progress to each other weekly.

Talk frankly

It is hardly a surprise, that using terms such as "insiders" or "outsiders" hinders the collaboration, making it difficult to create a sense of togetherness in the team. Once a doctoral student enters a new environment, it is important to introduce to her the places (exhibition spaces, development areas, etc.), background information and themes of the exhibitions but also the working practices that the museum professionals have. It is not very common that external partners are introduced to these practices, however beneficial this could be.

The professional from the museum interviewee noted that *"In the museum there is a public to whom you must go and you have to conquer, their attention is not given for granted. University partners do not know our audience".* Sharing audience research done in the museum could be key for the external collaborators, in order to better understand the museum as a millieu and the audience. Also, doctoral students could take benefit from the participation in the events organized within museum experts so as to look into museum professionals' discussions and practices.

Collaboration between museums and universities, even if desirable, is not easy since the reasons for collaborating might be different and not explicit. For example, one of the students described her disappointing collaborative experience and speculated about the possible reasons for the partner to disappear, such as overlapping activities or absence of time. She told that the partner had backed out saying *'if the other museum is not participating, we're not participating either'.* Here the partner was referring to an expected collaboration with another museum that was involved in the project. As *the doctoral student* referred *"the other museum changed* [the idea] *because they didn't have an online paying method, but our concept would have worked without one."* As perceived by the interviewee, the participation of one of the two museums was related to the participation of the other, even though this intention was not expressed in the beginning of the collaboration. The university partners interpreted this as a lack of interest in the project *per se* and also as a lack of honesty. They would have expected to get a transparent view on the arrangements and involvements that had to do with the project from the very start. Besides, the external researchers might have benefitted from getting the information on the deadlines of parallel projects – to understand why a certain person "has disappeared". If we get to know more about the working practices of our partners, we might have better clues for interpreting their behavior and actions.

The person interviewed from the museum noticed that: *"esteem and empathy, synergy created between the individual actors is crucial. This is not only a collaboration within institutions".* For this to happen, we need more instances of working together, instead of presenting each others already planned projects. Esteem and empathy

happen in process of co-design, while partners share a certain goal, and ownership towards the project. The human touch interferes in the dynamics of collaborations, this can never be neglected while studying mechanisms that affect design outcomes.

Continuing the discussion on the reasons for collaborating, the four interviewed agreed on the successfulness of the course on public space and social inclusion, even though they expressed different levels of willingness to participate to such kind of experiences. On one hand, the professor interviewee and one of the doctoral students perceived the course very useful. They valued the creation of networks and a reservoir of knowledge as well as building of respect between the institutions. On the other hand, the museum professional saw the benefits of the course in terms of *quick and dirty* collaboration, as a possibility to investigate new trends and new possibilities, to improve or implement designs, and breed a corpus of collaborators to gather different and original perspectives. Thus, he saw the collaboration with doctoral students as a way to get inspiration and up-to-date ideas on what is going on in the field of IT. However, for university researchers in the design field, informing and inspiring the development of exhibitions is only one way of collaborating. Other ways such as co-designing, and consultation in the decision making process have not been explored in the context of this particular case. We believe that there is room to enhance the collaboration in order to explore its limits. It is not only a question of being sincere, but also of being flexible. In collaborative projects there is a need to adapt and be flexible towards others' expectations and ways of doing.

Recommendations

Fruitful opportunities of collaboration between museum staff and university are always readily available and there is even enthusiasm for such processes. However, we have found through our interviews that there are some impediments that can disturb the flow of collaboration, putting its success at risk. Based on our analysis of these interviews, we suggest the following list of recommendations in order to overcome these potential breakdowns:

- **Share ownership.** A successful collaboration is open-ended: it sets objectives in a common space. It leaves room for both partners to set the agenda together in the situation, without imposing ideas or expecting the other to perform certain tasks.
- **Be transparent and flexible.** Talk about your intentions, working plans and deadlines. Be clear about your expectations, about the future of the project and the collaboration. Be honest about your own resources, skills and commitment.
- **Reflect together.** From the very beginning, schedule moments for sharing ideas, giving feedback, analyzing the progress together and for open reflection on the collaborative experience.

Conclusion

We have here presented reflections about one case study in relation to the collaboration between a museum and a university, starting from the point to which collaboration is desirable for designing digital services and products for the museum. People who collaborate within universities and museums have different, often opposite, skills and abilities that need to be clarified at the starting point of the collaborations. Therefore, partners' intentions and expectations have to be stated while partners are starting a project. In addition, they should be open to changes on what they have planned. New modes of collaborations will emerge in the future that will reinforce trust and confidence between partners in both organizations. This could lead to more creative ways of working together. For this to happen we have to work together under certain premises: being transparent and flexible, analyzing together the results and sharing the ownership on our projects.

Bibliography

J. Angus. Innovations in practice. *Journal of Museum Education*, 1(2), 2012.

N. Berry. A focus on art museum/school collaborations. *Art Education*, Vol. 51, No. 2, 1998.

T. Binder, G. De Michelis, P. Ehn, G. Jacucci, P. Linde and I. Wagner. *Design Things, A. Telier*. The MIT Press Cambridge, Massachusetts, London, England, 2011.

L. Ciolfi, L. Bannon. Designing Interactive Museum Exhibits: Enhancing visitor curiosity through augmented artefacts. *Eleventh European Conference on Cognitive Ergonomics*, 2002.

T. Cole and S. L. Shreeves, The IMLS NLG program: fostering collaboration. *Library Hi Tech*, Vol. 22 Iss 3 pp. 246-248, 2004.

P. Dalsgaard, C Dindler, E. Eriksson. Designing for participation in public knowledge institutions. *Proceedings of the 5th Nordic conference on Human Computer Interaction*, 2008.

G. Fischer. Symmetry of ignorance, social creativity, and meta-design. In KBS Special Issues *"C&C'99"*, 1999.

J. Harrison. Shaping collaboration: Considering institutional culture. *Museum Management and Curatorship* 20, 195-212, 2005.

E. Hooper-Greenhill. *Museums and their visitors*. Routledge, New York & London, 2013.

S. Hord. A synthesis of research on organizational collaboration. *Educational Leadership*, 43(5), 22-26. (1986)

V. Kaptelinin. Designing Technological Support for Meaning Making in Museum Learning: an Activity-Theoretical Framework. *Proceedings of the 44th Hawaii International Conference on System Science.* 2011

T. Macchia, L. Diaz and V. D'Andrea. Participating in Infrastructuring. The active role of visitors and curators in museum. *A Matter of Design: Making Society through Science and Technology. 5th STS Italia Conference*, 2014.

N. Proctor. Digital: Museum as platform, curator as champion, in the age of social media. *Curator: The museum Journal*, 53(1), January, 2010.

T. Robertson. The public availability of actions and artefacts. *Computer Supported Cooperative Work* 11 (3-4), 2004.

M. Salgado. *Designing for an Open Museum. An Exploration of Content Creation and Sharing Through Interactive Pieces*. University of Art and Design Helsinki. 2009.

N. Simon. *The participatory museum*. Museum 20, 2010.

M. B. Stogner. The Media-Enhanced Museum Experience: Debating the use of Media Technology in Cultural Exhibition. *Curator*, 52/4, 2009.

D. Stuedahl, O. Smørdal – Computers and Composition, Designing for young visitors' co-composition of doubts in cultural historical exhibitions, 2011.

The Widget Art Gallery – A Gallery 2.0

Chiara Passa
Fine Art Academy of Rome, Italy
chiarapassa@gmail.com

Abstract: *A few years ago, I was surprised by the increasing involvement of the audience in some hot mobile-art projects; so I wanted to create a virtual exhibition space 'cheap & chic' but simple to manage for me and clearly accessible to everybody by just using an Internet connection.*

Keywords: Art, App, Installation, architecture, mobile, smartphone, Gif, Painting, Animation, Music, AR, Augmented Reality, Gallery, Museum, Exhibition, Show, Internet.

Introduction

The WAG is a virtual display environment I have thought extremely coherent in order to show digital art. Due to our needs that seem to be increasingly handheld, WAG was born in 2009. The alternative to physical space comes when I have realized that the concept of possession has given way to access. As a result, the idea of having an exhibition space available always and everywhere was born.

Figure 1. The Widget Art Gallery interior

Paper

The Widget Art Gallery is a mini single art gallery room that fits into people's pockets. The virtual gallery-room, directly on people's mobile, hosts a solo digital art exhibition related and inspired to its dynamic site-specific context every month. So the WAG works both as a sort of *kunsthall* showing temporary exhibitions and also as a museum, conserving all the past shows inside an online archive that creates a permanent collection.

Figure 2. Chiara Passa's exhibition at the WAG-IPad. The 'WAG's plan displacement' is a short gif-animation on the concept of architectural device's ruin. The smartphone bursts and destructs itself, showing its domestic/intimate side: the processor's architecture. Nowadays, it is the concept of architecture closest to our behaviors, because we are always manipulating electronic/digital devices. So, the electronic architecture is a metaphor of our digital time

I think a new era has approached for contemporary art galleries and the way to exhibit/curate the digital art. For a long time, the art system held the monopoly on curated, publicly accessible art. But the advent of the Internet makes the contemporary galleries re-imagine the nature of the gallery itself, the condition of the digital exhibition and the curatorial practice on new media art. In fact, many galleries are turning their simple websites into curatorial spaces for contextualizing, commissioning and showcasing new artworks.

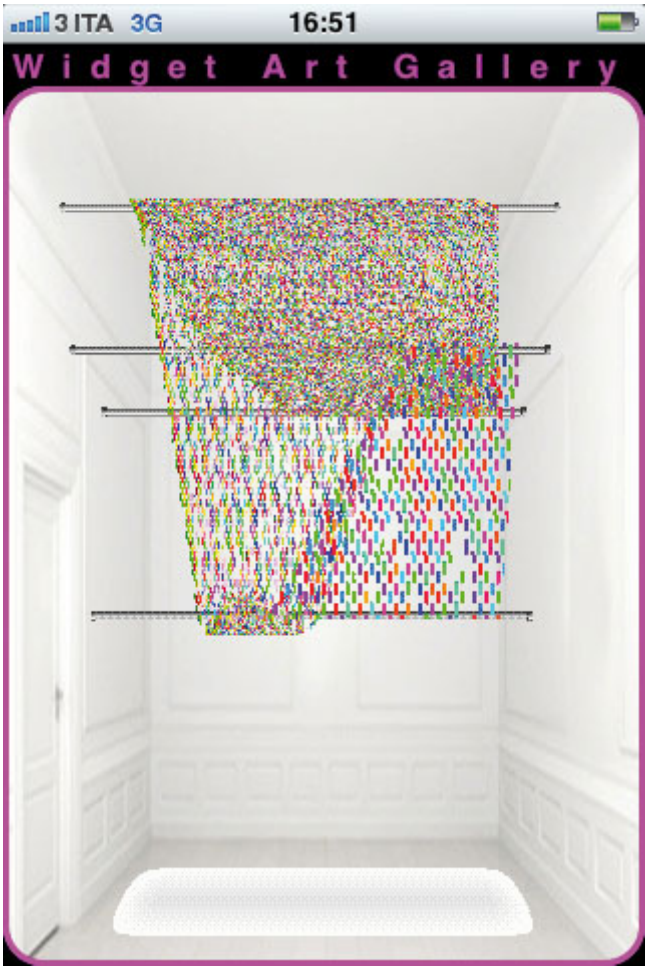


Figure 3. Yoshi Sodeoka's pixel structure at the WAG IPad. "A fabric of noise weaves itself through space. As it does the viewer can find beauty in the chaos of the interference pattern"

The mobile-show adds a plus valorem: it introduces the possibility to appreciate the artwork in relation to space in a private mode. The Widget Art Gallery is often a strange experience, it is a place where people are meant to have a private interaction within the artwork but are also surrounded by crowds; in any case, the WAG has both the possibility to be a collective and/or an individual environment that the audience can manage freely, how they want and where they need to. The virtual artwork inside the Widget Art Gallery has neither an inside nor an outside; it is not private, but it is public; it can no longer be only autobiographical, but mostly it is social. This last peculiarity characterizes and distinguishes it from the traditionally visual arts before the advent of the Internet. Related to WAG, the Gif format is a great success in art across-the-board. That is because of its multifunctional and switchable nature between video, photo and a simple static image, Gif gives artists many possibilities of expression/communication. The idea is that the Gif format is very easy to construct by artists and it is simple for me to figure out when I program the WAG exhibition.

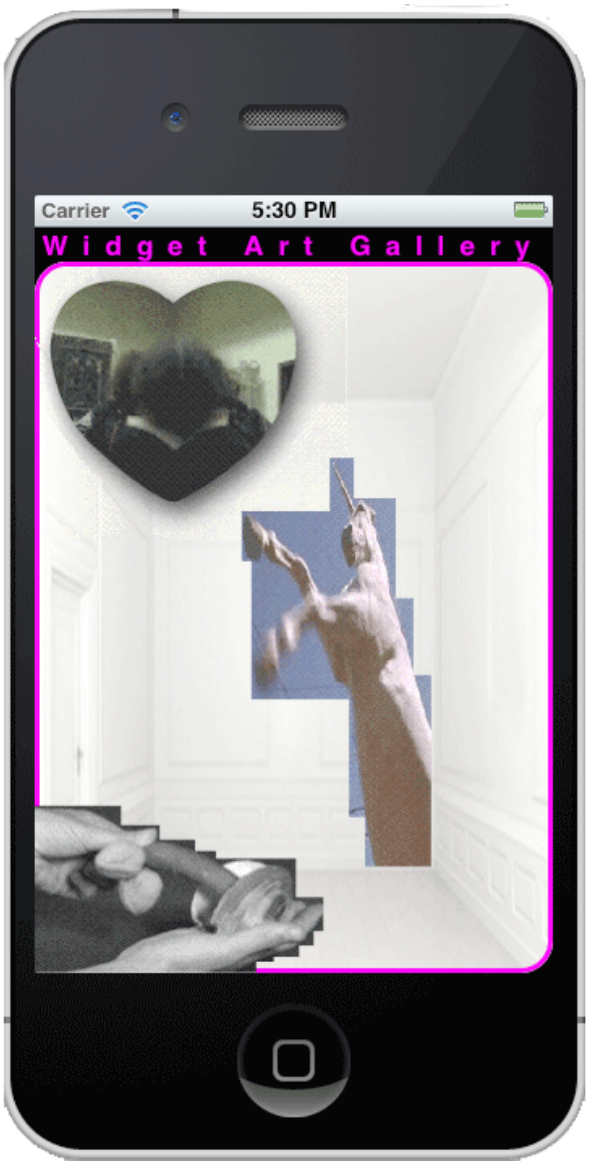


Figure 4. Lorna Mill's Gif show at the WAG-IPhone. "Making found gif collages, extracting dynamic pieces that are sexy, violent, poignant, & hilarious and repurposing them for her own mysterious needs. It's sort of art of participation that illuminates to her how she defines herself as an artist"

The possibilities of interaction regarding the time-based art in relation to the new spaces, the mobile platforms, grows up following the development of digital technologies, so the contemporary viewer is forced to undergo a sort of training (like the participant does playing video games) to understand and enjoy the time-based art that is transmitted very quickly. The WAG is an involved platform for the audience. A physical artwork (even if it is a digital creation), like for example an interactive video installation contextualized through the real space, needs a different participatory approach from the audience because the real space has a predominant role in relation to many time-based art-works aspects; as opposed to, for example, an artwork performing inside a mobile platform, which is placed into a limited space. The good stuff is that there are more people coming to watch a mobile-show, than people actually going to see a gallery exhibition.

I have built the WAG in order to also host interactive shows, for example Java artworks, sound projects, AR stuff, but this point is up to the artist deciding what he or she wants to exhibit.

Figure 5. Rollin Leonard's sculpture at the WAG osx-dashboard. "He has the idea to make replicas of Greek bust as artifacts of latex and make them jiggle with an internal motor. He never got around to doing that, but after looking at WAG's space the artist was reminded of my plan to animate the bust. This project is the outcome of that idea"

The WAG interior design I have created is inspired by a minimal room of a ninth-century building from which I took a picture of a real empty room. I believe he physical view/frame I have used and figured inside the digital device helps people understand and contextualize better the virtual artwork inside the mobile space. This is not a paradox in showing digital art, but in this way the digital environment provides a reference space, a sort of coordinates for the eyes. Furthermore, the real setting picture establishes an illusory axis between the mobile space and the virtual artwork during the show.

Figure 6. Helen Hadamidou's installation at the WAG osx-dashboard. Seven flat morphed screens displaying the artist's face affected by a virus are moving frantically up against the gallery's walls

I have chosen to build the WAG as a web-app cross-platform and device, using the html5 language and JavaScript, in order not to depend on any virtual store; in fact, I am free to make updates every time I need. I just wanted to create a virtual gallery accessible to everybody by simply using an Internet connection.

So, the Widget Art Gallery is a free Mobile Web-based App (licensed under the Creative Commons) and works online through this link: http://www.chiarapassa.it/wag/

It is also possible to download at http://www.chiarapassa.it/TheWidgetArtGallery.html the widget version for the OSX-dashboard.

References and Citations

WAG: http://www.chiarapassa.it/TheWidgetArtGallery.html
WAG past exhibitions: http://the-widget-art-gallery.blogspot.it/

The WAG was exhibited/presented and awarded worldwide, most importantly at the following:
2014 – EVA: Electronic visualization technologies and the arts conference. BCS-it, London (Widget art gallery).
2014 – "Arts in Society – The Lives of Art". Conference at Sapienza University of Rome (The Widget art gallery).
2014 – App Art Award, ZKM Museum Karlsruhe (Jury team).
2014 – Conference "La città". Università degli studi di Roma Tor Vergata (Live Architecture).
2013 – 'Academic MindTrek' Conference 2013, Tempere.
2013 – Media Art Histories'13: RENEW, Riga.
2013 – "Flossie – digital art festival", Queen Mary University, London.
2013 – MWA – Museums and the Web conference, Hong Kong.
2012 – The WAG was selected for the WSA-mobile award, Abu Dhabi.
2012 – Widget Art Gallery presentation at 'DigiHub – Art & Chat', Brighton, curated by Aharon and Phil Jones.
2012 – Art Publishing to the Future. Roma Contemporary, MACRO (Museum of Con-temporary Art, Rome). Curated by Dario Salani.
2012 – APREM Exploration 1 – "The Labophone", Fabrique de Théâtre, Frameries. Cu-rated by Valérie Cordy.
2012 – «consented ruin» group exhibition at Centro del Carme, Valencia. Curated by Nilo Casares.
2011 – "ZKM AppArtAward", Zentrum für Kunst und Medientechnologie, Karlsruhe. Curated by Heike Borowski.
2011 – e-Content Award Italy, second prize in the category "e-Entertainment and Games" (WAG-Widget Art Gallery, IPhone/IPad App). Sala Quaroni, Eur Roma.

Some interviews and reviews:
http://www.chiarapassa.it/TheWidgetArtGallery.html
WAG video presentation:
http://bit.ly/wag-video

References

Artist/conceptualizer and professor (Wikipedia). Education: Artistic Lyceum, Fine Arts Academy of Rome; Master's degree in new audio-visual mediums at the Faculty of Modern Literature. Lived around. At the moment I am living and working in Rome. My artwork combines different media: internet-art projects, animations, interactive video-installations, digital art in public space as site-specific artworks and video-sculptures. I develop also Internet-artworks such as widgets, apps and web-apps for mobile platforms.

My artwork was internationally exhibited from festivals and institutions, most importantly at the following:
- "Morphos", Vortex Dome Los Angeles. Curated by Ethan Bach. (2014);
- Media Art Histories 5: RENEW conference, Riga. (2013);
- "Not Here Not There" LEA-Leonardo Electronic Almanac, MIT Press Journal at ISEA Albuquerque: Machine Wilderness. (2012);
- "AppArtAward", ZKM|Zentrum für Kunst und Medientechnologie, Karlsruhe (2011);
- FILE | Electronic Language International Festival, São Paulo. (2011);

- "Soft Borders Conference-upgrade international", São Paulo, curated by Martha Gabriel. 18-21 of October (2010);
- Artech 2010 "Envisioning Digital Spaces", international conference on digital art, Guimarães, Portugal (2010);
- Electrofringe – festival of new media art, Newcastle, Australia. (2008);
- Festival A10 Medialab, London (2008);
- MAK – Museum of contemporary art (Vienna 2007);
- Milano in Digitale, Festival di Arte Elettronica, Fabbrica del Vapore, Milano (2007);
- MAXXI – Museo Nazionale delle Arti del XXI Secolo, Roma (2006);
- CCCB – Centro de Cultura Contemporània de Barcelona (2006);
- Museo Nacional Centro de Arte Reina Sofía, Madrid (2006);
- BizArtCenter, Shangai (2005);
- Centro per L'Arte Contemporanea Luigi Pecci, Prato (2005);
- MACRO – Museo di Arte Contemporanea, Roma (2004);
- PEAM – Pescara Electronic Artist's Meeting, Pescara (2004);
- 11° Biennale of young artists of Europe and the Mediterranean countries. Cosmos – a sea of art". Athens. (2003);
- VIPER – International Festival of Film, Video and new Media, Basel (2003);
- "XIV Quadriennale" Anteprima. Palazzo Reale, Napoli (2003);
- GAM – Galleria d'Arte Moderna Torino. Torino (2001);
- GNAM – Galleria Nazionale d'Arte Moderna, Roma (2001);
- Biennale de Valencia "El mundo Nuevo", Valencia (2001);
- 48° Biennale di Venezia, Venezia (1999);
- Fondazione Bevilacqua La Masa, Venezia (1999).

Full CV with prizes, exhibitions, festivals, presentations, talks, etc. at: http://www.chiarapassa.it/Artisticprofile.html
Resume: http://www.chiarapassa.it/SelectedExhibitions.html
Wikipedia (Ita): http://it.wikipedia.org/wiki/Chiara_Passa
Websites: http://www.chiarapassa.it/
Other stuff: www.ideasonair.net
Email: chiarapassa@gmail.com
Skype: ideasonair
Find me also at: http://www.chiarapassa.it/socialnetworks.html

The Whisperers: An Interactive Exhibition. Using Voice as Navigation for an Experiential Interface in a Museum Environment

Christopher Koelsch
Parsons The New School For Design, United States
http://christopherkoelsch.com/whisperers.html (View in Google Chrome)

Abstract: *An experiential, interactive museum exhibit, "The Whisperers" portrays a relevant and comparative historical era of paranoia where daughters spied upon mothers, neighbors eavesdropped on neighbors, and loved ones quickly betrayed one another. Inspired by the American government's scrutiny of private metadata, the exhibit in this article will illustrate the personal and intimate communication of whispering and its effects on familial and neighborly relationships underneath a statewide operation. This interactive experience describes dwellings, shadows, and spaces each with compartmentalized narratives. An environment where walls can have ears, the vents in your floor can have eyes, and the pipes in your bathroom are conduits of dark tunnels through an atmosphere of conspiracy, "The Whisperers" is a world where collective scrutiny, hushed tones and murmurs are the only communication for survival. The article will also relate the current authoritarian monitoring of personal data and current studies of its affects among individuals, families, and collective groups for a presentation, mirrored lesson from history. Represented as a scale model of a composite of historical time and form and built in its descriptive entirety as a first iteration, the exhibit/experience will present the first user experience with its successes and failures with proposed solutions. It also seeks to explore this scale model realized as a life-size immersive environment based on the technology it has practiced and researched.*

Keywords: historical, interactive, circuit, experiential, Jitter, code, firewire, audio, phonics, voice-activated, political, surveillance, NSA, metatdata, secrets, authoritarian, scrutiny, lessons, monitoring ,immersive, technology

Introduction

Liubov Tetieuva recalled her childhood in the 1920's in Russia during the Soviet regime and the surveillance of the Russian Komosol, the Russian secret police, quoted from Orlando Figes' The Whisperers, an historical record of private life in Russia:

> If my parents needed to talk about something important, they would always go outside the house and speak to one another in whispers. Sometimes they would talk with my grandmother in the yard. They never held such conversations in front of the children – never […] Not once did have an argument or talk critically about Soviet power – though they had much to criticize – not once in any case that we could hear. The one thing my mother always said to us was: 'don't you lot go chattering, don't go chattering. The less you hear the better.' We grew up in a house of whisperers. (Figes, 2007, Pg. 40).

Surveillance of its own citizens during this time from the Soviet government itself managed to infiltrate every aspect of Russian society. With collectivization of living spaces in habitats (three families in one apartment due to a governmental mandate for a reduction of space), the Soviet regime was able to reinforce its policies through collective scrutiny in the *kommunalka* (communal apartment) for the next 60 years.

Orlando Figes further describes collectivization in Russia in The Whisperers:

> The kommunalka played a vital role in this collective system of control. It's inhabitants knew almost everything about their neighbors: the timetable of the normal day; their personal habits; their visitors and friends: what they purchased; what they said in their own room, for the walls were very thin (in many rooms the wall did not extend to the ceiling). Eavesdropping, spying, and informing were all wrapped in the communal apartment of the 1930s, when people were encouraged to be vigilant. Neighbors opened doors to check on visitors in the corridor, or to listen to a conversation on the telephone. They entered rooms to 'act as witnesses' if there was an argument between man and wife, or to intervene if there was too much noise, drunken behavior or violence. The assumption was that nothing could be 'private' in a communal apartment, where it was often said that what one person does can bring misfortune to us all (Figes, 2007, Pg.180).

There was a decibel level that was clearly a hush in these dwelling spaces. An atmosphere of intense anxiety and frustration. Figes continues to illustrate the sound in this atmosphere:

> Private conversations were a particular problem. Talk was clearly audible between adjoining rooms, so families adopted by whispering among themselves. People were extremely careful not to talk to neighbors about politics (in some communal partners the men would not talk at all). Families from a bourgeois or noble background were careful to conceal their origins. Alina Dobriakova, the granddaughter of a czarist officer, grew up in a kommmunalka in Moscow where all the other residents were factory workers and their families, 'a conglomeration of unfriendly people,' she recalls […] Her husband Alexei, who was terrified of the Soviets in the next room, would remind her not to shout: 'whisper, or we shall be arrested' (Figes, 2007, Pgs. 183-4).

Reflection upon cases regarding 48 people using one bathroom due to collectivization, mothers who allowed their children complete freedom out of fear for the child's anger and their impending report to the authorities, and parents forced to speak openly only under the bed covers in the dark, "The Whisperers" endeavors to produce this feeling of apprehension, uneasy stillness, darkness, and even tender moments only allowed in absolute concealment.

Precedents and References

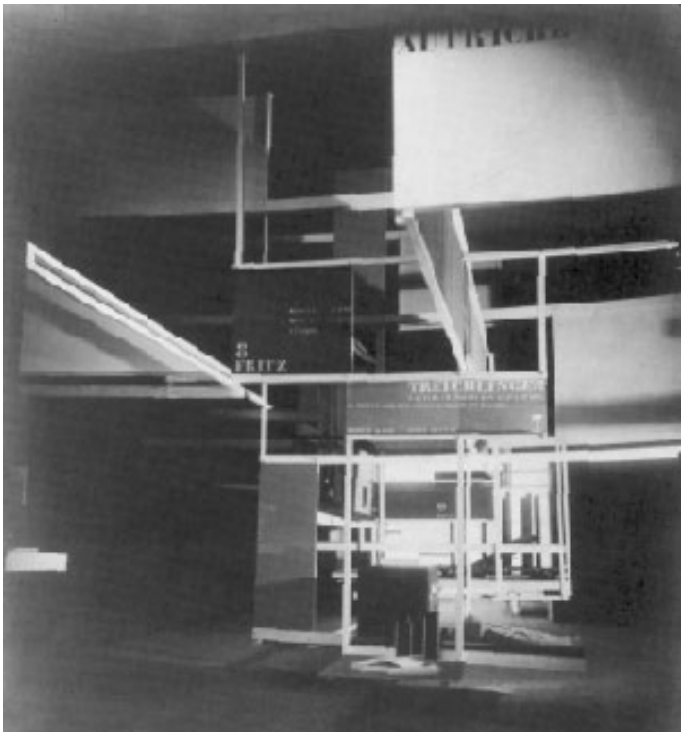


Figure 1. *City in Space,* Exposition Internationale des Arts Decoratifs, Paris, 1925

"The Whisperers" is based upon this historical text, The Whisperers by Figes. The author's descriptive and emotive writing was powerful enough for an impetus of depicting of lives inside small spaces during this time in history. But how could this be communicated physically, attempting to capture the emotions of the individuals who lived in these compartments? And can there be a direct participation of the viewer, or rather user, with this experience? How can the suffocation of statewide surveillance be communicated on the personal level?

The exhibition design of Frederick Kiesler and his architecture within exhibits was examined for this project with doors and unattainable reveals (vents, windows, openings).

Janet Cardiff's work with the "Cabinet of Curiousness" (Cardiff/Miller) inspired ideas of closed spaces in an installation that trigged a mechanical and digital reaction.

Figure 2. Janet Cardiff's "Cabinet of Curiousness" (1991)

Gaston Bachelard's The Poetics of Space (Bachelard, 1994) was researched to assist the idea of how spaces contain memory and past histories. Psychological cases of individuals who conform when in groups and how "mob rule" takes over once a critical situation presents itself was examined. The infamous psychological testing data of the Milgram Experiment data was further explored.

The current American governmental surveillance of the NSA, TSA, FBI and other authorities was another area of research for "The Whisperers." How safe is our metadata, private information, expressions of our private lives? How is it that the Internet – the largest tool in history for a freedom of expression, is now the largest authoritarian device for monitoring? The current censorship of the Putin government also pushed this concept further. The idea of taking an innocent, loving family relationship using expressions such as "I love you," and turning these phrases into dangerous sentiments was an interest to this author. What is the idea of "over"-surveillance between neighbors and loved ones? In other words – "over"-surveillance of the Internet through authorities

listening to simple phrases, emails exchanged in private becoming suspicious? What effect this twist had and what voyeurism, listening through walls, etc., had upon individuals in a contained world was imperative to explore for this project. By utilizing an historical simile in time compared to today's dilemma for expression, the idea of building a physical scale model of a Russian apartment building, a composite of time and form, was constructed to convey an experience that required the user to speak and therefore reveal unexpected, hidden information. The user experience of whispering would directly correlate to the whispering of the "imaginary" individuals of those dwelling inside to bridge this relationship. The scale model would prove to be a first iteration for an eventual design concept for a life-size, immersive, interactive museum experience. How speaking, whispering can become a navigation for narrative in an experiential museum, didactic environment is being explored.

Concept Realized

The Whisperers" was built in May of 2013 as an scale model of a Soviet dwelling in a large city. The project reflects the design of Soviet "Khrushchyovka", "Stalinkim", and "Brezhnevki:" cramped tenement housing devoid of ornament or any housing aesthetic built during the last century. Large spaces for one family such as an entire city home now condensed into several apartments for several families, or "kommunalka," are represented. This scale model consists of four floors with partitions that resemble the hasty divisions constructed in buildings during the first Five Year Plans. The dwelling contains reveals on various floors consisting of windows, vents, and pipes from the exterior of the scale model that provide digital inputs to reveals of the unit's interiors. These exterior reveals are also, however, the pathway to the narrative of the experience: pipes represent trails or conduits to various other compartments, various unmatched period windows provide glimpses into corners and spaces, and vents are a gateway for tunnels that lead to various areas.

Figure 3. Brezhevnki in Bishkek, Russia

Coupled with glimpsing into these exterior spaces and examining these interior divisions, the user experiences how whispering or speaking in a low voice enacts changes in the scale model of the dwelling. If a user whispers into an input of a vent, a new insight or experience present itself as a vignette; while it is not possible to glimpse inner compartments of a space unseen from an exterior window, door or crack due to architecture or darkness (inactivity), "whispering" into these exterior reveals will reveal secrets and information that will

expose these inner compartments. These exterior reveals will also allow two users to view and experience the exhibit: if one user whispers into a window on the left edifice of the dwelling or building and another on an opposite side, it will display information and trigger an experience on another unit. That is, one family's whisper or talk to another family or individual – about another family – are interrelated.

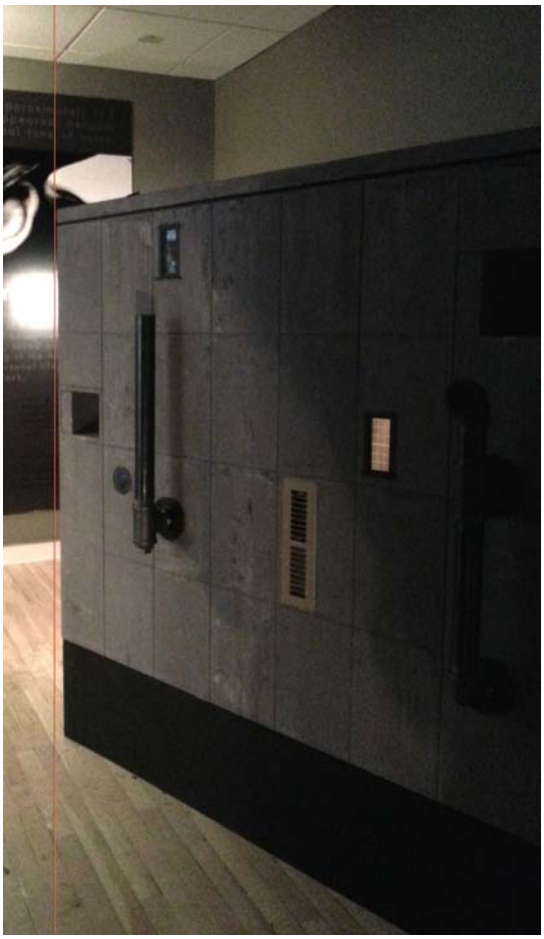


Figure 4. Gallery Area showing scope

User Scenario

The ideal environment for the experience of the project is a silent room without noise as much as possible. As the user approaches the scale model, there is moderate instruction in the exhibition room on how to experience the model/project ("whisper into any reveal"). The act of whispering seeks to be a vehicle for narrative: if the user chooses to speak/whisper, a digitally generated echoed representation of their voice is heard: an amplifier and microphone placed near window(s) and vent(s) obtains the audio of the speech and is processed by the software of MAX/MSP. Speech in whispers echo on a digital array suggesting a larger volumetric space inside the structure not readily seen. The whisper then triggers a compartment on another area of the building – this could be an inner compartment directly in the line of the user's vision (deeper inside the scale model or on another floor of the building). Some outputs from the user are unclear. They can be heard or seen on different areas of the architecture – but may not be in the immediate perspective of the user. At the same time, another user could whisper into another window and enact a third compartment (two families, groups, or people whispering about another family group or person).

Figure 5. Façade of "The Whisperers" showing openings of windows, pipes fabricated from iron, floor vents, and miniature windows

In addition to audio, the outputs of the whispering also reveal some of the walls to be translucent: a whispers enacts a light, and the light will reveal wall(s) with silhouettes of a family sitting at a dinner table, two people whispering, some individual walking. This will be accomplished with several media: with a LCD display mounted inside the scale model or an electroluminescent panel showing a silhouette of the action above. Also to be triggered is additional audio aside of an echo: mp3's of someone typing and as the user approaches the reveal, the audio senses the motion and changes to someone listening to a forbidden broadcast, etc.

In addition, whispering further reveals walls that become video: shot from a birds-eye perspective, peering at action through a hole, glimpsing fights in doorways, lovers secretly seen from an above vent in bed. When a user whispers, the idea of a whisper revealing a secret, something meant to be unseen and unknown, is immediately displayed. An important part of the UX is the complete and immediate cessation of the "secret" once the speaking stops. This involved technology with the applications of Jitter and MAX MSP code, the microcontroller of Arduino and its associated C++ language, a firewire interface to separate inputs/outputs into channels, amplifiers, and hidden mics. This technology uses Jitter to flutter the enaction of the video only started and stopped with voice. The hope is for the user to experience whispering as to reveal guilty actions, hidden truths, acts against "the people." A whisperer can cause trouble, display who is guilty of espionage, and sell another family friend, neighbor, and loved one to the KGB. n important part of this interaction is a set of the volume of the microphone at a cap: any user voice louder than a whisper will not cause any action or reaction. This is a decibel threshold. A whisper or low voice at a certain level would be vital for this activity. The user must also be in close proximity to the amplifying microphone. This filters out the background noise around the model.

Some of the imagery of the reveals are not to scale: the exterior scale does not match the interior scale. The user should be allowed to experience a sense of darkness and peculiarity. One pipe opening at the top of the project allows a whisper to reveal someone on the bottom floor or basement: a LCD display shows a video of a Soviet individual shot from above listening to perhaps an other neighbor in a next compartment.

A video of this user scenario may be seen at: http://christopherkoelsch.com/whisperers.html.

Figure 6. Main circuit inside the structure consisting of microcontrollers, displays, a firewire interface, and an Apple-Mini

Design of Technology

The audio capture consists of a firewire interface using the Tascam 1800 component. Initially, breakout boards using electret amplifiers were tested: responsive and accurate sound capture and its process flow were difficult after failing to obtain the correct range of values for a whispered enaction. Further research and testing proved these devices not to be suited for the input capture. Condenser microphones and their flexible wiring were imperative to fit into small areas especially the pipes. Gain levels had to be adjusted for filtering out background noise and the requirement of close proximity to the microphone. This was successful only with a small margin of error: the video needed a certain decibel level to play. The placement of the user's mouth near the mic didn't matter as much as the loudness of the voice. Whispers merged into low voices or murmurs proved to be a bit more successful when the user was at a comfortable distant away from the inputs. However, whispering closer to the microphone proved the desired result. It was decided that since the microphone can't denote an actual whisper, suggestions from the backdrop to whisper were the only speech command or requirement. It was also decided that since any user would not most likely shout at the structure, the low murmurs or voices from other users would be suggestive.

The output imagery consists of:

1. Two videos each with several video clips consisting of birds eye views of families cooking, a couple talking low in close quarters, a man listening to an illegal radio broadcast, a high view of a surveillance camera inside a kommunlka, a man shot from above walking up a stairwell, two men kissing in a dark room, a fight in a stairwell, a bribe or some deal happening in a corner. The user glimpses through several windows to see this output.

An important part of this interaction is a set of the volume of the microphone at a cap: any user voice louder than a whisper will not cause any action or reaction. This is a decibel threshold. A whisper or low voice at a certain level would be vital for this activity. The user must also be in close proximity to the amplifying microphone. This filters out the background noise around the model

Figure 7. User whispering into a Plexiglas to reveal imagery and video. Video and frame rate begins and ends with phonics

2. A silhouette of a family having dinner behind a damask wallpaper and having a private discussion denotes the family scene at a dinner as an example of intense emotional privacy. What was often discusses during this family ritual could be heard by outsiders as incriminating. This is also lit by an electro-luminescent panel.

Figure 8. Family at dinner with translucent wallpaper in front of EL Panel

3. A silhouette of two men whispering in shadow in a corner possibly speaking through a wall. This is backed by an electro-luminescent panel.

Figure 9. Silhouette backed on an EL Panel suggesting a private if not subversive conversation

4. A still image of a vandalized photo of Stalin placed inside a still photograph of a doorway suggests dissention, anger and discontent. Emotions of disagreement with the present government behind closed doors were criminal and eventually fatal. This is backed by an electro-luminescent panel.

Figure 10. Stalin in apartment doorway showing anger/dissenting/subversive view of the regime

5. On the right side of the structure, there is a default sound of a typewriter. When a user approaches, a motion sensor detects proximity and changes to an audio of an illegal radio broadcast.

One of the major blocks to crafting the correct code and the circuit was how to provide a how amount of voltage for the illuminated panels inside the project. The El Escudo Dos from Sparkfun, Inc. in the U.S. proved to be excellent in regulating this voltage for the circuit with the Arduino board.

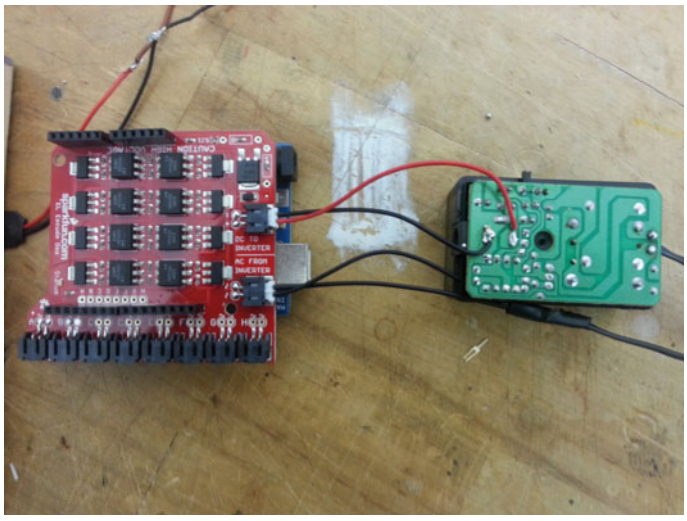


Figure 11. The El Escudo Dos shield on top of Arduino microcontroller wired to a transformer. This regulates voltage and is the central board for interactivity

User Testing and Data Outcomes

"The Whisperers" was presented in New York City in a gallery setting in May of 2013. It was displayed in a darkened, small space to convey its somber atmosphere. Dim spotlights on the project and throughout the room, was designed to give it a "noir," feeling of apprehension. As visitors/users entered the room, small signage was placed on the wall for instructions for the user: this was a design element that was debated. To obtain the atmosphere of quiet, uneasiness, the user experience did not want to dictate on how this "gadget," "installation" was to be interacted with didactically. But first time visitors were confused as to how to react with this structure. The signage gave an impetus as to how to begin. There also existed a large poster for information as to the time period and background the experience was depicting (Figure 12 below).

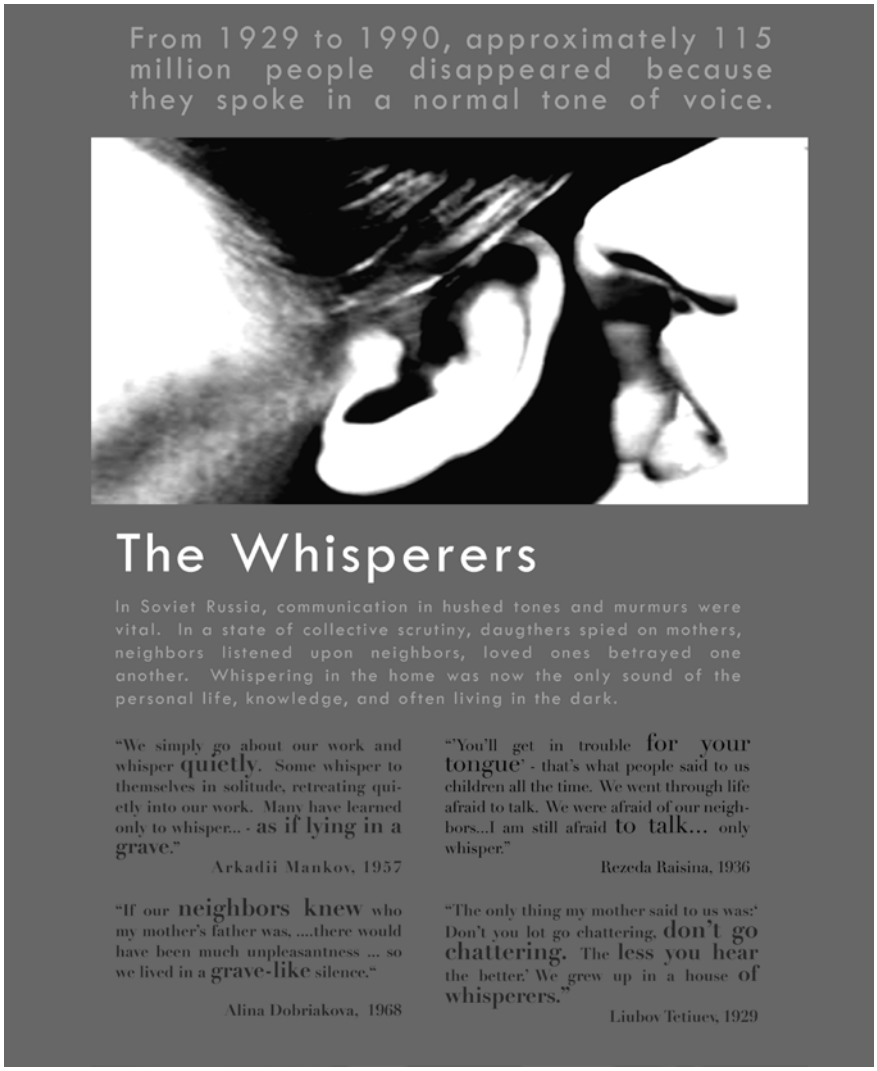


Figure 12.

The user interface of the project was designed to have the user experience obstructed and parallax views for their outputs: the user could not immediately see the visuals as to where their output was revealed on the façade of the project. This proved to be a design flaw with the user interface in the gallery setting. Some users lost interest due not to only to impatience to see this output, but also due to not being able to stay in position to whisper a second or third time due to a lack of additional users beginning the experience close to their body.

Closer movement of the visual outputs –is a key factor in the second iteration's success. However, the output of the audio echo "kickback" proved successful immediately for interest. Visitors speaking to one another in the room did subtract from the user experience: the hushed atmosphere desired and audio outputs heard were slightly lessened.

Future Iteration and Full-Scale Realization

The ultimate conceptual objective is how to create a digital museum experience, or an educationally immersive environment with a navigation by voice that fits within the theme of what the museum goer/user is experiencing. How can we experience a feeling of claustrophobia, suspicion, voyeurism, and sense of history with architecture and direct duplication of a feeling or action in a certain time? One often finds with historical or didactic exhibitions little immersion into its subject: the user reading signage, text only is too often experienced. But how can technology in this experience be invisible and not exist merely "for technology's sake?" How can technology be warranted/effective in this environment? How can the user's physical act of walking, crouching listening, and speaking/whispering prove to be a worthwhile and fruitful learning experience? These questions were posed for the idealized version of the experience as a life-size structure similar to the scale model – with stairwells/fire-escapes leading to these reveals, vents, windows, etc. Users approach the façade, physically walk up and down exterior stairs and are able to enter the *kommunalka* or compartments themselves. Similar to the scale model, A user would be able to whisper in a certain room or area – not only acting as a participant in the surveillance in revealing information – but also other users in the exhibit could see them performing "illegal" activities themselves. With the use of effective lighting coupled with two-way glass, LED screens with videos and silhouettes could reveal hidden imagery, movement, and further hidden data. Further, similar to the scale model, the same materials such as floor vents, iron piping, and Plexiglas may be used due to their actual-sized quality with non-proportion to the scale model.

Figure 13. Scale model with separate entrances in various compartments within the same structure for a realized immersive environment

There exists the problem with a life-size experience within the user flow, and user experience of single player versus a multi-player interaction. Crowd control needs to defined within this experience: several users pursuing the same input will confuse the condenser microphones. Also, several users throughout the same space decays the dignity of the atmosphere; instead of a single-user experience in a real museum environment (not practical due to to crowds and perhaps demand for entry), a construction of the architecture consisting of several compartments – each separated into "areas" within one apartment dwelling must be considered. That is, various entrances innate to their own experiences will need to be in place. It is also important to have various separate entrances to retain the feel of a the goings-and-comings of a large apartment structure.

Figure 14. Detail of scale model: two user whisper to each other in normal conversation. Through the vent in front they enact a projection from behind suggesting listening from others. This image flutters with voice

Figure 15. Further detail of scale model: user whispers through a pipe to another user and enacts a video of a man leaving perhaps leaving to report the conversation. This is a video on an LED display via two-way glass with encased lighting for translucence

Figure 16. Further detail of scale model. User approaches a sound of an illegal radio broadcast, "trips" the motion sensor and audio changes to music

Overall, a stronger link may be needed to today's restricted expression from American or foreign governmental sources (this is American-inspired due to the author's long-time residency in the United States). This may be obtained through signage in the room i.e. "today's restrictions are similar to this time period in history."

As the user interaction becomes a life-size player gamification, certain care must be taken with this future design to preserve the dignity of the time period: with almost 200 million lives lost to the Gulag, the Komosol activity of rounding up these individuals due to being "enemies of the people," this is an exhibit that cannot be taken lightly. The strategy of these "players" cannot portray too much of a "game" – running and joviality with younger players. However, there is definitely is a jovial gamification that is unavoidable. Observational user testing was conducted by at the United States Holocaust Museum in Washington D.C., due its similar themes of mass genocide, espionage, and somber exhibition design. Observations included many individuals, often from the younger audience, not having the same silent and somber collective reaction as most of the exhibit-goers. The conclusion drawn was that individuals will respond in their own way despite instruction as to theme and contents of the exhibition.

"The Whisperers" is an homage to all of those who were overshadowed during the infamy of the Holocaust in Germany, and the postwar secrecy of all of the Five Year Plans. It was designed due to a fascination with how human gossip, guilt by suspicion, and vested interests can detour lives dramatically and have a permanent effect on behavior and interpersonal relationships into old age.

References

1. Figes, O. (2007). *The whisperers* (1st ed.). New York: Metropolitan Books.
2. Kiesler, F., Bogner, D., Noever, P., & Kiesler, F. (2001). *Frederick J. Kiesler* (1st ed.). Ostfildern-Ruit: Hatje Cantz.
3. Cardiffmiller.com,. (2014). *Janet Cardiff & George Bures Miller | The Cabinet of Curiousness | 2010*. Retrieved 10 July 2014, from http://www.cardiffmiller.com/artworks/inst/cabinet_of_curiousness.html

4. Cardiffmiller.com,. (2014). *Janet Cardiff & George Bures Miller | Whispering Room | 1991*. Retrieved 12 January 2014, from http://www.cardiffmiller.com/artworks/inst/whispering_room.html
5. McLeod, S. (2014). *Milgram Experiment | Simply Psychology*. *Simplypsychology.org*. Retrieved 29 December 2013, from http://www.simplypsychology.org/milgram.html

Bibliography

1. (2014). Retrieved 17 November 2013, from http://www.aclu.org/files/pdfs/privacy/fusioncenter_20071212.pdf
2. Bachelard, G., & Jolas, M. (1994). The poetics of space (1st ed.). Boston: Beacon Press.
3. Kommunalka.colgate.edu,. (2014). *Communal Living in Russia*. Retrieved 3 May 2013, from http://kommunalka.colgate.edu/cfm/documents.cfm?ClipID=249
4. infowars,. (2014). *UK Government To Install Surveillance Cameras In Private Homes*. Retrieved 15 August 2014, from http://www.prisonplanet.com/uk-government-to-install-surveillance-cameras-in-private-homes.html.
5. Dernie, D. (2006). *Exhibition design* (1st ed.). New York: W.W. Norton.
6. Touchgraphics.com,. (2014). *Touch Graphics – Research – Ping!*. Retrieved 30 February 2014, from http://touchgraphics.com/research/ping/ping.html
7. (2014). Retrieved 30 April 2013, from alumni.media.mit.edu. http://alumni.media.mit.edu/~flavia/Papers/ichim_2004_Sparacino.pdf

Towards a significant Portuguese Cultural Heritage – An intervention from the Design perspective

Gonçalo Gomes
Universidade de Aveiro, Portugal

Vasco Branco
Universidade de Aveiro, Portugal

Abstract: *This paper presents ongoing research that aims to contribute to the systematisation of Portuguese Design history and the simultaneous development of an instrument of representation, analysis and discussion about his heritage. Using Portuguese Design History as a case study, we are developing tools that will enable us to promote some of the most relevant Portuguese artefacts and, at the same time, to gather the social production of knowledge about these objects. In bringing together, and confronting, inputs from scholars, Portuguese designers (in some cases, authors) and socially generated content, we intend to contribute towards the creation of new knowledge and towards a broader forum of debate about each one of these pieces.*

Thus, adding to the historical and contextual data, we are working on a deductible interpretative layer, that will come both from the designers and the project itself, but also from the uses generated by the artefacts. From a design perspective, this will allow us to answer questions such as: the objective issues needed to be solved by these objects, the conditions imposed in their constructive processes, the reflection of the designer as the author that proposed those solutions, among many other procedural constraints.

From the social realm we will be able to enhance these artefacts with new data about them in context of their use. Photographs and videos of people using them, sounds or texts describing their own personal experiences, bringing back memories and making connections with other objects and realities, are some of the data that we anticipate. This will also permit us to reinforce the collection with the inclusion of other artefacts, suggested by the public, that they consider to have had an important role in their lives, and also, in reverse, confronting scholars and designers with these selections. We believe that this approach between the public and the realm of Portuguese Design will allow a public demystification of the design processes and the recognition of its importance in our daily lives.

Keywords: 5 Design History, Portuguese Design, Cultural Heritage, Collective Memory

> "Recognising that every person has a right to engage with the cultural heritage of their choice, while respecting the rights and freedoms of others, as an aspect of the right freely to participate in cultural life enshrined in the United Nations Universal Declaration of Human Rights (1948) and guaranteed by the International Covenant on Economic, Social and Cultural Rights (1966);
>
> (…)
>
> The Parties to this Convention agree to:
> *a*) Recognise that rights relating to cultural heritage are inherent in the right to participate in cultural life, as defined in the Universal Declaration of Human Rights;
> *b*) Recognise individual and collective responsibility towards cultural heritage;"
>
> *in "Council of Europe Framework Convention on the Value of Cultural Heritage for Society", approved and signed at Faro in 27th day of October 2005 and published in "Diário da República, 1st series – nº 177 – September 12th 2008, pag. 8-20.*

The *Council of Europe Framework Convention on the Value of Cultural Heritage for Society* – signed by Portugal on October 27th, 2005 – defines the concepts, objectives, rights, responsibilities and policies relating to cultural heritage to be implemented by its signatories. This convention also emphasized the importance of citizen participation, not only with regard to the use of Cultural Heritage, but also in making decisions regarding its definition, selection and enrichment. This objective is evident in article 4, *Rights and responsibilities relating to cultural heritage*, where it is established that "The Parties recognize that: a) Everyone, alone or collectively, has the right to benefit from the cultural heritage and to contribute towards its enrichment;" and article 12, *Access to cultural heritage and democratic participation*, where it is settled that "The Parties undertake to: a) Encourage everyone to participate in: The process of identification, study, interpretation, protection, conservation and presentation of the cultural heritage; (and in the) Public reflection and debate on the opportunities and challenges which the cultural heritage represents" (INCM, 2008)

The concept of Cultural Heritage has undergone frequent revisions; thus, today, apart from physical objects and classified locations, it also includes what are designated 'heritage practices' (Harrison, 2010b). These practices, just as objects and places, are preserved and transmitted from generation to generation as a collective attribute, a fundamental element in the construction and materialisation of social and cultural identity of a group or society (Rodrigues, 2012). Thus, Cultural Heritage may be regarded as a collection of material and immaterial items, considered to be of collective interest and sufficiently relevant so as to be perpetuated throughout time, as this invocation of the past equally assumes the recording of and the legitimisation of what is most socially relevant for a group or society in constructing their social memory (Olick, 1999).

From an academic perspective, the concept of heritage has also evolved, so that today, according to Rodney Harrison it comprises two inter-related understandings: the extensive "top-down" approach, the classification and promotion of specific places by States, as repositories of regional, national and international values, which result in "official" heritage; and the "bottom-up" relation between people, objects, places and memories, from which "non-official" forms of heritage/patrimony are created, tending to occur at a local level (Harrison, 2010a).

Therefore, the role of the citizen, as an active member of the society to which he or she belongs, gains importance. It implies additional responsibilities, which, although always present, have never before been recognised or established.

It is in the field of sociology that this reality is approached for the first time in a more explicit manner, through the philosopher and sociologist Maurice Halbwachs, considered a leading exponent of "sociology of collective memory" (Rodrigues, 2012). In his work, "*La mémoire collective*", originally published in 1950, the author defends the idea that, as a rule, it is in society that people acquire their memories, but it is also in society that people recall, recognize and localize them (Halbwachs, 1990). Therefore, the author proposes that memory is a collectively constructed social phenomenon which is reproduced over time. Like cultural heritage, the social memory that is generated is dynamic, mutable and selective, recording only what it considers most important for future generations.

However, although it was this author who inaugurated "a conceptualisation of memory as an eminently collective phenomenon, and introduced this concept in the lexicon of social science" (Peralta, 2007), his discourse always assumed a subjection of individual memories in collective patterns. This is precisely the main criticism of his work, according to James Fentress and Chris Wickham, who consider Halbwachs to regard the individual as "a kind of automaton, passively obedient to an interiorised collective will" (Fentress & Wickham, 1994). It is exactly to avoid a clear association with this kind of approach that these authors favour the designation "social memory" rather than the term "collective memory" (Fentress & Wickham, 1994).

Since then, various authors have contributed towards defining a field of study dedicated to social memory (Hobsbawm & Ranger, 1983; Connerton, 1993; Prats, 1997; Samuel, 2012). According to Elsa Peralta, the most

recent studies assume that in contemporary societies, characterised by the fluidity of movements of the population, by the multiplicity of individual choices and by the plurality of discourses, it has become very difficult to comprehend the possibility of an unequivocal public memory (Peralta, 2007). Works such as *Remaking America, Public Memory, Commemoration and Patriotism in the Twentieth Century* (1992) by John Bodnar, focus on the problem of constructed memory in the public sphere, as it can be multivocal and hegemonic. This perspective is centred on memory as the result of negotiation between narratives and discourses, which implies a constant debate between creation, preservation, eradication and consentualisation of memories. It can be considered inevitable that conflicting versions of the past can exist within the same society, but it should also be pondered that "memory cannot be reduced to simple political questions, as it always ends with a reflection on the principal relations of power which were imposed at the moment, not necessarily through a coercive apparatus, but mostly through a subtle process of communication" (Peralta, 2007).

This reality is particularly relevant in this first quarter of the twenty-first century with the development and institution of new forms of communication. An array of digital tools and systems, online and at our disposal, denoted by *Social Technologies* have allowed the establishment of new models of participation and collaboration, thus causing major changes in how we communicate and, as explained by Clay Shirky: "when we change the way we communicate, we change society" (Shirky, 2010).

These emerging tools and practices that promote connections, production, sharing, localisation, publication and distribution of content (see fig. 1), are characterized primarily by their ability to facilitate greater social participation in technologically mediated contexts. Configured in systems based on electronic social platforms, around which communities grow, evolve and share experiences with each other, voluntary participation, based on the user's attribution of value, is created.

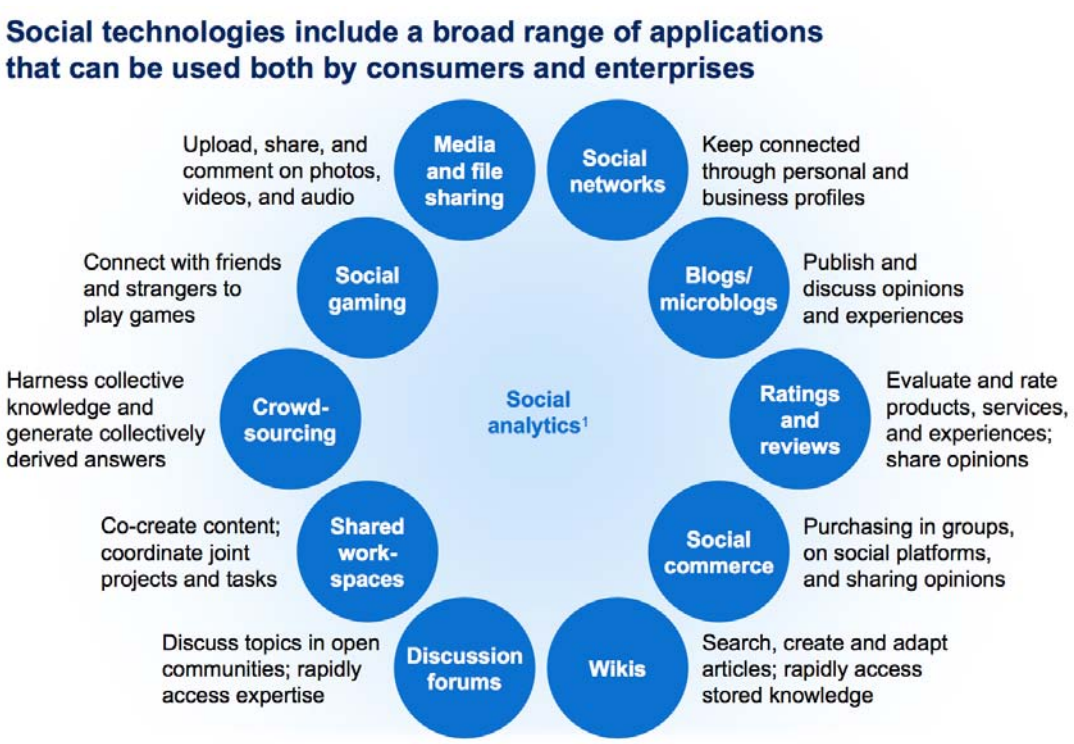


Figure 1. Social analytics is the practice of measuring and analyzing interactions across social technology platforms to inform decisions

Source: McKinsey Global Institute analysis (Chui, Manyika, Bughin, Dobbs, & Roxburgh, 2012).

Its availability in "hyperactive" societies, where speed between demand and response, idea and realization, need and satisfaction is increasing, contributed to his rapid adoption and converts them in support to many of our daily tasks. Just as email and SMS have been replacing phone calls, it is expected that social technologies will have a similar effect on other dynamics of communication (De Gennaro, 2010 *cit in* Skaržauskienė, 2013).

It is precisely in this context that we have been witnessing the emergence of new practices of social heritage, promoted by this new reality, which assigns new responsibilities to citizens, particularly with regard to their role as "produsers" – the producers and users of technologies, but also of content and services collectively created online (Bruns, 2007).

As this is a new reality it becomes essential to investigate how the integration of these new products, services and technologies is influencing not only the way citizens interact, but also how these tools promote new relationships between citizens and heritage, thus bearing a direct impact on how communities will construct our social memory, meanings and social values (Giaccardi, 2012).

Design History and Material Culture Studies

As stated by Kjetil Fallan, "surely, designed objects, their conception, manufacture, meaning and use have been subject to historical studies for a long time in older fields such as archaeology, art history and history" (Fallan, 2010). Although, despite this reality, it is recognised that Design History as a discipline in its own right is a relatively recent phenomenon, its history is comparatively small when equated with other academic disciplines.

Initially very influenced by the tradition of Art History, rooted in the work "*Pioneers of Modern Design: From William Morris to Walter Gropius*" by Nikolaus Pevsner (1936) and presented in various sub-disciplines of Design, as proposed by Hazel Conway (1987), its evolution has brought us to a reality, that, as stated by John Walker: "(...) The disadvantage of dividing the subject into separate fields is that discussions of these basic issues are bound to be scattered" (Walker, 1990).

Clive Dilnot (Dilnot, 1984a; 1984b), Victor Margolin (Buchanan & Margolin, 1995; Margolin, 1995; 2002) (Margolin, 2009) and Jonathan M. Woodham (Woodham, 1995) (Woodham, 2001) have since then stated that the relevance of developing the discipline as an autonomous branch of the "greater" discipline of history appears obvious and that the main challenge is in the standardisation of methods of analysis used by the "different types of Design Histories" that are being produced.

Today, according to Grace Lees-Maffei, Design History is characterized as "the study of designed artefacts, practices and behaviours, and their surrounding discourses, in order to understand the past, contextualize the present, and forecast the future" (Lees-Maffei, 2014). Adding Fallan´s argument that design history's 'core concern' remains 'the materiality of objects' (Fallan, 2010), we can assume that the study of the relations between people and objects, usually addressed by the Material Culture Studies, is becoming an increasing field of curiosity to Design History.

From cultural anthropology, design historians have learned that everyday objects have 'social lives' (Appadurai, 1986). Yet social scientific methodologies have been dedicated to consumption behaviour and not giving importance to the roles of Design practice, manufacture and materials. As Lees-Maffei states, "The relationship between designed goods and consumers could hardly be more extensive in capitalist society; design history can expand at least in part by harnessing popular interest" (Lees-Maffei, 2014).

It is in this perspective that we believe that a greater social involvement in the patrimonialisation of Portuguese Design, and a close attention to the information being produced by thousands of Design users available

through social technologies, is becoming a central issue in the development of a significant Portuguese Cultural Heritage.

Probing the Portuguese Community of Material Culture Bloggers

We will now describe an empirical study developed in order to offer a better understanding of the Portuguese reality regarding the use of social technologies in the process of collecting and preserving our material cultural heritage. Therefore, we have carried out an explorative study investigating the information that citizens publish everyday on one specific social technology: blogs. This was an obvious choice as blogging is probably the most implemented practice of social public sharing of personal information and, although all of these technologies have only existed for a few years, blogging is one of the oldest.

To focus our efforts, it was necessary to operationalize and circumscribe the main aspects of this topic. Initially, when defining what would be eligible to propose as an object of study, we decided to choose some keywords that would permit us, by running them on various search engines, to delimit a large sample of blogs. From that first selection we scrutinised the ones that explicitly presented at least ten posts about Portuguese artefacts in the last one hundred published. After this process we ended up with seventy-five blogs that we identified as the "universe", and from which we conducted the main investigation.

During the early stages we mostly concentrated on two research questions:

1) Does the practice of socially generating information about historical Portuguese artefacts exist and how is it characterized?
2) If the answer to the first question is affirmative, what kind of information is being published on these blogs?

Method

The research design method was mainly based on the Grounded Theory Method, whilst using aspects of analytic induction (Gerrish & Lacey, 2013) and matrix analysis (Miles, 1994). The investigation was founded on the constructivist understanding of reality assuming that individuals generate subjective reality in the process of construction (Glasersfeld, 2005) and accepting that the subjective reality of others is a limited process and can only take place through communication (Rusch, 2007). As scholars, we are consequently not objective beings, and, obviously, that influences the findings through our interpretations. Assuming this position, we have centred the investigation on the principles of constructivist grounded theory (Mills, Bonner, & Francis, 2008). The Grounded Theory Method "foster[s] seeing your data in fresh ways and exploring your ideas about the data through early analytic writing. By adopting grounded theory methods you can direct, manage, and streamline your data collection and, moreover, construct an original analysis of your data" (Charmaz, 2006). The main feature of grounded theory is a structured but highly iterative procedure of simultaneous data collection and analysis, based on constant comparison between already coded and new data samples (Charmaz, 2006).

Our investigation can be split into two different, yet interrelated, stages. In both phases, a sample of blogs was selected and analyzed. In the first stage, we conducted a survey, using the Typeform[1] platform, applied to all the seventy-five blogs identified as the "universe". This survey intended to deepen the previously initiated characterization of each of the blogs: their authors, the content and the motivations and objectives behind these practices. After two incidences of direct contact with the authors we received fifteen complete and validated answers.

[1] http://www.typeform.com

For each of these fifteen blogs, we collected and analysed the last ten posts approaching the research theme, which were the same ones that made them eligible for the universe sample.

This data was then examined and coded using the qualitative-data-analysis software NVivo[2]. We started coding the content of the posts regarding their features (i.e., the use text, images, video, sound, etc.) and substance (i.e., expertise, depth of analysis, references, etc.). The results of this first exploration were one category describing the type of content used and two categories describing the information presented in the blogs (see Results).

At this stage a second sample was drawn using dimensional sampling (Cohen, Manion, & Morrison, 2007). Using the dimensions of age, professional expertise and diversity of types of artefacts addressed, we drew a new sample of eight blogs, each embodying the considered features.

For this sample we collected and analysed the first five posts, five more from the end of the first third of the blog's lifespan, another five posts from the second third and, finally, the last ten blog posts. We chose to implement this sampling method because we presumed that blogging behaviour develops and changes through time, and that it would be interesting to see if that fact is true and if it is reflected in the published information.

Another key issue in the selection of the blogs had to do with ethical issues. Though the data in blogs is generally publicly available, and thus theoretically public, we consider it private property of its creators. Although blogs are usually addressed to the broad public, the authors still may not be comfortable with the use of their data for research purposes. This was the main reason why we only used the fifteen blogs the authors of which answered our inquiry (we asked for their consent in the introductory text of the survey).

After these two first stages we selected another four blogs for an even more detailed analysis. We conducted interviews with their authors in order to collect more comprehensive knowledge about their past, their methods, objectives and ambitions within their projects. This is a process that is still under development and from which we will not be able to present any outcomes within this article.

Results

The findings presented here are the outcome of an integrative analysis of the first sample and the following analysis of the second sample with the previously defined categories. They must be understood as preliminary results of an investigation that is still in development (see Conclusions).

Our first task – before exploring the blog posts – was to study the blog itself, including its organization, the static pages and all the existing add-ons. From this approach we clearly identified two different kinds of use for this sort of platform: 1) a first group of blogs with almost no other pages besides the "posts roll", short posts mainly constituted of images and presenting a long list of links to other blogs of the same kind; 2) a group of blogs with an average of four other pages besides the homepage, including one for the blogs' objectives and authors' personal information, bigger posts supported by long texts and various images, and a less impressive list of other blogs that, in this case, are usually of a more institutional nature.

Although not explicitly indicated by the kind of organization of the blog, we suspect that in the first case we are dealing with a more personal use of it as a tool to gather information and, in the second case, as a publishing platform of personal generated content. Also, regarding the first group, the publications are usually anonymous and, regarding the second group, they tend to be identified by the author.

It was interesting to see that both kinds are typically projects of one single author and almost all of them state the importance of sharing this information so that it "doesn't get lost in time" and to keep the memory of traditional Portuguese artefacts alive.

[2] http://www.qsrinternational.com/products_nvivo.aspx

Regarding the substance of the information published, we have divided our evaluation into two different categories: one regarding the expertise about the subject matter and another concerning the depth of the analysis.

Mainly through the information collected in the second sample we could recognise that almost half of the bloggers considered were also designers or design students. By itself this was not a key feature in the level of expertise of the posts since the majority of them opted for shorter posts, mostly with images. Obviously, we found some professional designers with a more profound analysis of the matters they were publishing about, but we located the same attitude in other bloggers with lesser relations with the Design field.

Bearing this in mind, we can state with some assurance that the depth of the information published is related with other issues, like the time available to research and write (some of the surveyed authors identified this question as a key factor) and the urge that some of them personally demonstrate in their "mission" to preserve the memory of artefacts that were important to them on a personal level.

In this regard, is also important to emphasize that many authors questioned referred to the importance of having digital repositories available on-line as accredited sources of information. Almost all of those who develop deeper analyses and longer posts with many images considered these sources as fundamental in their process of creation.

One other important issue that we realise about this subject is that all of these efforts conducted by the bloggers constitute a very rich source of social heritage since, in some cases, even if they publish just one image of a single piece, that can constitute a focus of discussion and enrichment by other users, about a artefact that, in another situation, could just disappear into oblivion.

Conclusions and current developments

Primarily we would like to point out that, given the nature of our sampling procedures, the facts do not permit us to make absolute conclusions about the entire Portuguese material cultural blogging. However, some assumptions might be drawn through the analytical generalisation process that we described in this article.

This is research in progress and until now its progression has allowed a very detailed, iterative analysis, resulting in an analytical framework for this type of blog. In our opinion it will barely allow any further verification of the results since the universe of Portuguese bloggers is not vast enough to permit a deeper corroboration.

Although we had dedicated some attention to the blogging behaviour of the authors, the purpose of our investigation is not to describe it. Instead, we intend to study the kinds of information they deliver in their blogs and how they are contributing to the establishment of the Portuguese Cultural Heritage through this medium. This specific process of analyses permitted us to certify that this is a reality that already happens through social technologies.

As a particular contribution to the discipline of Design History we consider that these practices will be an equally important input and, at least in Portugal, we can verify that the "raw material" for this connection already exists.

As a development of this project we are now integrating these social contributions in a relational matrix with other inputs that come from Portuguese designers and Portuguese Design historians (scholars).

One of these initiatives includes the study of the "Iconography of design – Portugal 20th Century" selection, made by the designer Carlos Rocha as a special order from de CPD – Portuguese Centre of Design at the beginning of the 21st century (see fig. 2). We are interconnecting this selection with another group of artefacts that

we gathered through the examination of some *extant texts* (Charmaz, 2006) of the Portuguese Design historians Maria Helena Souto, Rui Afonso Santos, Margarida Acciaiuoli, João Paulo Martins, Ana Tostões and Nuno Lacerda Lopes, also reflecting on the Portuguese Design in the 20th century and first published in the 2001 CPD – Portuguese Centre of Design yearbook (CPD, 2001). From this intersection we established a new sample encompassing the artefacts in common in both sources. This new selection will be explored within the blogs from the "universe" sample and the discourses from the different sources will be compared and analysed.

Figure 2. "Iconography of design – Portugal 20th Century" selection, made by the designer Carlos Rocha

As this is a work in progress, we cannot yet present any valid results. However, we believe that from the intersection of these three dimensions of analyses we will accomplish deeper levels of knowledge about Portuguese artefacts and, hopefully, a more meaningful history of Portuguese Design.

References

Appadurai, A. (Ed.). (1988). The social life of things: commodities in cultural perspective. Cambridge University Press.

CPD. (2001). Anuário 2001 . Lisboa.

Barbosa, H. (2011). Uma história do design do cartaz português do século XVII ao século XX.

Bruns, A. (2007). Produsage: Towards a broader framework of User-Led Content Creation. Paper Presented at the Creativity & Cognition 6, 13-15 June

Buchanan, R., & Margolin, V. (1995). Discovering Design. University of Chicago Press.

Charmaz, K. (2006). Constructing grounded theory. Thousand Oaks.

Chui, M., Manyika, J., Bughin, J., Dobbs, R., & Roxburgh, C. (2012). The social economy: Unlocking value and productivity through social technologies. McKinsey Global Institute.

Cohen, L., Manion, L., & Morrison, K. (2007). Research Methods in Education (6 ed.). Routledge.

Connerton, P. (1993). Como as sociedades recordam. Oeiras: Celta Editora.

Conway, H. (1987). Design History: A Students' Handbook. Routledge, 240.

Woodham, J. M. (2001). Designing Design History: From Pevsner to Postmodernism. Communication Research Archive 1 (1). ISSN 1177-3707.

Dilnot, C. (1984a). The state of design history, part I: Mapping the field. Design Issues, 4-23.

Dilnot, C. (1984b). The State of Design History, Part II: Problems and Possibilities. Design Issues, 3-20.

Fallan, K. (2010). Design History: Understanding Theory and Method. Berg.

Fentress, J., & Wickham, C. (1994). Memória social. lisboa: Teorema.

Giaccardi, E. (Ed.). (2012). Heritage and social media: Understanding heritage in a participatory culture. Routledge.

Gerrish, K., & Lacey, A. (2013). The Research Process in Nursing. Wiley-Blackwell.

Glasersfeld, E. V. (2005). Thirty Years Constructivism. Constructivist Foundations, 1(1), 9-12.

Lees-Maffei, G., & Huppatz, D. J. (2012). Design History: From Service Subject to Discrete Discipline. Design Frontiers: Territories, Concepts, Technologies.

Halbwachs, M. (1990). A memória coletiva. (L. L. Schaffter). Vértice.

Harrison, R. (Ed.). (2010a). Understanding the politics of heritage. Manchester University Press.

Harrison, R. (2010b). What is heritage? In Understanding the politics of heritage. Manchester University Press.

Hobsbawm, E., & Ranger, T. (1983). The Invention of Tradition. Cambridge University Press.

INCM. Convenção Quadro do Conselho da Europa Relativa ao Valor do Património Cultural para a Sociedade, Diário da República 1-26 (2008).

Margolin, V. (1995). Design history or design studies: Subject matter and methods. Design Issues, 4-15.

Margolin, V. (2002). The politics of the artificial: Essays on design and design studies. University of Chicago press.

Margolin, V. (2009). Design in History. Design Issues, 25(2), 94-105.

Martins, S. D. T. (2011). A memória de um lugar: discursos e práticas identitárias na freguesia do Castelo em Lisboa.

Miles, M. B., & Huberman, A. M. (1994). Qualitative Data Analysis. SAGE Publications.

Gideon, S. (1948). Mechanization takes command. A Contribution to Anonymous History.

Mills, J., Bonner, A., & Francis, K. (2008). The Development of Constructivist Grounded Theory. International Journal of Qualitative Methods, 5(1), 25-35.

Olick, J. K. (1999). Collective Memory: The Two Cultures. Sociological Theory, 17(3), 333-348.

Peralta, E. (2007). Abordagens teóricas ao estudo da memória social: uma resenha crítica. Arquivos da Memória, (2), 4-23.

Prats, L. (1997). Antropología y Patrimonio. Barcelona: Ariel.

Woodham, J. M. (1995). Resisting colonization: Design history has its own identity. Design Issues, 22-37.

Rodrigues, D. (2012). Património cultural, Memória social e Identidade: uma abordagem antropológica. Ubimuseum.

Rusch, G. (2007). Understanding: The Mutual Regulation of Cognition and Culture. Constructivist Foundations, 2, 118-128.

Samuel, R. (2012). Theatres of Memory. Verso Books.

Skaržauskiené, A., Tamosiûnaitè, R., & Žalénienė, I. (2013). Defining Social Technologies: evaluation of social collaboration tools and technologies. Electronic Journal of Information Systems Evaluation, 16(3).

Shirky, C. (2010). Eles vêm aí. Actual Editora.

Reyner, B. (1960). Theory and design in the first machine age. Praeger Paperbacks, New York, 1967, 1970.

Walker, J. A. (1989). Design history and the history of design. Pluto Press (UK).

This work is funded by FEDER through the Operational Competitiveness Programme – COMPETE – and by national funds through the Foundation for Science and Technology – FCT – in the scope of project PEst-C/EAT/UI4057/2011 (FCOMP-OI-0124-FEDER-D22700).

Confabulated Architecture

Jae Kyung Kim
Information Experience Design programme, Royal College of Art, London

Abstract: *Confabulated Architecture is a research-based design project made in collaboration with Sir John Soane's Museum in London. It addresses the question, what impacts does online search have for informing physical museum experiences? To investigate this, I asked people who had never visited Sir John Soane's museum to draw it, based solely on someone else's online review. The main features from the drawings were then used to create three fragmented models using 3D printing, to demonstrate how our perception of museum space is changed through online search. The 3D printed outcome gave an interactive tactile experience to convey the invisible changes in perception embedded in technology, and represents an imaginary physical-digital version of the museum that expresses the potential impact of how internet-based information from social media mediates our understanding of real places and real lives.*

Keywords: Sir John Soane's Museum, Social Media, Online Search, Museum Experience, Information Architecture

Introduction

The rise of digital and social media increasingly affects our daily lives. According to Löwgren and Reimer (2013), people formerly known as 'the audience' no longer only consume but now produce and even design content with many new forms of digital media – including such popular social media as Facebook, Twitter and Flickr.

In this situation, shared information in social networks creates a new cultural form in unexpected ways. It has been called 'memes,' following Dawkins, who explains how cultural information spreads from person to person. A meme is an "the idea of a unit of cultural transmission, or a unit of imitation" (Dawkins, 1976: 206). In the digital age, these memes multiply rapidly as a form of cultural genes, affecting the way we imagine places, objects and phenomena surrounding us. In fact, the computer media revolution affects all stages of communication, including acquisition, manipulation, storage and distribution; it also affects all types of media – texts, still images, moving images, sound, and spatial construction (Manovich, 2002: 19). Software is thus not only a technological environment but also a social and cultural one that enables us to construct images and meanings through interaction with websites and applications.

We have many opportunities to build up our identity and experience throughout our lifetimes, through education, travel, relationships, and so on. People experience space in varying ways, and this contributes to the development of a sense of self. As people increasingly use online media, however, we accustom ourselves to create artificial memory from the information we access. This is how Carr puts it:

> The introduction of new storage and recording media throughout the last century greatly expanded the scope and availability of "artificial memory." Committing information to one's own mind seemed ever less essential. The arrival of the limitless and easily searchable data banks of the Internet brought a further shift, not just in the way we view memorisation but in the way we view memory itself. The Net quickly came to be seen as a replacement for, rather than just a supplement to, personal memory (Carr, 2011: 180).

Our communication devices have become an indispensable part of our lives, and ways of exchanging information have been changed by the devices' affordances and materials – specifically smooth and opaque glass

surfaces. This is touch without texture. Our gestures for getting information have become mainly swiping and touching, and arguably we have lost sight of other sensory experiences.

What impacts does online search have for informing physical museum experiences? My focus is on museum architecture, addressing how this software culture shapes our collective imagination, specifically what impact online search has on informing our physical museum experience. The research question was investigated in a project in collaboration with Sir John Soane[1]'s museum in London as part of the Information Experience Design programme at the Royal College of Art in 2014. Soane was an architect in the 18th Century, who designed the Bank of England and other important buildings, and assembled a large and eclectic collection of objects from around the world. One of the aims of the project was 'understanding the relations between cognitive and physical architecture', and it offered me an opportunity to explore how our perception of museum space is changed through online search.

The project started from a quote from the designer Kenya Hara: "A designer creates an architecture of information within the mind of the recipient of his work" (Hara, 2007: 156). I argue that not only designers are able to build such information architecture in their mind, but the general public also does in the process of getting information, whether online or in physical space.

Hara shows how people create an image with external sensory stimuli in connection with revived memories. This implies that everyone has creative tools in their minds for constructing memories. I apply this concept to people's digital experience of Sir John Soane's Museum through online searches which are aimed at constructing a sense of place before their visit, through an alternative cognitive process. I wanted to compare the 'information architecture' structure constructed from such searches to the real museum architecture.

Research Design

The project was developed by collecting data from online reviews of the museum, which were then used to inform participants' drawings of the museum in an adaptation of the evaluation method called Personal Meaning Mapping (Falk, 2003). The drawings then informed the design and 3D printing of physical models as a final outcome.

Data Collection

I hypothesised that when we collect information in digital form before a museum experience, our cultural perspectives are changed by collaborative and recursive social media activities such as sharing, tagging and posting relevant museum contents. According to Cameron and Mengler (2009), museum collections become subject to mobile flows and fluidity, as they are inducted into the world of 'hyper-complexity' referred by the cultural theorist John Urry (Ibid., p. 191). This draws attention to cultural (hyper)-complex perspectives as part of a new cultural turn, which is consumed in many different and unexpected ways through continual network environments. Cameron describes these complex cultural phenomena in the context of museum collections:

> Google-mediated searches are enabling the 'networked object' to play a role in political interventions in public culture … This highlights the fluidity, complexity, contested and political nature of cultural interactions and exchanges around what an object might mean. It also demonstrates how the divide between so-called high culture and popular culture, museum culture and public culture can spontaneously dissolve, and how easily people can combine museum collections with other cultural forms (Cameron, 2012: 270).

[1] Sir John Soane was an English architect in the 18th century, who designed Bank of England and his house, in Lincoln's Inn Fields, London, has opened to public as a museum having the of the art works and architectural artefacts.

Interacting and exchanging cultural information in the complex and recursive network causes multiple representations and makes a form of visible connectivity, whereas ever-invisible data are hidden in the Internet infrastructure. Despite these limitations from digitised processes to inform the real museum experience, most museums use social media as a means of communication with visitors and potential visitors.

Sir John Soane's Museum's digital activity, as with other museums, has centred around its main website and also social media – now with more than 5,000 followers on Twitter and more than 6,000 'likes' on Facebook. The museum shares the latest research, discoveries and event information. It has found that its website and social media usage have become increasingly important channels for communicating with its audience, according to the museum's Annual Review (2013).

As pre-visit experience of the museum, all this data presumably shapes visitors' imaginations about it. To inform my 'Confabulated Architecture' research, I decided to use reviews of visits to the museum, which were solely text based. After comparing data from Twitter, Facebook and Google, I determined that Google reviews appeared to be pure impressions written by museum visitors, not promotional content from the museum. Examples are shown in Figure 1.

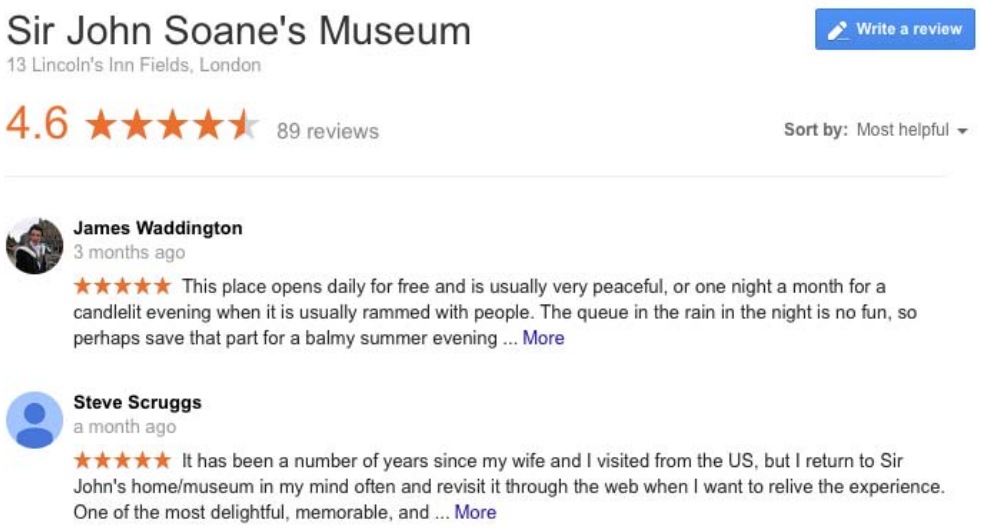


Figure 1. Sir John Soane's Museum on Google Review (screen captured on 02.09.2014)

A total of 23 reviews were used to analyse visitors' experience, and why they recommended the museum. Written language on the web connects place, people, things and knowledge digitally, influencing a culturally complex perspective and specifically, pre-visit experiences. According to Shelden:

> From a computational perspective, these diverse phenomena and the connections between them can be viewed – and, more importantly, tractably traversed – as manifestations of essentially the same technical and theoretical structure of networked space(s): geometric, parametric, knowledge domains, and the digital and physical realms (Shelden, 2013: 37).

Personal Meaning Mapping

Throughout the research process, I wanted to get an image based on multiple sensory stimuli, and evoke memories of the participants to create a bridge between virtual and physical museum space, drawing 'confabulated architecture' images from online information. Adapting Falk's (2003) method of Personal Meaning

Mapping (PMM) for my research, I asked people who had never visited the museum to draw an imaginative expression, based on the collected text reviews from those who had visited.

I gave the drawing task to 23 participants who were studying or teaching art and design at the Royal College of Art, and also considered to match gender and age between reviewer and illustrator. There was also a limitation that they mustn't look up any related images of Sir John Soane's Museum to inform their drawing, but draw only from the symbolic contents through the reading process in combination with their unconsciousness. The imaginary and symbolic dimensions should bring participants into a 'realistic illusion' (Lefebvre, 1991: 29).

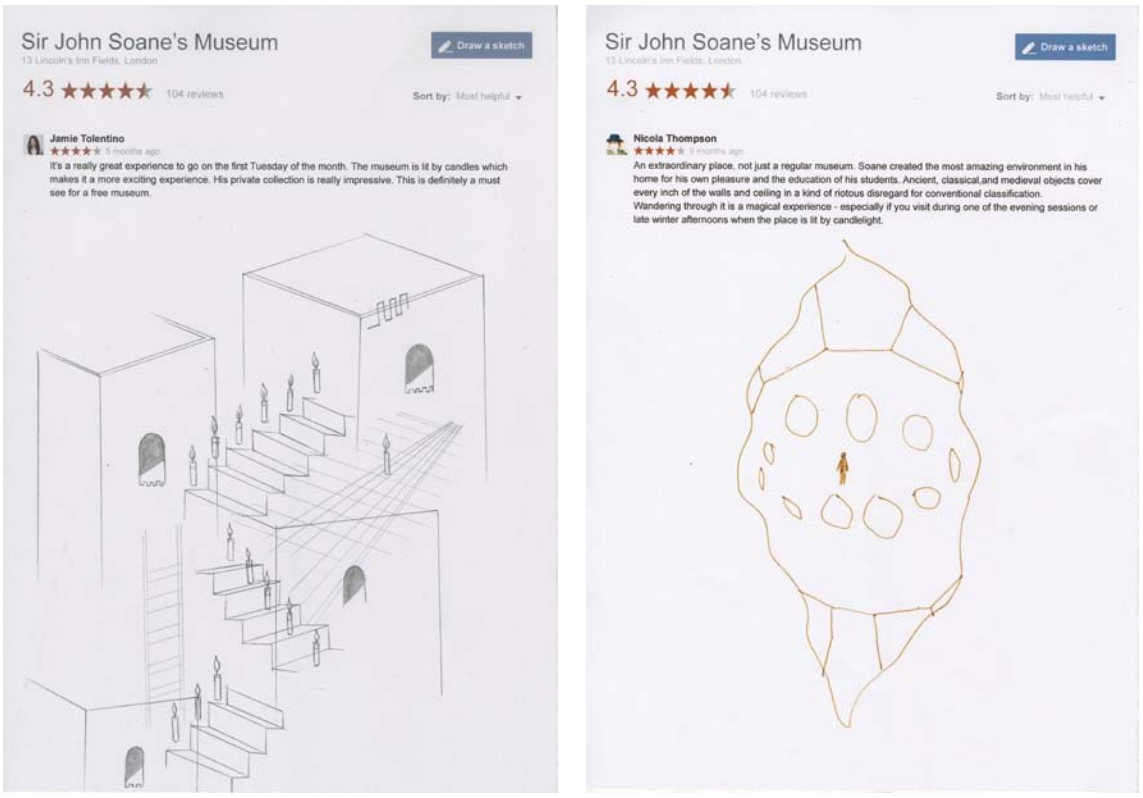


Figure 2. Drawing from interviewees and questionnaire paper based on Google Review

The resulting drawings were categorised by exterior and interior of imaginary museum space. A notable feature was a depiction of the monthly event in which the museum is lit by candlelight. These events cause long queues due to their popularity.

According to Anusas and Ingold (2013), "Data displays presuppose a world of objective properties that are given quite independently of the direct sensory engagements through which people perceive and come to know their surroundings." This cognitive process for concretising experience about a place thus affects individual sensory perceptions, and as a result people create an illusion of a place based on Internet searches.

3D printing

My interest in developing tactile experiences as communication modes and interfaces derives from how we shape our experience in the digital space. Taking a tangible design approach as a further method, I combined aspects of the drawings in order to create a new, imaginary version of Sir John Soane's museum. The process

of taking representative features from drawings into 3D architectural shapes are shown in Figure 3. It was then 3D printed as small and detailed plastic models (Figure 4).

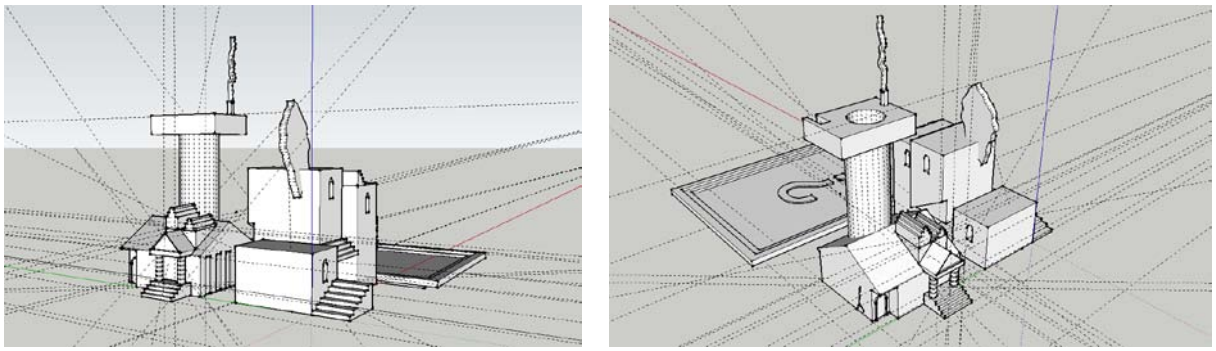


Figure 3. Drawing used by SketchUp software programme, Jae Kyung Kim (2014)

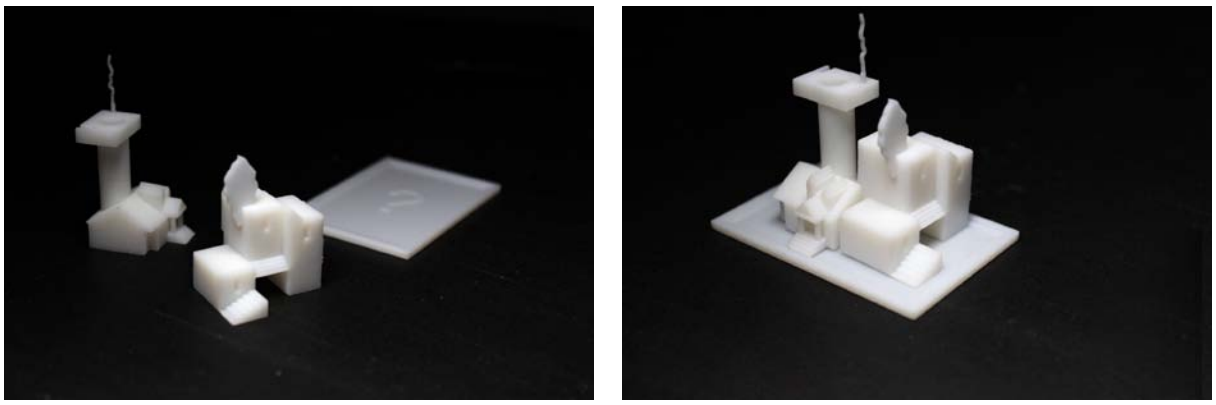


Figure 4. 3D printed model, Jae Kyung Kim (2014)

The fragmented models based on the drawings can be assembled in different ways, similar to social network environments in which data are translated and consumed in an ongoing process. I wanted them to be seen and handled as real objects that make visible and touchable the synthetic images that reflect how people might perceive the museum through online search. The 3d models thus invite people to join an endless process of transformation that connects to a concept of the 'networked objects', as regarded by Cameron (2009) as acting as a mediator between the museum world and its publics. Here, objects take an active role in mapping out a public space, gathering social association beyond the confines of the museum and within the networked public sphere. Each object brings people and ideas together, generating a different pattern of emotions, agreements and disagreements, each with its own coherence that is separate in theory but mixed in practice (Latour, 2005).

3D printed prototypes thus aim to enhance the individual experiences between people, objects and space, and to stimulate awareness of over-familiar things, as we are deeply involved in the network environment.

Findings

The research outcome 'Confabulated Architecture' is intended to represent phenomena as a physical representation of our mind, and interrogate visitors' museum experience affected by online information. The following are some tentative findings.

Openness of visitors' digital experience

In the research process, I asked people to draw images based on text descriptions that stated the Internet users' impressions of museum visit. The resulting images represented a great variety of contents, as the information in online networks is new, diverse and open. We thus create a form of openness (and a perception of the public) that in turn alters the public's perception of the museum as an open space (Geismar, 2012: 270).

Information in social media is continually interwoven by representations of social interconnection and individual experience in a networked space that can be described as "Walking through a maze, the walls of which rearrange as one walks" (Urry, 2006: 111).

Moreover, new perspectives and possibilities that can be seen through drawings and 3D objects could stimulate and influence real museum visit. I found that some of the illustrators became interested in Sir John Soane's museum and subsequently went to visit in person after participating in the drawing task.

Differences between virtual and real experience

Complex 3D objects represent a reconceptualisation, which often happens in network environments, to be perceived in relation to artistic illusion. Lewis Mumford described the view and the stimuli in our cities, suburbs and souls: "we have a double vision which sees with both eyes – the scientific eye of actuality and the illuminated eye of imagination and dream" (In Custer, 1998). Do we need a balance between reality and imagination, so that we do not lose our means to distinguish between real and virtual experiences? The differences between real museum architecture and 3D-printed confabulated architecture objects reveal the restricted view we get from purely digital experience.

Triggers for experience

The 3D objects were used as medium to draw attention to the 'constructed' and 'plural' culture driven by social media. The 'information architecture' in our minds is delivered via tangible experience combining and handling objects in many ways, not as screen based interaction which is a means of visual and informational communication. The objects that we can see and touch in reality also give us an opportunity to starts think about fictional memories created by mediated experience from online search

Conclusion & Further work

The project and its outcome are a starting point of my main research about distorted perceptions of real spaces and architectures through shared information in social media, and I would like to keep using innovative media that provide tangible evidence and new perspectives of places that we may imagine through social media activities.

This could develop as a workshop series using Lego or 3D printing, asking participants to create from their own imagination based on the text description of museums in other sites. In contrast to the project described in this paper, the 3D objects would be created by participants themselves.

Social media is now leading a change of museum access and visitor experience, both virtual and physical. However, we are deluded into mediated experience as we have a tendency to use web-based network tools to search information, and this informs personal memory mixed with illusion and afterimages from online search.

Further details of the project are below:
1. Confabulated Architecture: http://kimjaekyung.com/Confabulated-Architecture
2. HeadSpace brief: http://spaceprogram.rca.ac.uk/?p=298

Acknowledgements

This project was in collaboration with Sir John Soane's Museum. I appreciate all participants who took some of their time to help in this project and the 'Space Program-HeadSpace' project leader Kevin Walker.

References

Anusas, M., and T. Ingold. (2013). "*Designing Environmental Relations: From Opacity to Textility",* DesignIssues 29: 58-69.

Bertel, C. (2013). *Sir John Soane's Museum Annual Review 2013*

Cameron, F., and S. Mengler. (2009). "*Complexity, Transdisciplinarity and Museum Collections Documentation: Emergent Metaphors for a Complex World"*. Journal of Material Culture 14:189-218

Carr, N. (2011). *The Shallows: How the Internet is Changing the Way We Think, Read and Remember*. Atlantic Books

Custer, C. (1998). "Reading: The rehabbing of Lewus Mumford" Reader (Chicago), April 28, 1998 (http://www.chicagoreader.com/chicago/reading-the-rehabbing-of-lewis-mumford/Content?oid=872124 (accessed on 15.09.2014))

Darwins, R. (1976). *The Selfish Gene*, Oxford: Oxford University Press

Falk, J. H. (2003). Personal meaning mapping. In G. Caban, et al (Eds.), *Museums and creativity: A study into the role of museums in design education*. Sydney: Powerhouse Publishing.

Floridi, L. (2014). *The ethics of data culture: Transdiegetic information – what it is and why it matters.* CHS Symposium 'All Seeing – All Knowing,' Royal College of Art, London, 07 Feb 2014.

Geismar, H. (2012). Museums + digital = ? In D. Miller and H. Horst. *Digital Anthropology*. Oxford: Berg.

Hara, K. (2007). *Designing Design*, Lars Muller Publishers

Ingold, T. (2010). "*The Textility of Making"*. Cambridge Journal of Economics 34, 91-102.

Latour, B. (2005). *Reassembling the social: An Introduction to actor-network-theory*. Oxford: Oxford University Press.

Löwgren, J and B, Reimer. (2013). *Collaborative Media: Production, Consumption and Digital Intervention*, The MIT press

Manovich, L. (2002). *The Language of New Media*. Cambridge, MA: MIT Press.

Shelden, D. (2013). "*Networked Space"*. Architectural Design 222, 36-41.

Urry, John (2006). "*Complexity"*, Theory, Culture & Society 23(2-3): 111-15.

Exhibiting Fashion: Museums as Myth in Contemporary Branding and Media Culture

Synne Skjulstad
Westerdals: Oslo School of Arts, Communication and Technology, Norway

Abstract: *The importance of understanding how museums adopt and co-develop digital communication technologies for exhibition design as well as in museum branding practices is widely acknowledged. Also, the controversy of exhibiting fashion in museums has been debated extensively (see Steele 2008). Museums provide high fashion with cultural credibility as part of multilevel branding, while fashion in museums may be understood as attracting visitors as well as linking museums with popular culture. In this paper, Roland Barthes' concept of mythologies (1957) is applied in unpacking some of the relations and negotiations between museums and fashions' multiple ties to branding and consumer culture. The paper investigates how the mythical "museum" permeates fashion branding, and how museum myths are visible in retail spaces. Focus is primarily given the to MET exhibitions of Prada/Schiaparelli: Impossible conversations and Alexander McQueen: Savage Beauty, as well as range of retail spaces modeled upon museums. Based in media and communication studies, informed by social semiotics, it draws on fashion- and branding theory linking fashion as "image" with museums perceived as myth in fashion exhibitions and fashion branding. It discusses how museums offer fashion entry to "high" art and culture, while museums enter the popular media fashion culture as media.*

Keywords: Fashion branding 1, Myth 2, Fashion exhibition 3, Museums 4, retail design 5

Introduction

Fashion and museums form an interesting couple. Not only do fashion designers' retrospective exhibitions draw crowds, art museums also play an important role in the branding of high fashion. Fashion exhibitions take place in a wide range of museums, and fashion houses appropriate museal aesthetics and practices in order to consolidate their role as cultural producers. How may we understand these relations as relating to contemporary branding and media culture beyond the fashion exhibition as a department store window? By drawing on Roland Barthes' concept of myth, the paper investigates how museum myths are incorporated into retail spaces as part of contemporary fashion branding, and how museums may be understood as media through which fashion's place in "high" culture is communicated multimodally.

Fashion is central in propelling museums into contemporary media culture, not only articulated in digital media, but also via spatial communication and material objects (Lash & Lury 2007). Digital technologies and networked services have been central to contemporary reflective museology, and actively integrated into museums' communication practices, aiming at generating public engagement and participation (Pierroux & Skjulstad 2011). But, while many museums' curatorial and communication practices are highly modern, authoritative conceptions of the museum as bearer of heritage and canon (Huyssen 1995) tends to appear in high fashion brands' image making and communication of corporate identity via museum myths. While the fashion industry is positioned between popular media culture, and the artistic tradition of haute couture, fashion oscillates between the art field and popular culture (Taylor 2005).

This paper argues that contemporary fashion branding, especially evident in the luxury fashion brand Prada, draws heavily on mythical notions of the museum in their spatial communication. By discussing selected fashion exhibitions, such as the retrospective "Armani" at the Guggenheim, "Savage Beauty", and "Schiaparelli and Prada: Impossible Conversations at the MET, as they relate to myth and to fashion branding, the paper aims at unpacking some of the intersections between fashion exhibitions and high fashion branding, with a specific focus on museums understood as carriers of myth. It does not, however, draw conclusions about fashion exhibitions per se, or to museums exhibiting dress and fashion in general. Based in media and communication studies, drawing on social semiotics, as well as fashion studies, this paper is part of the research project BRANDO (Branding and Advertising in Digital Domains), which investigates multimodal articulations of contemporary branding of luxury fashion.

The paper is structured as follows: The first section presents the paper's theoretical approaches, while the second section discusses fashion's relations to art and museums, giving special attention to the role of museums in the multimodal branding of the fashion house Prada. In order to establish a sense of the ways in which museum myths are conveyed in this particular brand's fashion branding, selected retail spaces where the "museum" is prominent are discussed. Finally, two fashion exhibitions, which both convey designer's artistic sensibilities, but in quite different ways, are discussed in terms of brand communication.

Theoretical approaches

Myths and Brandscapes

As Luxury fashion house Louis Vuitton recently opened a spectacular art museum in Paris, drawn by Pritzker-price winning Frank Gehry, there should be no doubt that luxury fashion branding is drawn to the art world. Museums and of the art world form a repository of myth for luxury fashion branding, and a strong presence in the art world is valuable for luxury fashion brands. In a collection of essays, all published between 1954 and 1956, and later published with an accompanying theoretical chapter Roland Barthes (1972) explored and tracked down "… in the decorative display of *What-goes-without-saying* (italics in original), the ideological abuse which, in my view, is hidden there" (p.11). Barthes set out to update and expand the semiotic theory of Ferdinand de Saussure by exploring how everyday popular phenomena, spanning from investigations of ornamental food, to striptease, may be read as carriers of myth. According to Barthes, everything can be myth, provided it is conveyed as discourse, that is a "….type of social usage which is added to the object". (p.109) Barthes investigated how socially constructed narratives and assumptions and mediated phenomena tend to become "naturalised", and how myth is crated when an extra layer of meaning is created without one necessarily being aware of this. Myth is thus deeply rooted in culturally embedded assumptions. Many such assumptions may be ascribed to art museums, and their role in the development and preservation of culture, more precisely the authoritarian role the museums tend to want to leave behind, often with the aid of digital communication technology (Witcomb 1997).

With the onset of place branding via signature buildings drawn by "starchitects" such as Gehry, the concept of "museum as spectacle" (Sherman & Rogoff, 1994) emerged to describe the museums place in what Anna Klingman (2007) describes as *brandscapes,* where branding and architecture merge, perhaps most notably seen in Bilbao. In a social semiotic view on the design of communication, such spatial design practices are recognized as fundamentally mediated (Kress and van Leeuwen 2001), and integral to brand communication. However, this also applies to store interiors, as retail designer strive to articulate the identity of a brand via spatial means (Mesher 2010).

Multimodality

The identity of a fashion brand is mediated via a range of communicational means, spanning from brand architecture, interiors, packaging etc, to websites, online stores, pop-ups, social media etc. Barthes notion of myth is applicable to all discourse. He explicitly treats discourse as encompassing "… any significant unit or synthesis, whether verbal or visual…" (p.11), as discourse. Within social semiotics, such discourse is referred to as multimodal discourse, what Kress and van Leeuwen (2001) define as "…the use of several semiotic modes in the design of the semiotic product or event, together with the particular way in which these modes are combined" (p.20). They offer a theoretical framework through which fashion exhibitions and high fashion branding, including retail spaces may be investigated as carriers of myth. Present in this theory is the notion of provenance as the idea that signs may be 'imported' from one context into another "…in order to signify ideas and values associated with that other context by those who do the importing." (p.23). In fashion branding in context of museums, appropriation of ideas and values are traceable in sophisticated retail spaces, which emulate museums.

Exhibiting Fashion, Fashioning Museums

Fashion, Art and museums

In discussing fashion as a dialogue between commerce and art, Melissa Taylor (2005) points to an all-encompassing partnership between art and fashion that has formed to the extent of saturation point. However, fashion exhibitions in art museums dedicated to single designers or brands have caused controversy (Taylor 2005, Steele 2013, Koda & Glasscock 2014). According to Steele (2012), even questioning between fashion and art distinctions is still highly controversial, as fashion outside the realm of haute couture, along with its industrial production and commercial rationale historically has been dismissed as ephemeral and superficial. However, fashion exhibitions may potentially evoke great public interest, and may aid museums in receiving publicity (Taylor 2005), and resources (Riegels-Melchior 2014). Fashion is by nature eye-catching, and is likely generate interest from audiences other than the art-savvy ones already visiting museums (Taylor 2005). In that respect, fashion exhibitions, may be regarded as a means for breathing new life into museums and as facilitating their entry onto the super-highway of media spectacle and celebrity culture (Church Gibson 2012). For fashion brands, being represented in art museums add cultural credibility. In this respect, fashion brands in art museums, and museums in fashion branding may be understood as bridging "high" and popular culture (Taylor 2005, Church Gibson 2012), where the value systems of art and popular culture are exchanged and appropriated.

The perhaps most well-known controversy of fashion exhibitions in art museums relates to the infamous fashion editor-turned-curator Diane Vreeland's retrospective exhibition of Yves Saint Laurent in 1983. At the time of the exhibition, Saint Laurent was still alive, and the first living fashion designer to be given a solo exhibition at the MET. The exhibition was closely tied to the economic interests of the brand, resulting in a long lasting policy of not mounting solo exhibitions of living designers. Similarly, a 2001 retrospective exhibition of the work of Giorgio Armani at the Solomon R. Guggenheim museum, New York, was heavily criticised for lacking contextual information and for looking too much like a retail space. Chris Breward, critic for the Guardian, slaughtered the exhibition, stating that:

> There was little attempt to inform the audience of the historical, social, technological, economic or geographical contexts that make fashion a subject worthy of sustained study. The overriding impression was of a glossy but ephemeral department-store window.

However, the fact that Armani had donated a large sum to the Guggenheim also led to heated debate of institutional ethics, and the Guggenheim was accused of corporate sell-out by letting Armani buy its way into the art world (Steele 2008).

Museums in fashion branding and retail design: Koolhaas & Prada

Blurred boundaries

Art museums serve as frameworks of reference through which commodities may be presented to consumers (Taylor 2005), articulated via the inclusion of the archetypical aesthetics of art museums in retail spaces. (Cairns 2010) More prominent in museums devoted to material culture than in art museums, the most potent symbol of "the museum" in the context of fashion branding is the glass display cabinet. It tends to be appropriated in retail spaces, as a rather banal signification of "do not touch these valuable objects" or "these valuable objects are not commodities", making objects transcend their former status as commodity. And as fashion moves into museums, the aesthetics of museums move into retail spaces, making them, as stated by Dietmar M Steiner (2000), indistinguishable from one another:

> Museums, by virtue of their architectonic consciousness have become places where lifestyles are staged. This potential has been extended from the field of the arts and the museum to the field of fashion and advertising. Thus, it is now becoming difficult to differentiate between a museum and a department store. (p. 21)

According to Barthes, "the fundamental character of the mythical concept is to be appropriated" (p 119). Prada provides an interesting example of the many ways in which a global fashion brand may appropriate museum aesthetics and incorporate museum myths in its retail design. For more than fifteen years, Prada has collaborated extensively with OMA (Office for Contemporary Architecture) and its branch AMO (Architecture for Metropolitan Office) led by Dutch "Starchitect" Rem Koolhaas. The collaboration is extensive, and a full analysis of this is beyond the scope of this paper. However, this collaboration is key in understanding relations between fashion and museum myths in contemporary fashion branding. For Miuccia Prada and her husband and business partner Patrizio Bertelli, it was a major challenge to maintain a sense of exclusivity in times of expansion (Ryan 2005). In the book "Projects for Prada", published by Prada's art foundation, Fondazione Prada Milano in 2001, Koolhaas presents concepts for the development of the brand. One strategy presented in the publication is to redefine shopping as a cultural activity, and redefine shoppers as museum-visitors, library-visitors etc, and to conceive of the brand's history as an archive. Many of these concepts are present in Prada's New York flagship store, (or Epicenter, as Prada refers to their flagship retail spaces). A spectacular space was erected on the former premises of the Soho Guggenheim, a context already infused with cultural significance, as Soho is associated with galleries and artist's studios. Interestingly, the actual sales area in the retail space is removed from visitors' attention, located in the lower floor, backgrounding (Cairns 2010) the commodities in favour of an experience of entering a modern art museum or a temple (Newhouse 1998).

Exhibiting the fashion archive

But what does the museum as myth offer Prada, a brand part-taking in the cyclical fashion system? Koolhas (unnumbered pages) states: "in a world where everything is shopping and shopping is everywhere, the ultimate luxury is *not* to be shopping". This is key in understanding how museum myths are incorporated into the larger conceptualisation of shopping as culture, and articulated in the architecture and retail design of the brand. The museum is conveyed as the absence of shopping and of the active associated decision-making. In Koolhaas's sense, the museum becomes a medium and a space where the multivalent expression of the *brand* may be exhibited.

Nicky Ryan's (2007) analysis of Prada's role as a modern patron of avant-garde architecture and art shows how the image of the brand is built around the designer Prada's cultural and artistic sensibilities, and how such a strategy caters to the specific cultural taste distinctions relevant for the brand. She argues that artistic avant-garde positions are appropriated and made harmless in the service of corporate branding. In enabling and taking on an active role in producing symbolic capital for the brand, Prada becomes a cultural force in its' own right. According to Ryan, Prada's embrace of artists who's work may even be read as overtly critical towards consumerism, neutralises the critical potential inherent in them, making Prada appear as a liberal and enlightened patron.

In 2008 OMA designed a mobile architectural space for Prada, named "Prada Transformer". Designed specially for this space was the travelling exhibition "Waist down" where Prada's archive of skirts were exhibited (Figure 1). In exhibiting garments from past collections, treating these as an archive, Prada acts as a museum in its own right, exhibiting its own products in a museum-like setting, freed from museum ethics. Interestingly, Riegels-Melchior (2014) points to the fact that in embracing fashion exhibitions, museums often have to collect garments from other sources than their archives, often exhibiting new objects at the expense of their own collections. Looking at the branding practices of Prada, the archive of past collections forms a basis for the exhibition of the brand's history.

Figure 1. Museum-inspired Prada retail spaces
http://architizer.com/blog/oma-and-prada/

Myths exchanged

In Koolhaas's redefinition of luxury shopping, he offers an interesting conception of luxury, which is directly linked to an understanding of museums as places where visitors do not actively engage with the exhibitions:

The ultimate luxury is focus and clarity. Museums are popular not for their content, but for their lack of content: you go, you look, you leave. No decisions, no pressure. Our ambition is to capture attention, and then, once we have it, to hand it back to the consumer.

The museum Koolhaas refer to is not the reflective museum where visitors' active meaning making is key.

Several Prada retail spaces convey an appropriation of a museum aesthetic. According to Barthes (1979) mythical signification is never arbitrary. It is "…always in part motivated, and avoidably contains some analogy." (p. 126). In a transitory Prada retail space, a conception of the museum is a present idea. The fourth floor of the London department store Harrods was turned into a museum-like space for a month in 2014, exhibiting the brand.

Figure 2. Museum-inspired Prada retail spaces installed in department store, Harrods, London
http://www.prada.com/pradasphere

In "Pradasphere", garments and other fashion items from past collections were arranged together with books, films, and objects in a museum-like interior dominated by large carefully crafted remakes of the original vintrine cabinets from the original Fratelli Prada store in Vittorio Emanuele II arcade in Milan. In Vogue, Kilcooley-O´Halloran (2014) describes how the Harrod's spokes person describes the Pradasphere exhibition like a natural history museum of Prada, referring to it as "Our favourite kind of history". In the exhibition, the sales clerk takes on the role of museum guide, guiding visitors to an exuberant display of not only fashion design, but a curated display of the core identity of the brand.

A Fashion mausoleum, the myth of artistic genius: Alexander McQueen "Savage Beauty"

Not received as a branding spectacle, a "natural history" of the designer Alexander McQueen plays heavily on the myth of the late artist as a genius, who's dark emotions were conveyed through fashion design. Fashion in museums may draw broad audiences to museums (Riegels Melchior 2014), as witnessed in the 2011 retrospective exhibition of Alexander McQueen's work "Savage Beauty" at the MET. The exhibition featured approximately one hundred garment ensembles, as well as a range of headdresses and accessories, along with selected video works. According to Vogue, the exhibition was the eighth most visited in the MET's history, with more than half a million visitors.

Figure 3. Image from the exhibition "Savage Beauty" at the MET
http://culturereport.wordpress.com/2011/08/05/last-chance-to-see-alexander-mcqueen-savage-beauty-at-the-metropolitan-museum-of-art/

The exhibition took place at a time where attention and interest was turned to McQueen following his 2010 suicide (Smith & Kubler (2013). In the exhibition catalogue, Susanna Frankel (2011) highlights how McQueen has been subject to much mythologizing. Not only is his story one about the ugly duckling of working class Britain, who worked his way to the pinnacles of the fashion world, but also one about the end of spectacular fashion shows. Nathalie Khan (2013) explores fashion as mythology in her analysis of Alexander McQueen's catwalk shows and adaptation of digital technologies and how McQueen aimed at establishing myth around himself and his work. She finds that the material objects displayed gain a different aura through their removal from their "permanent presence" in media culture, gaining the "…longevity of a historic object" (p.26)

After the passing of Alexander McQueen, the brand Alexander McQueen still exists, and is owned by the luxury group Kering, which was vital for the realization of the exhibition. However, as the exhibition was centered around Alexander McQueen's artistic genius, and as a memoriam of a fashion myth, the show did not raise the same amount of controversy the YSL retrospective once did, as the focus on the objects tied the exhibition to the late designer, not the brand.

Fashion as image Schiaparelli and Prada: Impossible Conversations

The less spectacular exhibition *Schiaparelli and Prada: Impossible Conversations,* held in 2012 at the MET compares and contrasts the two designers, juxtaposing their work in highlighting Schiaparelli's emphasis on "waist up" and Prada's focus on "waist down". Central to the exhibition was a composited film dialogue created by Baz Luhrman, between the two designers, who separated by almost a century, never met. The conversation, drawn from Schiaparelli's biography " Shocking Life", was performed by actress Judy Davies and spliced with interviews with Miuccia Prada. The fictive conversation provided a frame through which the two designers' lives and works were contextualised. The exhibition was quite well received by critics, but was also criticized for being intellectual and dry, not generating as much public interest as "Savage Beauty". New York time critic Holland Cotter (2012), comments:

> It's on the small side. It has a tight thesis, comparing and contrasting work by two designers of different generations. And it carries that idea through with the careful, even wonkish earnestness of an end-of-year term paper.

However, as the brand Prada is constructed around Miuccia Prada's intellectual and artistic cultural preferences (Ryan 2005), her presence at the MET as an intellectual consolidates her position at the center of the fashion elite. The core values of the brand are thus exhibited. As the exhibition was not designed as a spectacular department store window, this did perhaps disarm critics. However, as the exhibition not only exhibited Prada's designs, but the very essence of the brand, critics should perhaps have been more alert. Looking at the multivalent communication practices of Prada, we may start to see the branding of this fashion house as catching up with a "new" museology paradigm, one, as Rielgels Melchior (2014), sees a "…program for reflective museology, a critical approach to museum practices, and a constant focus on the democratic duty to interact with visitors, especially new ones". (p.12).

Museums as fashion media: exhibiting brands

In her influential essay, Fiona Anderson (2000) links the development of fashion exhibitions to an adoption of a corporate marked-oriented logic, as well as to a shift in museal practices and scholarly debate about what modern museums should be and do. She argues that fashion is not about garments but about its associated imagery. What then, we may ask distinguishes a museum exhibition like "Impossible Conversations" from advanced branding? "New" museology, where a reflexive, and non-authoritative approach to the "truth" is replaced by participative reflection, meaning making and critique, now aligns with sophisticated high fashion branding, as high fashion brands are already cultural producers. The museum is modelled in fashion branding, and becomes a medium for fashion's sophisticated branding techniques, turning museums and shops into what Church Gibson recognises as the real metropolitan salons of the new millennium.

Acknowledgements

Thanks to Westerdals: Oslo School of Arts, Communication and Technology for funding and support, and to Unni Tanberg and Sam Bannister for valuable comments.

References

Anderson, F. (2000). "Museums as fashion Media". In Bruzzi, S & Church Gibson, P. (Eds). *Fashion Cultures: Theories, Exploration and Analysis*. London: Routledge.

Barnard, M. (2002). *Fashion as culture.* (Second edition). London: Routledge.

Barthes, R. (2000). *Mythologies.* Selected and translated from the French *Mythologies*. Paris: Editions du Seuil). London: Vintage

Breward, C. (2003, October 18). Shock the Frock. (The Guardian). Retrieved from http://www.theguardian.com/artanddesign/2003/oct/18/art.museums

Cairns, G. (2010). *Dechiphering Art, Advertising and Architecture: New Persuasion Techniques for Sophisticated Consumers*. Oxfordshire: Libri Publishing.

Church Gibson, p. (2012). *Fashion and Celebrity Culture*. New York: Berg.

Cotter, H. (2012, May 10). Speaking Fashion: Schiaparelli and Prada: Impossible Conversations at the Met. (The New York Times). Retrieved from http://www.nytimes.com/2012/05/11/arts/design/schiaparelli-and-prada-impossible-conversations-at-met.html?pagewanted=all&_r=0

Evans, C (2013). "Yesterday's emblems and tomorrows commodities: The return of the repressed in fashion imagery today". In Bruzzi, S. and Church Gibson, P. (Eds.). *Fashion cultures revisited* (77-103). London: Routledge.

Frankel, S. (2011) Introduction. *Alexander McQueen Savage beauty*. Catalogue, The Metropolitan Museum of Art. (p.17-30)

Huyssen, A. (1995) *Twilight Memories: Marking time in a Culture of Amnesia*. London: Routledge.

Kilcooley-O´Halloran, S. (2014, April 30). The Pradasphere is Unveiled. (Vogue). Retrieved from http://www.vogue.co.uk/news/2014/04/30/pradasphere-harrods-prada-history-exhibition-london-open

Khan, N. (2013). Fashion as Mythology: Considering the Legacy of Alexander McQueen. In Bruzzi, S., & Church Gibson, P., (Eds.). *Fashion Cultures Revisited*. London: Routledge. (p. 261-273)

Mesher, Lynne. (2010). *Retail Design.* Lausanne: Ava Publishers.

Klingmann, A. (2007). *Brandscapes: Architecture in the experience economy*. Cambridge, MA: The MIT Press.

Koda, H, & Glasscock, J. (2014). The Costume Institute at the Metroplitan Museum of Art: An evolving history. In Riegels Melchior, M, & Svensson, B (Eds.), *Fashion and Museums: Theory and Practice* (19-33). London: Bloomsbury.

Koolhaas, R. (2001). *Projects for Prada: Part 1*. Milano: Fondazione Prada Edizioni.

Kress, G. ,& vanLeeuwen, T. *Multimodal discourse: The modes and media of cotemporary communication*. London: Arnold.

Lash,S, & Lury, C. (2007) *Global Culture Industry*. Cambridge: Polity Press.

Newhouse, V. (1998) *Towards a new museum*. New York: The Monacelli Press.

Oakley Smith, Mitchell, & Kubler, A. (2013). *Art/Fashion in the 21st Century*. London: Thames & Hudson.

Pierroux, P. and Skjulstad, S. (2011) Composing a public image online: Art museums and narratives of architecture in Web mediation, *Computers & Composition,* 28: 205-214.

Riegels Melchior, M. (2014). Introduction: Understanding Fashion and dress museology. In Riegels Melchior, Marie, & Svensson, Birgitta (Eds.), *Fashion and Museums: Theory and Practice* (1-18). London: Bloomsbury.

Sherman, Daniel J., & Rogoff, Irit (Eds.). (1994). *Museum culture: Histories, discourses, spectacles*. Minneapolis, MN: University of Minnesota Press.

Steele, V. (2008) "Museum quality: The rise of the fashion exhibition". *Fashion Theory.* Vol. 12, NO.1, pp 7-30.

Steele, Valery. (2012) Fashion. In Geczy, Adam and Karaminas, Vicky (Eds.). *Fashion and Art.* London: Berg.

Steiner, Dietmar M. (2000). "Is it a Cathedral, a Museum, or a Shop?" *Architectural Design*. Vol. 70. No. 6. Pp. 20-23.

Taylor, M. (2005). "Culture Transition: Fashion's Cultural Dialogue between Commerce and Art". *Fashion Theory.* Volume 9. Issue 4. pp. 445-460.

Witcomb, A. (1997) The End of the Mausoleum: Museums in the Age of Electronic Communication. Proceedings *of Museums and the Web: An International Conference*. Los Angeles, CA, March 16-19. 1997.

The Exquisite Cabinet: An Experimental Installation to Encourage Creative Thinking and Sharing Stories

Caroline Claisse
Royal College of Art, UK

Abstract: *My research looks at how creative practitioners mediate between museums and their visitors through the creation and use of interpretive objects that encourage imagination, leading to new ways for visitors to connect with artefacts on display. This research has informed my own creative practice, which looks at objects and how to encourage creative thinking and sharing of stories. I am interested in creating tools to encourage creativity and imagination that stimulate participants' meaning-making in museum contexts. My work encourages participants to both create and reflect on physical artefacts that are shared with others to open a dialogue from someone's own perspective and facilitate new ideas to emerge. The Exquisite Cabinet features four intriguing objects with RFID tags embedded in them. To encourage visitors' contribution and imagination, the cabinet used similar method as the surrealist game Exquisite Corpse (Cadavre Exquis).Visitors are invited to pick up an object and to embed a snippet of a story inspired by it, following on from the last visitor's story. Once the story is added, the cabinet prints it out, carrying on a physical narrative chain, and the collage of stories was also stored on an online platform.*

Keywords: interpretive object, creative thinking, stories, meaning-making, participatory, new technology

Project description

Museums with handling object collections sometimes struggle to use them in interesting ways with visitors. For example, the Horniman Museum in London has an amazing collection of handling objects that visitors can play with in 'discovery sessions.' There are thousands of well-crafted, fragile and precious artefacts on display from the collection and visitors can access and handle them freely. But the museum's facilitators have difficulty stimulating visitors' imagination and curiosity with the objects. A series of observations of handling sessions there, together with my MA dissertation (2013) informed my practice and pushed me to think about how to encourage people's imagination and curiosity with the help of objects in gallery settings.

Developed organically from theory and research to experimentation, prototyping, and final installation, *The Exquisite Cabinet* was an experimental project conducted at the Royal College of Art in London, and it was exhibited during two weeks at the RCA Degree Show in June 2014. With this project I was interested in promoting a playful, experimental and tactile experience which would challenge users' creative enquiry and connections to physical objects.

The objects were used as stimulus to challenge visitors' imagination and creative inquiry. The way they were made, as hybrids of two or more fragmented objects, was intended to trigger visitors' curiousity. Indeed the objects' making process echoed Surrealist methods from the 1930s, in which artists collected 'found objects' and re-arranged them in unexpected combinations or 'poetic assemblages' that would challenge the subconscious. Surealist André Breton argued that such methods can 'aid the systematic derangement of all the senses... it is my opinion that we must not hesitate to bewilder sensation...' (Breton 1969:263).

Figure 1. The Exquisite Cabinet at the RCA Degree Show (2014)

Figure 2. Objects #4 #1 #3 #2 (2014)

For *The Exquisite Cabinet*, objects were collected, assembled and glued together, then 3D scanned and 3D printed as whole new objects. For example, Object #1 is a hybrid between a handcuff and a tea cup; once 3D printed, the handcuff was no longer a distinctive element from the cup, and the new object acquired new meanings when used. Indeed, users started to associate the object with a prisoners' cup or a magic lamp used to transport ourselves over time. Surreal stories started to merge involving tea rituals/parties mixed with prisoners in jail and associated notions of isolation. Below is a selection of the stories invented by different users when handling Object #1:

– ... must have belong to a prisoner... he needed a large handle because one of his hands has seven fingers
– ... What I fear is the cage.. so narrow I could not breath
– ... alcoholic prisoners
– ... we had a cup of tea in the jail
– ... He stayed home immobile sat all day drinking tea

Creative inquiry was also encouraged by using other Surrealist methods such as the game 'Exquisite Corpse'. Surrealist artists invented Exquisite Corpse in the 1920s, in which participants were collectively invited to assemble words or images. In the case of words, one participant writes the start of a sentence and folds the paper, leaving only one part of the sentence visible for the next player, who can then contribute to the narrative chain. Once finished, the paper unfolds to reveal an imaginative, curious or absurd sentence collectively assembled. Indeed, this is where the game originally took its name: 'Le cadavre exquis boira le vin nouveau' ('the exquisite corpse shall drink the new wine') was a phrase that resulted when Surrealists first played the game in 1925.

The Exquisite Cabinet uses the same kind of system as the Surrealist game: it contains a drawer housing each object, and when participants remove one and place it on the top of the Cabinet, RFID technology prompts an embedded screen to reveal the last seven words of the previous visitor's story, so they can carry on if they wish. Seven words, rather than one, were displayed in order to facilitate the continuation of a narrative. Following the last seven words, users could embed a maximum of 100 characters, which was found to be the maximum length, as visitors often wrote between 40 and 80 characters. It was found difficult to keep the story going over more than ten users.

Figure 3. Back of the cabinet, stories printed (2014)

A continuous story for each object is then printed out the back of the Cabinet on one of four small, embedded thermal printers. Below is a snippet of the story constructed by twelve participants in response to Object #3 which is an hybrid between a razor and a small hand. Each line represents one participant's input:

– The captain shaved the sea surface.
– Shaving the surface was not enough - he soon realised he needed reach far underneath the water
– in every little corner of the flat land
– the slime slipped south.

(break)

– Suicide is painless
– but what if there are seven hells?
– there's no earthly way of knowing just exactly where we're going...
– is that you always know where you came from because it always points in the wrong direction.
– But it guides you to a more mysterious path
– tree that lays in the deep forest
– which is from a dream of our child wizzard
– a certain sort of wetness is perpetuated.

From previous research (Claisse, 2013), physical contact with objects was found to contribute to visitor engagement. Both 'hands-on' and 'minds-on' experiences (Dewey, 1934) were shown to encourage personal and social connection with artefacts on display. However, while physical contact can sometimes stimulate what happens in the brain in surprising ways, touch in gallery settings is found to be largely underestimated.

Being able to touch and handle the objects in *The Exquisite Cabinet* encouraged imagination, and most of the users were more precious about what to write for their snippet of story. Over a two-week exhibition, none of the objects got stolen, but Object #1 (teacup/handcuff) broke four times, due to a design fault in the Cabinet in which the height of the drawers was too small for the object to be placed straight. Sometime users would

not notice this and close the drawer on the handcuff, causing the object to break. Indeed, it was interesting to see how these accidents influenced visitors' printed story/conversations. Below is a selection of different sentences that echoes the break. Each line represents one or several users' input:

– ... I smashed the teacup (…)
– ... haha verrai incatenato all'acqua che ho reccolto fgh dgbb. I didn't understand what he said. I panicked, I drop the cup. (…)
– ... she tried to save the tea from spilling ettttttttddwsdfuhhbvbhufdutfyufuffgyghgfuguufkfufjchgghusaaseprdquikjh-gfdfggghhhhjjjjik koopwwwww wwww i broke a cup. Dishwasher abuser gnggng nothing to say (…)
– ... hi vodka cup, oh no the cup is broken. (…)
– ... jen broke her cup last Wednesday (…)
– ... broken broke technology (…)

Visitors were often curious about the technology. Indeed, snippets of stories sometimes echo the 3D printing process in which the objects were made :

– ... drinking from the printed cup (object #1, teacup/rasor)
– ... I am a clone with no history so sad (object #1, teacup/rasor)
– ... A three dimensionally printed digital remix of a cup and a handcuff (object #1, teacup/rasor)
– ... Weird hand wow it is d printed. D printed the new technology which will change the down hand (…) (object #3, rasor/small hand)
– ... Creepy print. (Object #2, mask/miror)

The four objects were familiar enough for people to identify what they were about:

• 'The cup looks strange because there is a handcuff stuck on the side' (object #1, teacup/razor).
• 'Sat a strange little dog in a cup inflated by a ball of air looking out...' (object #4, dog/baloon/glass).

But the fact that the objects combined two objects in one challenged visitors' imagination straight away

• 'A dog was once sitting in a champagne glass when the bottom of the glass suddenly turned into a pea...' (Object #4, dog/balloon/glass).

Stories echoed personal connections and cultural references throughout the narrative chain, such as super-natural narratives (Object #1):

– ... some sort of magical power. A genious came out of it (...)
– ...A ghost came out of it (...)
– … Aladdins magic lamp (...)
– ... intringuing object. Is it an Alladin lamp? (...)
– ... I was flying away with jafar:-) when I suddenly saw Dark Vador with a cup of wine (...)
– ... The genie has gone home but she or he has left a beautiful objet for me to admire:-) (…)

Figure 3. The Equisite Cabinet, online stories storage (2014)

The snippets of stories were visible in both the exhibition space (printed stories) and online (digitally stored on exquisitecabinet.co.uk). The physical installation encouraged social interaction between users. As shown below, group of visitors would look at the screen and discuss the stories while other visitors would read the printed stories from the back of the cabinet.

Figure 4. The Equisite Cabinet at the RCA Degree Show (2014)

The Exquisite Cabinet was informed by research and embodies some of the ideas explored throughout the MA Information Experience Design at the Royal College of Art. I hope to keep exploring the themes of creative inquiry, tactile encounters and stories and finding a common ground to demonstrate the potential of technology in contributing to such experiences.

Acknowledgements

Many thanks to Kevin Walker, Brock Craft and Dainius Slavinskas for their support with this project.

References

Breton, A. (1969) 'Surrealist Situation of the Object' in *Manifestoes of Surrealism*. Translated from the French by Richard Seaver and Helen R. Lane. Ann Arbor: University of Michigan Press.

Claisse, C. (2013) . Interpretive handling objects for mediating experiential learning in gallery settings. MA Dissertation. Royal College of Art.

Dewey, J. *Art as Experience*, http://ddong.narod.ru/deweyen2/index.htm (03 August 2014).

Parallel Exhibits: Combining Physical and Virtual Exhibits

Lars Lischke, Tilman Dingler, Stefan Schneegaß, Albrecht Schmidt
University of Stuttgart, Germany

Merel van der Vaart
University of Amsterdam, Netherlands

Pawel Wozniak
Chalmers University, Sweden

Abstract: *People have a special fascination for original physical objects, their texture, and visible history. However, the digitization of exhibits and the use of these data is a current challenge for museums. We believe that museums need to capitalize on the affordances of physical exhibits to help users navigate their more extensive virtual collections. Although lacking materiality, virtual objects have other advantages: They can easily be manipulated, rearranged, duplicated, and moved. This offers new opportunities for visitors to engage with museum collections and the curatorial process in a creative way. In this paper, we propose a concept designed to make use of existing digital content in combination with physical exhibits in museums, which we call Parallel Exhibits.*

Parallel Exhibits is a system that enables museum visitors to interact with traditional museum collections and virtual objects at the same time. It is an interactive exhibition space where visitors and curators enter a design dialogue mediated by technology. Curators display a selection of physical objects and invite visitors to complete the exhibition with virtual objects from the museum's collections or elsewhere. The ever-changing display can be augmented with digital text labels and messages. We implemented Parallel Exhibits as a web application, which bears the advantage of easily running the application on different platforms. We tested the system both in a museum, using an interactive table and a projection wall, and as part of an online survey reaching a broader audience. In the field study we observed that visitors like to share their ideas and thoughts while using the table. The results of the online survey indicate that visitors like to contribute to exhibitions. In this paper, we describe the technical design of Parallel Exhibits, as well as the outcomes of the on-site study and online survey.

Keywords: Digitalization; Virtual exhibition; Cross-Media installation

Introduction

Over the last decade the traditional authoritative voice of the museum has been subject to debate. A more open and collaborative approach to exhibition making has emerged. Although the museum is still seen as guardian of objects of great (art) historic value, it is no longer thought to be the sole keeper and source of all knowledge about the objects in its care. Visitors bring their own knowledge and expertise; sometimes they are hobbyists or subject enthusiasts with very particular backgrounds and perspectives. Facilitating an active dialogue between visitors and curators can enrich both the museum's understanding of its visitors' needs and enhance visitors' experience through participation.

New technologies in the field of pervasive computing and the participatory web provide manifold opportunities to create a more personalized museum experience. Interactive exhibitions allow visitors to actively engage with cultural heritage themes or individual objects. To facilitate visitor engagement with the collections, the

Gallery One at the Cleveland Museum of Art, for example, combines museum objects with digital installations around a series of themes (Helmreich *et al.,* 2013). It provides access to a curated digital repository via a 40 feet multi-touch screen, called the 'Collection Wall'.

With the ubiquity of smartphones people carry a high-end interaction device with them at all times. Such technologies allow museum visitors to directly interact with an object, exhibit, or even an entire gallery, but might also provide access to the vast digital repositories that are available online. The Museum of Modern Art (MoMa) developed an iPhone application[1], which provides object information on demand. The system allows visitors to bookmark information and to integrate their own pictures of objects. Museums strive to find new ways to facilitate a more explorative museum visit by connecting digital information and the physical. When designing an exhibition, limitations in space demand that artifacts need to be carefully selected from a vast pool of objects. During this selection process, which is traditionally undertaken by curators, countless artifacts are filtered out and never make it on display. Other times, relevant artifacts may be on display elsewhere and, hence, unavailable for the current exhibition. Virtualization of artifacts can solve these issues preliminarily. Virtual archives, such as *Europeana*[2] and *Google Gallery*[3], have the advantage of representing countless numbers of artifacts with additional information as text, images, or videos. They can be effectively browsed, indexed, and searched to quickly find objects related to a certain topic, type, or storyline.

In this paper, we introduce a technology-mediated interactive exhibition space, where physical exhibits can be combined with virtual representations of remote or unavailable artifacts. This system, called *Parallel Exhibits*, provides visitors with means to select artifacts and augment them with digital information, just like curators would do when designing an exhibition. To profit from the curators' expertise, the system provides tools for curators to pre-select and connect certain artifacts according to common properties or topics, allowing for a semi-guided design process. Through this participatory approach visitors are invited to look more closely at the physical artifacts as well as the multi-layered stories behind them. In contrast to physical exhibits, digital objects can be exchanged and (re-)arranged without much effort. This allows the creation of more dynamic exhibition spaces, in which visitors take on an active role and contribute to the exhibition design. We have built a series of proof-of-concept prototypes where we augment physical exhibition spaces with virtual exhibits in the form of text, images, and videos. Visitors can browse a catalogue of artifacts and create customized exhibitions with or without virtual curatorial guidance. We report on a field study conducted at the Allard Pierson Museum in Amsterdam and further feedback from curators as well as an online survey that we used to refine the concept

Engaging Visitors

A growing number of museums are currently advocating collaboration, participation, and co-curation with their audiences. The Wallace Collection in London engaged visitors in the exhibition curation process by letting a group of children co-curate an exhibition. They were given responsibility for developing the storyline, object selection, and text writing (Bryant 2011). However, this kind of involvement proved to be time consuming and the nature of the project only allowed for a small group of visitors to be involved. Furthermore, the resulting exhibition was rather traditional and static without the possibility of changes afterwards.

The Museum of National History in the Netherlands also engaged its visitors: they invited people to send in pictures representing the country of the Netherlands, which were shared with the public online in a temporary exhibition (Byvanck & Schilp 2012). This allowed for large-scale participation and the online gallery had a more dynamic nature, ever changing as more pictures were sent in. This approach allowed collecting feedback and inspirations from a broad audience. People had the chance to share their perspectives and influence the out-

[1] Moma iPhone App website: http://www.moma.org/explore/mobile/iphoneapp

[2] http://www.europeana.eu/

[3] http://www.google.com/culturalinstitute/project/art-project

come of the final exhibition. The resulting exhibition was, however, again static: it did not change after it was opened to the public. In contrast, we strive to create a more dynamic approach that encourages people to voice ideas concerning a current exhibition, calls for participation in the design process, and allows visitors to suggest changes on the fly.

Simon gives examples of physical exhibitions that change over time as visitors add their opinion to displays (Simon 2010): in 2009 the Smithsonian American Art Museum organized *Fill the Gap*. Visitors were asked online and on-site to suggest a replacement for a specific museum object that was to be taken off display (Simon 2010, 151). *Fill the Gap* suggested a democratic approach to the decision making process inviting visitors to state their preferences in context of the type of object that was there before and of the current exhibition. Even though this was directed at getting people involved in the exhibition design, the focus on a single interchangeable object rather limited people's creativity. Having in mind people's vast imagination and variety of perspectives we designed *Parallel Exhibits* with the goal to (virtually) open up museums' store rooms and exhibition spaces.

Parallel Exhibits

The *Parallel Exhibits* approach aims at creating a shared online and on-site experience where visitors are provided tools that enrich their physical (or virtual) museum visit using existing digital repositories and resources (cf., Figure 1). Some museums, such as the *Tropenmuseum*[4] in Amsterdam, provide online access to their artifact archives, whereas other websites work across multiple museums: *Europeana* is a digital library holding the contributions of more than 2,000 European institutions giving visitors access to millions of books, paintings, films, museum objects, and archival records. With *Parallel Exhibits* we tap into these vast archives and create a system where visitors select artifacts and arrange them into a personal exhibition.

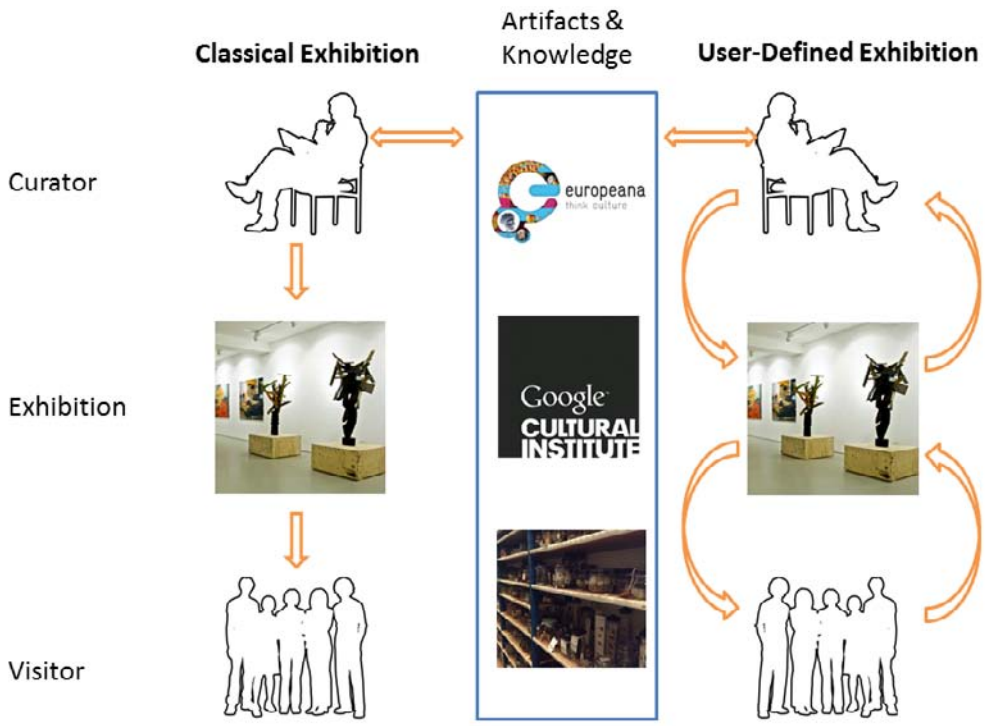


Figure 1. The concept of Parallel Exhibits. In contrast to classical exhibitions, there is a direct feedback loop between visitors and curators mediated through the system

[4] http://papuacollectie.ab-c.nl/

The sheer number of virtual artifacts available raises the challenge of how people sift through these to find what they like best in context of an actual exhibition. As Simon puts it: "Participation thrives on constraints" (Simon 2010, 22): people need a clear, manageable, and easy to grasp task. If visitors do not know where to start or if they feel they do not know enough about a subject to contribute, they may not participate. Hence, *Parallel Exhibits* presents a semi-guided approach where visitors are given curatorial assistance in form of information and suggestions. Its content management system and tagging tool allow curators to provide basics to help visitors develop their ideas and to make them feel confident enough to make informed decisions about artifact compilation.

Parallel Exhibits provides visitors with an interface to browse a pre-selected assortment of artifacts and spatially arrange them on a canvas in the context of a physical exhibition. The installation allows for multi-user interaction, acknowledging the social nature of most museum visits. To make sure the in-depth collection knowledge of curators is effectively combined with visitors' creativity, we propose two modes of use for the installation: in the first, we start off by allowing visitors to freely combine artifacts. However, not all visitors may be comfortable with this kind of freedom and might appreciate a certain level of curatorial guidance. Also, the museum or curator may want to encourage visitors to explore specific themes or subject areas.

Hence, the second mode of use involves a half-guided design tool where visitors are inspired and guided by a set of curatorial recommendations. There are three ways for curators to guide the visitor through the design experience: first, artifacts can be pre-selected from the vast pool of digital archives resulting in a filtered assortment of artifacts. Second, curators can attach keywords to each artifact, through which cross-connections between objects are created. Keywords can be anything between the material the object is made of (e.g., 'iron') to the purpose an artifact was used for (e.g., 'woodwork') or the age it was used in (e.g., 'stone age'). Users of *Parallel Exhibits* can see these cross-connections to other objects with the same keyword tag and, hence, quickly find related artifacts that might fit their exhibition. As a third way to guide the visitor's design process, curators can add physical context to the design space by placing plinths with real artifacts into the exhibition space to be augmented.

The goal of *Parallel Exhibits'* approach is to stimulate deeper engagement with the artifacts and underlying stories, as well as supporting the social interaction among visitors and between visitors and museum staff. As a result, curators can get a better understanding of the interests and ideas of visitors.

Virtual archives can hold a nearly endless amount of content and this content can be accessed, selected, and edited easily. The possibility of digital displays on-site allows visitors access to objects that are kept in museum stores, are on loan to other museums, or objects from other collections. By providing tools to surface these remote artifacts, visitors have a say in which objects are interesting and worth being on display.

Parallel Exhibits makes contributions in three dimensions: (1) the installation takes into account the visitor perspective, enabling personalization of the experience and valuing visitors' knowledge. (2) Curators are given means to communicate with visitors through curated exhibition challenges and might be inspired by visitor choices. (3) Museums have the opportunity to share larger sections of their collections, including objects that are on loan or too delicate to be put on display.

System set-up

To evaluate the *Parallel Exhibits* approach, we implemented a prototype as a web-based application. By using web technologies we gain high flexibility in terms of compatible devices, sized from portables to wall sized devices. This allows creating exhibitions alone and in groups and, thus, also supports the social experience of a museum visit.

The system consists of three parts: the most important part presents the virtual collection and allows the arrangement of personal exhibitions. This so called "*stage*" is mainly designed to be part of an exhibition. To allow

groups of visitors to interact with it at the same time, we propose to run the stage on a large touch-screen, like an interactive table. Depending on the design of the exhibition it is also possible to present the stage on the web or on user owned tablets and smart phones. On this stage users can choose exhibits from a collection of objects on the right side of the interface (cf., Figure 2). It is also possible to view information about each virtual exhibit in the collection. To underline the story behind the arrangement, a title and text messages can be added. The title can also be defined by the curator, thereby guiding users into a certain direction. In the second iteration of this interface users have the possibility to share their arrangements on twitter or export them as image.

Figure 2. A screenshot of the visitor-facing user interface of Parallel Exhibits. The available digital exhibits are on the right and can be dragged to the stage on the left

The second part presents arrangements created in this way to a larger audience. While visitors arrange exhibits on the stage, the system presents the results in the museum using projections. It is further possible to present arrangements on the museum's website. A key concept of *Parallel Exhibits* is to combine virtual objects with real exhibits, so we connect the presentation of the virtual visitor created exhibition with a physical one by placing plinths in front of the projection area. Users can place virtual objects on the plinths to draw attention to these objects. Furthermore, placing physical exhibits on the plinths can enrich the setup, which helps guiding users' focus into a certain direction.

Additionally, we developed a "curator view", which allows museum staff to manage the digital collection. It is possible to include virtual exhibits from external sources like a museum's owned database or *Europeana*. Furthermore, detailed information about every single object can be updated. Background information and key words can be added. The key words are used to build relations between different virtual objects. Thereby the system is able to propose matching objects.

We evaluated this prototype in a field study (cf., Figure 3) by placing it in a room of an ancient Egypt exhibition at the Allard Pierson Museum. We selected 15 images from *Europeana* with objects related to this age and invited visitors of the exhibition to explore the system without any further guidance. We observed visitors and conducted semi-structured interviews with them and the museum staff. To attract attention, we decided to use

an interactive table, namely, a *Microsoft PixelSense 2.0*[5]. An interactive table provides a large interaction area with enough space for multiple visitors to have a look at and interact.

Additionally, we conducted a series of semi structured interviews with curators and museum staff from different museums. We discussed different uses cases of our systems and analyzed the needs of the curators.

Figure 3. Visitors, researchers and curators engaged in discussions around the prototype at the Allard Pierson Museum in Amsterdam

Finally we conducted an online survey in which we present our system to collect quantitative feedback. So we analyzed interaction time and how objects are used in arrangements. In the online survey we invited participants to use the stage of our system. Afterwards we asked them to answer a questionnaire.

Findings and Discussion

During five hours of observation 35 visitors interacted with the stage of the system. Most visitors passed by in small groups or pairs. Most of the times, one visitor started arranging objects, while others stood by observing. In many cases this triggered lively discussions about the presented objects and the best way to arrange them. We also observed a strong interest in the story behind the virtual exhibits. We conclude that users are not only interested in selecting nice looking objects but also in learning more about them. An important criterion was the object's history. Visitors want to create collections of exhibits that historically fit together. This is supported by the fact that when a curator of the museum was present, visitors tended to ask many questions about the exhibits and created more sophisticated exhibitions.

[5] http://www.microsoft.com/en-us/pixelsense/

We interviewed users as well as museum staff about their motivation to participate in an interactive exhibition. Most users would like to get a printed copy of their arrangement to take home and show it to friends and family. In contrast, only very few were interested in sharing their arrangement online in social networks, like Facebook or twitter. Furthermore some visitors looked explicitly for game elements in our system: they mentioned it would be nice to get "points" for arrangements. One curator mentioned the idea to provide an exhibition context and areas on the stage to place objects. So it would be possible to give visitors points for correctly placed exhibits. Afterwards, we integrated tools for curators to assign keywords to exhibits within Parallel Exhibition. These keywords signal connections between objects and allow for a semi-guided approach to create more meaningful exhibitions and, thus, serving a similar purpose as the curator during the field study.

In our online survey, 40 people participated and interacted with the stage of our system, on which we presented 200 objects from different historical eras, for example, medieval castles or ancient Egypt handcraft. Because every participant worked on his or her own session we were able to collect quantitative feedback: participants interacted on average 226 seconds with the stage (SD = 220). On average, every participant used 5.65 exhibits in his or her arrangement (SD = 4.24). With longer interaction time participants arranged more objects. At the same time they removed more exhibits from the stage. Thereby, we conclude that participants tried out different arrangements before they were satisfied. Nearly three-fourths of the participants added exhibits which were recommended for their current virtual exhibition by the system. This indicates the need of support to browse large amounts of data and the interest in guidance.

Like in the Allard Pierson Museum, we placed three virtual plinths on the stage. The visualization of the positions of the arranged exhibits shows that most participants used the guidance to place objects as well. Thus, curators can explicitly influence the position by virtually assigning objects into the stage.

Afterwards we asked participants about their motivation to use such a system with regard to a museum visit. More than half of all participants would use such a system, because they miss something in an exhibition. In total, 40 % would use such a system just out of fun and only 20% were interested in sharing their thoughts with others in the museum or online. Similar to our first study, participants were more interested in a printed version of their arrangement than in sharing arrangements on social media.

Curators and museum staff indicated an interest in new ways of communication between them and visitors. Some saw a benefit of the system being a better understanding of both stakeholders, so visitors could inspire the feeling of being a curator and curators could get an impression of visitors' interests.

As source of digital exhibits curators would use museum owned databases, because the large amounts of objects owned by the museum. In contrast, the possibility to include external databases like *Europeana* seemed to be less attractive. Additionally one curator mentioned that it would be useful to use our system for planning upcoming exhibitions. This would allow to have a first look on ideas and to discuss them with colleagues.

From a technical point of view, curators mentioned different ideas to present the arrangement in the museum. Besides the proposed concept to use plinths, curators were interested in presenting empty show cases, which could be filled with virtual objects by visitors. Furthermore, curators asked for the possibility to present the virtual objects in 3D. However, 3D visualizations of exhibits are rarely available at the moment and need to be created beforehand.

We identified three different use cases for Parallel *Exhibits*. The first scenario is to include the stage and the presentation of Parallel *Exhibits* in a museum. Here visitors are becoming curators. Exhibitions created by visitors would allow curators to get more accurate insights into visitors' interest. Furthermore, the museum would become more interactive and enhanced interaction between visitors could take place. In this scenario we see the most potential for the museum of the future. It combines a rich fund of cultural heritage and knowledge with the creativity of visitors.

In the second scenario users would use the *Parallel Exhibits* stage online, for instance, on the museum's webpage. This can be supportive for a deeper interaction with the community of the museum. Interested and enthusiastic volunteers can contribute their knowledge. The online available version can also be used by future visitors to prepare a museum visit. This is particularly interesting for visiting groups with educational goals. For example, school kids can prepare their personal exhibition and visit the museum afterwards.

In the last scenario, museum professionals use *Parallel Exhibits* to sketch arrangements for new exhibitions. Museum professionals can visualize different arrangements without much effort, explore different drafts and discuss them. Similarly in this scenario *Parallel Exhibits* enables remote participation, so visitors or staff from other museums can be included in the exhibition design process.

Conclusion

Cultural heritage artifacts reside in great numbers in galleries and storage facilities. For most objects a vast amount of digital content is available. Traditionally, the selection process for creating an exhibition is dominated by curators and exhibition designers. In our work, we present the *Parallel Exhibits* concept which allows visitors to be part of the exhibition creation process. In a dynamic approach visitors become co-curators under curators' guidance. We created a web-based prototype where users can select and arrange exhibits. The resulting exhibition can be viewed online or projected on-site into an exhibition space at the museum. We report on a first field study, a series of interviews with museum professionals, and an online survey in which we show the overall feasibility of our approach, identify three specialized use cases, and discuss possible application areas.

Acknowledgements

We thank the Allard Pierson Museum, Amsterdam and Merel van der Vaart for providing the facilities for conducting the field study. Furthermore, we thank the Petrie Museum of Egyptian Archaeology UCL and Wellcome Library, London for providing content we could use in the application. The research leading to these results has received funding from the European Union Seventh Framework Programme ([FP7/2007-2013]) under grant agreement no 600851.

References

Byvanck, V. & Schilp, E. 2012. Blueprint: Plans, sketches and story of the Dutch Museum of National History (2008-2011), Amsterdam: SUN architecture and Stichting innl.

Bryant, E. 2011 ' A Museum Gives Power to Children', Curator the Museum Journal 54:4, pp 389-398.

Helmreich, A., Jones, J., and Stevens, J.J. 2013. 'Exhibition Critiques: Gallery One, Cleveland Museum of Art', Exhibitionist 32:2, pp 91-100.

Simon, N. 2010. The Participatory Museum. Santa Cruz, CA: Museum 2.0.

Watson, S. 2007. Museums and their Communities. London: Routledge.

Wonderful Stories on Digital Devices – How Museums Have the Power to Ignite Feelings of Resonance and Wonder

Rikke Olafson
DREAM, University of Southern Denmark, Denmark
www.dream.dk

Abstract: *Nowadays technologies such as smartphones, laptops and tablets, have become part of everyday life for most people. Museums too have embraced many of these devices in order to try to provide the visitor with a more interactive and engaging museum experience. Referring to Stephen Greenblatt's (1991) concepts of resonance and wonder, I illustrate how digital media, combined with powerful stories, have the power to create emotional and engaging learning experiences for young people between 13 and 23 years of age.*

During the spring of 2012 I carried out a number of direct observations of young people visiting the highly digital exhibition "Seven Vikings" at Moesgård Museum, a cultural history museum in Denmark. Seven Vikings was an experimental exhibition, which used a variety of digital media solutions such as RFID tags, sound, 3D movies and projections, to tell the stories of the local Viking population, in order to create a sense of wonder and a strong relationship between the objects and the visitor.

In this paper I present three case studies of young people visiting the exhibition.

The case studies represent a variety of experiences, reflections, and responses to the narrative storyline and the use of digital media. This paper gives a new perspective, on how museums can use digital media and storytelling to address the challenge of creating engaging experiences for young people.

Keywords: Adolecents, museums, digital media, storytelling, exhibitions

Introduction

Museums have the potential to become places of wonder and resonance for different types of visitors, including adolescents. But many adolescents still perceive museums to be unlikely places to have engaging experiences, a place where they might have an experience of wonder or even an emotional experience (authors notice). In the following I present three case studies, which each illustrate how adolescents at a museum experienced different varieties of engagement, reflection and wonder as a consequence of digital media solutions, combined with digital storytelling within a special exhibition.

> The moment we choose to look back, to reflect upon the past, we find narratives and theses based on the sometimes (fragmentary) evidence available, but, subsequently these are filtered further by the medium through which we choose to convey those histories. (Parry 2007, p.3).

Ross Parry argues that the past is full of narratives, as stories are embedded in the lives of people, but also, and perhaps more importantly for museums, in objects. Therefore all objects may have a story to tell, but it is up to the curators to convey it. Digital storytelling has proven to be a very successful tool to convey stories in projects involving games, films, and multimedia, but despite past emphasis on multimedia technology in museums,

museums still consider digital storytelling a new concept. As it is the case with traditional storytelling, the use of digital stories in the museum serve many purposes, including telling of life-stories, historical events, or as informational or educational tools. Therefore digital storytelling has the potential to engage visitors by using new technology to, for example, offer different viewpoints, themes or stories related to one object, allowing and encouraging visitors to discuss the different stories in order to create interaction (Lambert 2013, Wyman, B., S. Smith, et al. 2011).

Resonance and wonder

In his influential essay 'Resonance and Wonder,' Stephen Greenblatt (1991) describes two principal modes, *resonance and wonder,* by which visitors engage with objects or displays in a museum. By *resonance*, Greenblatt refers to,

> The power of the displayed object to reach out beyond its formal boundaries to a larger world, to evoke in the viewer the complex, dynamic cultural force from which it has emerged and for which it may be taken by a viewer to stand (Greenblatt 1991).

A resonant exhibition has, according to Greenblatt, the power to pull the viewer away from the celebration of isolated objects and toward a series of indirect, intangible connections, reflections and questions. Tiina Roppola (2012) also uses the concept of *resonance* in order to describe the interaction between people and exhibitions. A resonant exhibition is, according to Roppola, a place where "visitors can *physically*, *personally* and *socially* interact with, or feel part of, exhibition environments" (Roppola p. 151, original emphasis). However, according to Roppola, simply combining sounds, sights, smells and textures does not automatically create a resonant experience; the sensory input needs to correspond with the cognitive means through which the audience understands them.

Wonder
Greenblatt's *wonder* refers to the immediate power of objects and displays to attract and capture the visitor's attention:

> The power of the displayed object to stop the viewer in his or her tracks, to convey an arresting sense of uniqueness, to evoke an exalted attention" (Greenblatt 1991 p. 42).

De Bolla (2001) also elaborates on the state of wonder. He describes it as a temporary state of mind, you can "remain in wonder, be in it" (De Bolla 2001 p. 181). Therefore wonder can be interpreted as a feeling, which has the power to ignite the state of resonance, a feeling that leaves the visitor wanting more.

Project background

The observational study took place in a special exhibition – The tales of the Seven Vikings, at the cultural history museum "Moesgård" in Denmark. During the period in which the study was carried out, the museum was in the process of developing and trying out new and experimental ways of interpreting the past for the development of new exhibitions in a brand new museum building (which will open in October 2014).

In this article I have divided the exhibition into three main parts: The introduction/Sleeping Vikings room, the main part of the exhibition (Viking Aros), and the destination/sailing-installation room. The "Seven Vikings" exhibition encourages the visitor, through the use of digital media and narrative storytelling, to step into another world and another time.

The Introduction/Sleeping Vikings room

The visitor is first introduced to the Seven Vikings through large pieces of text. A specific prehistoric artefact represents each Viking and the visitor is encouraged to choose a tactile replica of the prehistoric artefact. The replica contains an RFID tag that, at several stations throughout the exhibition, triggers a dramatized first person story of the chosen Viking; the tag also allows the visitor to play a game at the "sailing installation".

The tales of the Vikings are all based on facts gathered by archaeologists through excavation, investigations and research, and all of the represented Vikings did at some point visit Viking Age Aarhus. The stories are created by playwrights, and are performed by real actors.

The concepts of the stories build upon the linear storyline. The visitor chooses the stories he/she finds interesting, but they are not obliged to listen to all of them, as the stories are semi-closed and relate to the scenario and objects in a specific display. This allows the visitor to get a semi-personal experience of the exhibition.

After the introduction, the visitor enters a room with dimed light, and is confronted with life-like figurines of the Vikings represented in the exhibition. The Vikings appear to be sleeping and are very realistic: you can even hear one snore, and two of them move their chests as if they are breathing. Only one of the Vikings is awake, the Randelev Woman. In this room the visitor can access the stories of the Vikings for the first time. Contrary to the stories in the main exhibition, the majority of the stories in this room are not told in first person. Only the tale of the Randelev women is in first person, and her story in this room is also the most poetic tale in the entire exhibition.

The main part of the exhibition (Viking Aros)

After the introduction to the sleeping Vikings, the visitor is invited to explore the old town of Aros. Moving through the dimed light and smoky "streets" of the town, the visitor can discover small hidden movies and projections, while gazing at the objects on display. Sound emerges from the video installations and from the listening stations, where the visitor is invited to use the object with the RFID tag to explore and learn more about Viking-age Aros.

The Destination/Sailing-installation room

In the last part of the exhibition the visitor is invited to go on a journey with their Viking. The "sailing installation" consists of two main parts: a sailing game and a big interactive map. The game allows the visitor to feel what it was like to navigate with the help of the natural landscape, without modern technologies like GPS. It also gives the visitor a tactile digital experience in sailing, as they use a real wooden steering oar to sail from Aros to their Viking's final destination. This part also includes a number of small rooms with exhibitions that depict the Vikings' travel destinations.

Methods

Throughout the summer of 2012, I observed 44 adolescents visiting the Seven Vikings exhibition. I paid special attention to young people between 13-23 years of age. The observations were direct, non-interfering observations and were recorded in the form of detailed field notes, which included personal and professional reflections. The observations were followed up by short conversations, if there were specific situations that I wanted to know more about.

Results

In the following I seek to illustrate how incidents of wonder and resonance occurred in the Seven Vikings exhibition, drawing on three case studies of observations of visiting adolescents.

These cases serve as examples of how adolescents interacted in and reacted to the exhibition. The first case illustrates how a narrative story in the room of the sleeping Vikings influenced three young womens' interactions with the rest of the exhibition, while the second case study illustrates how digital media created a reflective experience for a grandfather and his grandchildren in the main exhibition.

The final case demonstrates how digital media and a narrative storyline served as a means of reaching a common ground for two boys while they were using the sailing installation, as well as how the digital media made them reflect about the content of the exhibition.

Case study one: The three girls and the Randelev woman

The case of the three girls' encounter with the Randelev woman illustrates how a powerful storyline, combined with embedded digital media, created a resonant experience for three girls aged 17-18. As already mentioned, the Randelev woman was different from the other Vikings, as she was the only one that was not asleep. Her story was also told in a more poetic manner and was acted out in the first person.

On many occasions, I noticed that visitors seemed to have a special connection with the Randelev Woman: for instance, I noticed that visitors often took her hand, and made time to listen to her entire story. The three girls also had a strong reaction to the Randelev woman's figurine and story: they listened to her entire story in complete silence. Towards the end of the story I noticed that especially one of the girls looked very moved, and even had tears in her eyes. The other two girls were whispering. In the main exhibition they listened to a few randomly selected stories, and gazed at some of the 3D movies. Suddenly they made a long stop at the "cemetery story" listening station. The cemetery story tells the story of the Vikings who did not travel, Vikings like the Randelev woman. It has projections of skeletons from an excavation near Aarhus. The girls stayed for an extended time (compared to other adolescents visiting the exhibition) in the cemetery room while talking. I listened in on their conversation and could hear sentences such as: "are those real people?" "is the story real?"

I approached and asked the two girls what they were whispering about, when they were standing in front of the Randelev woman.

Girl A: "well first we talked about how real she looked, and then that I really wanted to give her a hug, as she looked so sad and alone haha"

Girl B: (nodding) "yes yes I really wanted to take her hands and tell her that everything would be okay, that they [the men] would come back"

I also confronted them about the long stop at the "cemetery story", as I had observed that it was not a typical stop made by others. They expressed that the storyline of the Randelev woman, combined with the digital storyline at the cemetery stop had really made them reflect about their own fragility, death and the past. As Girl B put it:

> The narrative story of the Randelev woman, was so poetic and beautiful and because she looked so real… ehmm… It was so ehmm… REAL and it made me think about the past, about the people, it made me wonder if they were just like me…. A PERSON

This case is a great example of how the Viking age, and in particular the Randelev woman, came alive through a storyline and became relevant to the girls. The narrative journey of the exhibition invited the young girls to

explore the life of a Viking not by using a digital screen, but through a storyline combined with layers of illusion and the real, which relied on the exhibition's ability to create a sense of wonder. You may say that by dramatizing the stories of the Vikings the exhibition created atmospheres of imagination – places for wonder. And it is the combination of the real and the imagined that made the girls have a resonant response and interaction with the Randelev woman. As Roppola points out, it is the personal and social experience of the exhibition, which creates a resonant experience, and this case illustrates how exhibitions can create such experiences for adolescents using digital media, but also the importance of using digital media wisely and in an embedded way, to produce innovative exhibitions.

Case study two: The grandfather and his grandchildren

A Grandfather and his grandchildren (aged 18-20) entered the exhibition.

They made stops at all of the listening stations in the main exhibition, and listened to most of the stories. As it was quite unusual for visitors to stop at all listening stations in the main exhibition, I asked them why they had chosen to do so. They expressed that it was the combination of great stories and the RFID tagged object: as the grandson expressed, "It [the object] was so interesting and smart and I loved that it was not just another app, but it was a thing a "real" thing". Here you might say that the object as a smart and surprising digital device created an immediate sense of wonder, and as a result of that stimulated a motivation for learning for the grandchildren and the grandfather.

The object also acted as a means for the three to reach common ground. The grandchildren were allowed to act as facilitators for the grandfather in order to teach him how to use the tagged object. For the grandfather, the tag was truly a device of wonder, as he had never seen anything like it before. In this case the visitors also stressed that it was not just the technology, but how it was used, that made them reflect upon their common history. It was the combination between the stories based on real objects and digital media which made it possible for the family to obtain a social and personal connection to the exhibition. As the grandson explained, "Without the stories the exhibition would not have been as powerful as it was, they were new and engaging"

Case study three: "We are sailing"

This case study illustrates how two boys (age 14 and 15) made alternative use of the "sailing installation" in the destination room in order to finish the game.

The two boys quickly rushed through most parts of the main exhibition towards the sailing installation. As I had observed on other occasions, the boys choose to cooperate on playing the game. One (Boy A) started to play the game, while the other one (Boy B) took on the role of navigator. In the middle of the game, the boys shifted places, and Boy B took the place of the sailsman, while Boy A was supposed to be the navigator. Boy A started to investigate the interactive map that also is a part of the installation.

Suddenly Boy A shouted "wow I think it is all connected … I think that I can follow you [the sailing route] on the map, who are you [referring to Boy B's Viking]". "I'm Reginbrandt" Boy B answered. Boy A left the exhibition and ran to the introduction room to collect an object similar to Boy B's Reginbrandt. Boy A had noticed that by using the large map of the installation, he could guide Boy B towards the Viking Reginbrandt's destination.

Afterward I talked to the boys about their experience and what they had gained from it.

Boy B: "Well…. we talked about how cool it was that they could travel so far without a GPS and why they traveled"

Boy A: "yes, I did not know that they were so clever in the Viking age, I thought that it was all about fighting and ehmmm stuff"

Boy A was also very impressed by the fact that he could guide his friend by using the map, but yet again "it was a bit like cheating, as they [the Vikings] did not have the opportunity to use a map"

The case of the sailing installation demonstrates how digital media have the power to reach and engage young boys. After the initial sense of wonder, which made them stop at the installation, the boys had a resonant experience that allowed them to reflect about past, present and the differences between the two periods of time. The installation also allowed them to work together and have a social and personal experience.

Conclusion

The study illustrates how clever embedded digital media, combined with powerful narratives, can change the museum and create meaningful experiences for adolescents. The results have been employed in the creation of the new Moesgård Museum.

As the case studies demonstrate, embedded digital media combined with storytelling can potentially take on a key role in the storytelling process and thereby create meaningful, emotional and engaging museum experiences for adolescents.

The three case studies of young people interacting with digital media, prehistoric objects and each other, provide different insights into how embedded digital media combined with digital storytelling, have the possibility to create experiences of *wonder and resonance*, and the impact of these experiences. Case study one shows how they can be used to address adolescents in ways that would not be possible without technology. The story became alive to the girls, because of the combination of the subtle voice of the woman reading, which was activated by the RFID tag and made alive through the storyline. Case study two showed that digital technology has the power to create a sense of wonder, as it did for the grandfather and his grandchildren. Case study three illustrates how digital media have the power to engage adolescents in a playful manner, in order to make them reflect upon their past. Furthermore, the use of digital media may constitute a base for the creation of a powerful connection between the exhibition and its visitors. To sum up, the use of digital storytelling has three main benefits for museums:

- Objects become more relevant for the audience
- It allows the visitor to get an imaginative and reflective experience-resonance
- It can create a sense of wonder

Is the use of new trends, such as digital storytelling, a new tool for museums to use to attract and keep new audiences? Implementing the newest digital media in every exhibition may evoke an immediate sense of wonder, but does digital media help in creating an experience of resonance, an experience of richness or significance as described by Greenblatt? I would argue yes, and in this paper I have proposed that embedded digital media in combination with a powerful narrative story have the power to engage and create a significant museum experience and therefore have the potential to be a method for museums to stay relevant for their audiences. And while digital technology often acts as the means of conveying a message, it is the combination of technology with sound, words, smell and light that constructs and enhances the emotional side of the experience, which has the power to ignite a feeling of resonance. For instance, light, sound or stories can react with the visitors' perceptual systems in order to create the experience of harmony or reflection. The simulated relationship between the digital media and the physical space of the museum was possible because of the existence of the frame of the narrative stories of the Vikings, together with the realistic and emotional scenography, allowed the visitors to relate to the people of the Viking age, by creating a link between past and present.

Future work

In the future and beyond the current work, a sound understanding of these notions will hopefully come to enrich current trends in museum architecture and the design of "creative spaces". But if digital media and storytelling is to create a state of resonance, it has to be used well. To end with the words of Greenblatt:

> I think that the impact of most exhibitions [designs/objects/texts] is likely to be enhanced if there is a strong initial appeal to wonder, a wonder that then leads to the desire for resonance, for it is generally easier in our culture to pass from wonder to resonance than from resonance to wonder. In either case, the goal — difficult but not utopian — should be to press beyond the limits of the models, cross boundaries, create strong hybrids. For both the poetics and the politics of representation are most completely fulfilled in the experience of wonderful resonance and resonant wonder.

Author's note

The study on which the article is based forms part of a research program, "Learning 2.0", supported by the Danish Research Council of Strategic Research (grant number 09-063275).

References

De Bolla, P (2001) *Art Matters* Harvard University Press.

Greenblatt, S. (1991). "Resonance and wonder," in I. Karp & S. D. Lavine (eds.), *Exhibiting cultures: The poetics and politics of museum display*, Washington, DC: Smithsonian Institution Press, pp. 42-56.

Lambert, J. (2013). *Digital storytelling: Capturing lives, creating community*. London: Routledge.

Lorenc, J., Skolnick, L., & Berger, C. (2010). *What is exhibition design*? Mies, Switzerland: Rotovision.

Parry, R. (2007) Re-coding the museum: Digital heritage and the technologies of change London, UK: Routledge.

Roppola, T. (2012). *Designing for the museum visitor experience*. London, UK: Routledge. Rosenbaum, M. S., &

Wyman, B., S. Smith, et al. (2011). "Digital storytelling in museums: observations and best practices." Curator 54(4): 461-468.

When Different Types of Visitors Sign up for Digital Curation

Trine Nissen, Nina Udby Granlie
Trapholt, Denmark – Art and Design Museum

Abstract: *In November 2014 Trapholt Museum of Modern Art in Kolding, Denmark, will launch an ambitious project – inviting visitors to the museum to create their individual exhibitions and featuring their own preferences. The exhibition will be called YOUR exhibition. The intention is to employ visitors' own discoveries as a key to intensifying the appreciation of art, and the project builds upon 10 years' experience with the museum visitor as curator – but it is the first time the experiment takes place in a digital context. The visitor is invited to select their favourite work from a range of 150 pieces on the principle of personal choice of curation elements – for example, colour, atmosphere or motif. The selected works are placed one by one in an electronic basket, and in the final gallery the exhibition can be realised on a scale of 1:1, individual visitors themselves positioning the items in the exhibition gallery and choosing background colour, lighting and title. The finished (electronic) exhibition can then be shared on social media.*

The article is part of Trapholt's contribution to the sustainability prism of the broader intermuseum research centre. It investigates the significance of the digital versus the authentic piece and Trapholt's targeted work of communicating with different types of museum visitor attending the same exhibition. The article was written by Nina Granlie (collection manager) and Trine Nissen (head of communication).

Keywords: digital curating, physical objects, museum communication, visitor segmentation

Do authentic objects possess a different potential from their digital cousins?

In YOUR exhibition the visitor assumes the role of expert and becomes the curator of art and design. The visitor wanders about among authentic pieces, which it is forbidden to touch, and therefore the exercise proceeds with the aid of a digital curation tool designed for the exhibition.

One of the aims of the exhibition is to investigate the significance of the authentic items. Is it important that the visitor views authentic objects – or could the whole thing just as well take place at a digital level? Issues of aura, original and authenticity have come to the fore in the context of the development of information technology and are debated in materiality studies and the museological field. One anxiety in this respect has been whether the aura of the original is lost when an item is expressed in digital representation and form of reception. Museum objects are the essence that distinguishes museums from other discovery, educational and cultural institutions. Materiality studies, however – like so many other scientific disciplines – have been influenced by the effect of information technology on social development. The development of Web 2.0 – also referred to as the Social Web, Open Web, Active Web, Living Web – as these names suggest, has made us active participants – "prosumers" – capable of exerting influence and sharing content with others through social platforms. Thanks to technology, museum items can now be made accessible in innovative and sensory ways which at the same time cater for differentiated users with different needs, preferences and styles of learning. In the development of the curation tool for YOUR exhibition, one of the key requirements has been

to take advantage of the technological option of individualising and personalising the users' interpretation framework. The challenge has been to create a medialised interpretation space offering at the same time room to dwell on the objects' material characteristics – form, colour, texture, etc. In the field of materiality studies emphasis is given to the special potential of authentic objects for creating engaging and affective sensory-based discoveries. It is Trapholt's theory that this potential can be released, for example, by letting visitors interact with the objects during curation – by comparing and studying objects in the context of a selected theme, the visitor derives a more acute awareness of these objects. In the field of phenomenology Heidegger and Merleau-Ponty argued that perception is about the body's interaction with the world around it. The objects open themselves up as a mutual relationship to the viewer as opposed to earlier ages' view of the object as a passive item separated from the subject. Sandra Dudley adopts the view that exhibition design should attempt to minimise the distinction between objects and visitors – for example, by facilitating a greater sensory engagement with the objects. As it is forbidden to touch objects, technology can provide a digital "hands-on" experience, with curation exercised through the use of eyes, thoughts and hands. Normally, a distinction is drawn between the material and virtual worlds. Frost (2010) and Witcomb (2007) have argued for eliminating the distinction on the grounds that they can enrich and supplement each other. The question is whether visitors indeed are able to experience a distinction between the authentic works and their digital forms in YOUR exhibition? The ambition is to have technology function not as an add-on but as an integrated tool, which in Heidegger's words employs available means – in other words, that the actual technological characteristics of the curation tool fade into the background, attention being directed instead at the analytical options that become available and which result in the distinction between physical and digital object being mentally eradicated. Perhaps digitalisation has gradually become assimilated and we now live in a crossover world in which it no longer makes sense to distinguish? On the other hand, the anxiety about digitalisation is that in the process of enabling users to interact there is the risk that the museum limits the possibilities of the visitors' direct non-mediated encounter with the objects. Do the magic and aura of the objects evaporate when the visitor is required to examine both their authenticity and their representation? It is questions of this nature that Trapholt attempts to answer through subsequent empirical examinations during the exhibition period.

Communicating with dissimilar visitors

"Even mass communication pressure cannot influence a person who has no need for communication" (Katz, Blumler et al, 1974). This part of the research project focuses on communication aimed at the respective segments and examines the innate dissimilarity that museum segments appear to possess. How do you communicate effectively to all types of public audiences when on the one hand you wish to enter into a dialogue with the audience and allow the audience to apply its own discoveries and references in understanding the work, when certain audience types actually find that distance and the White Cube are the definition of a meaningful museum experience. The significance is also examined of the museum context of the visitor's experience – in particular the importance of the presence of "the others" in the room. In this connection it should be stressed that the direct communication effect (the Hypodermic Syringe model) is not possible. The theory was initially rejected as far back as 1948 by Hyman & Sheatsley, who highlighted the relevance of supplementing the communication model with psychological characteristics. In Trapholt's communication of YOUR exhibition communication is therefore not considered to be one to one. The starting point is the needs-based model – a situation in which communication does not reach isolated audience members but is aimed instead at individuals in social networks who are part of a wider cultural context. This understands the communication process as a circular, multi-stage model with an associated theory of the meeting between mass communication and interpersonal communication (Sepstrup & Øe. 2010). The basic assumption is that it is possible to influence the knowledge of a target group – but that the knowledge does not necessarily result in a change of attitude/behaviour. In other words, communication can produce durable changes in attitudes and behaviour if the recipient is motivated

and can apply and process the knowledge obtained. And if the process of obtaining the knowledge results in positive thoughts and ideas which are an integral part of the person's cognitive structures.

A traditional four-part segmentation of the communication process is at play:
1) Exposure, 2) Awareness, 3) Recall and 4) Effect.

Exposure by itself says nothing about awareness. Initial awareness leads possibly to continued awareness. In an overcommunicated society it makes sense to concentrate on situations and target groups in which selectivity works to the communicator's advantage, which is one of the reasons Trapholt uses familiar channels of communication such as newsletters and posters and postcards distributed via its network of ambassadors. At the same time we know that repetition assists recall. It therefore makes sense to repeat the message in selected media – for example, by reinserting an advertisement multiple times in the same medium. Initial awareness is often marked by an element of surprise, which has been one argument for extensive use of social media in this project. Trapholt has no longstanding tradition of using social media, and certainly not as an integral part of the exhibition concept. This will no doubt surprise many visitors – and other potential visitors.

The effect of this effort will become evident in the number of segments in the social media and particularly in the number of visitors and subsequent quantitative and qualitative questionnaire surveys.

Who visits an art museum – and why?

In Denmark, the national user survey provides a segmented picture of which persons visit museums – and why they visit museums. One of the findings of the survey is that women and the elderly are overrepresented. Of the total, 26% have a university-level education compared with 7% of the Danish population in general. And 15% are between the ages of 14 and 29 – making up 23% of the population. This means, therefore, that Danish museum visitors differ from the population in general. Trapholt has worked for some years with a four-part segmentation model, clarifying different motives for visiting museums. The model operates with 1) Cultivated, 2) Browsers, 3) Social, 4) Investigators (Grøn, Nordisk Museologi 2007) and shows that whereas the cultivated and investigating visitors are primarily interested in the museum objects, the social and browsing audience are more attracted by the situation and shared company. Group segmentation cannot be translated and read from the demographic data but it is significant that there is coincidence between a high level of education and the group of cultivated. It should also be emphasised that visiting a museum is not only defined by inherent personal traits, income level and cultural habitus but also by a given situation and one's companions at the museum. The four-part segmentation model, however, will be retained here because it defines behaviour at the museum which can otherwise be difficult to determine.

Earlier studies show that visitors frequent museums for various reasons – for example, to advance their cultural development, social respect, knowledge or a good social experience. With YOUR exhibition, Trapholt has chosen a subject which can potentially appeal to all four of the segments who frequent the museum. The permeating message on which the exhibition is based is that art can impart new realisation, personal development, optimism, engagement, quality of life and enrichment. An attempt has thereafter been made to link the message with the preferences of the differentiated audience and the museum's preferences in visual communication material. The aim has been to arrive at a visual expression which both accommodates the four segments and at the same time has art at its centre. Based on 10 qualitative user tests and close co-operation with an external communication agency, the choice of style has focused on a strictly aesthetic expression which references the White Cube in its aesthetics and which at the same time maintains art and the piece as the pivotal point of all campaign material. There is a wish to communicate the exhibition on social media, in the full awareness that this is not – at first glance – the preferred channel of communication of the cultivate segment. Insistence on

social media – particularly Facebook – as a channel of communication arises from the view that the self-exposure offered by Facebook is in line with the potential of YOUR exhibition.

Sepstrup and Øe point out that the challenges of campaign communication are:

- That the visitor considers available knowledge as irrelevant.
- That the visitor does not trust their own comprehension.
- That the change in comprehension is superficial and therefore not durable.
- That the visitor is unable or does not possess the self-confidence to translate new attitudes to action.

With precisely this in mind, Trapholt in its exhibition communication has worked methodically with empowerment, assuring the visitor that they are adequately equipped for their meeting with the artistic scene. The graphic component should be simple and aesthetic. The formulation is clear, and it is the intention that the visitor should at all times be aware of where she is in the process. The idea is that if the visitor conquers the above challenges and succeeds in reaching the affective presence, the museum has achieved much – and if the visitor is already a user of the social media there will clearly be an inclination to publish via this channel. It is precisely as visitors become empowered and feel confident in the museum space that they feel the urge to reproduce and show their merits outside the museum. As a museum, Trapholt wants to harness the visitor's desire and need to show off their skills because this realises the exhibition's underlying message of getting art to the widest possible audience in order to multiply its potential.

The qualitative user tests were held over a two-week period during which users from widely differing demographic backgrounds were invited to create their own exhibition as a prototype to the exhibition proper. The works were represented by laminated photocopies (not genuine objects), and visitors were assisted through the digital process by the interviewer and given additional help when questions and uncertainty arose. In spite of the artificial interview situation, the tests revealed many factors which were implemented in the final version. For example, it became evident that there was a general desire to be able to add a comment to the visitor's own exhibition. It became clear that the process of selecting works is intimate and personal and highly significant for the visitor; it was therefore important that in their choice of title – or extra comments on the exhibition – visitors should be able to stage their work precisely. Selecting and putting works into your own exhibition is perhaps a bit of fun but if the fun is to be reproduced and circulated to friends – for example, via Facebook – it is important that the result reflects exactly who the visitor is, and that it faithfully captures the manner in which she wishes to be viewed by her friends. It also became clear in the test that visitors should be permitted initially to select many works but that later in the process they should reduce the number of works in their digital basket to seven. This reduction phase became a key ingredient in the final setup because the act of reducing helps to sharpen the visitor's picture of what she wants to relate through her exhibitions. An attempt was also made in the tests to challenge linguistic style and choice of words. All participants thought the chosen linguistic style was good, and no one had problems navigating – nor did the cultivated segment feel intimidated. This was attributed to the artificial interview situation: participants did not wish to offend the nice interviewer. Later, the linguistic tone in the campaign material and in the exhibition was carefully vetted and adjusted; it had neither to be too young, too direct nor too literary. Similarly, three different exhibition titles were considered: from **Hva' ka' kunst? (What's art?)** to **Kurator for en dag (Curator for a day)** and the final version **DIN udstilling (YOUR exhibition)**, which was considered to capture the essence of the visitor deciding. Trapholt's work with the exhibition on all communication platforms centres on customisation – the visitor's impression of being centre stage. The visitor is regarded as the main character, and all exhibition communication hinges on the visitor making the decisions, enjoying herself – and learning in the process.

The chosen exhibition structure imposes demands in the way of involvement and physical activation in the form of touching screens, if the visitor is to experience the large exhibition and at the same time build their own, smaller exhibition. Acknowledging that, for example, browsers and cultivated would rather look than touch anything in the exhibition, it is possible to enjoy the exhibition without taking an active part. The exhibi-

tion has been designed to enable the visitor to look at objects without making a selection. This reduces the exhibition to an excellent display of 150 of Trapholt's best works – but at the same lacking the innovative layer that makes involvement something special.

Next step – evaluation and measuring effect

What does the museum expect from the exhibition? The exhibition has, as far as possible, been planned with user surveys and with a background of relevant theory and literature. When it opens, it will become evident whether the museum has achieved its goal. Generally speaking, the museum is already blessed with very fine impact measurements, thanks partly to its good exhibitions, partly to experience sacrifice – with visitors making the effort, actively opting to visit Trapholt, thereby from the outset motivated for a high rating.

The next step is to evaluate. All visitors who take part in the realisation of their exhibition in the exhibition hall will receive a questionnaire via e-mail after their visit. It will ask a series of questions which the museum has defined. It will identify what the deciding factor was in their decision to visit the museum, their assessment of the communication generally, and their use of social media. Questions will also be asked about the visitor's enjoyment of the digital experience, and an attempt will be made to discover whether it was important that the visitor was exposed to the genuine article or the digital version. Did the visitor notice that the exhibition had both a digital and an authentic side – and, if so, what significance did this have for the experience?

The survey will also have a qualitative aspect – 4-6 selected respondents will be asked the above questions with the focus on whether the quality of the visit was influenced by other visitors at the museum. Data will be amalgamated and the subsequent processing of data will be carried out during 2015, and the results are expected to be published during 2016. The exhibition is semi-permanent and will initially remain in place until 2017, subject to a few replacements and some reorganisation. In addition, key findings from the study will be implemented on an ongoing basis.

References

Bille, Mikkel & Tim Flohr Sørensen: *Materialitet – en indføring i kultur, identitet og teknologi*, Samfundslitteratur, 2012.

Brændholdt Lundgaard: B*rugerundersøgelse 2012. Kulturstyrelse, 2013.*

Bourdieu. *The Field of Cultural Production.1993.*

Cameron, F.: *Digital futures I*: *Museum collections, users, information needs, and the cultural construction of knowledge*. Curator, 2003, 46 (3).

Dudley, Sandra: *Museum Materialities – Objects, Engagements, Interpretations*, Routledge, 2010.

Duncan. *Cicilizing Rituals inside public art museums.1995.*

Kulturministeriet. *Danskernes Kulturvaner 2012.2013.*

Kulturministeriet. *Museer og Tal. Danskernes museumsvaner 2012. ODM, 2013.*

Hastings. *Social Marketing: Why should the devil get all the best tunes. Routledge, 2007.*

Kulturstyrelsen. *National brugerundersøgelse. Trapholt. Årsrapport for 2013.2014.*

Landert og Kjærside. *Danske museer i tal. Kulturstyrelsen, 2012.*

Parry, R. & Arbach, N.: *Localized, Personalized, and Constructivist: A Space for Online Museum Learning*. In: Cameron & Kenderline (ed.): *Theorizing Digital Cultural Heritage – A Critical Discourse*, The MIT Press, Massachusetts Institute of Technology, 2007.

Paris, S.G.: *How Can Museums Attract Visitors in the Twenty-first Century*. In: H.H. Genoways (Ed.), *Museum Philosophy for the Twenty-first Century,* 2006.

Ravekki. *Museum Texts. Communication Frameworks. 2006.*

Rudloff, Maja: *Det medialiserede museum: digitale teknologiers transformation af museernes formidling.* In: *Mediekultur, journal of media and communication research*, 2013.

Russo, A. & Watkins, J.: *Digital Cultural Communication: Audience and Remedition*. In: Cameron & Kenderline (ed.): *Theorizing Digital Cultural Heritage – A Critical Discourse*, The MIT Press, Massachusetts Institute of Technology, 2007.

Wood. The Authorities of the American Art Museum IN Whose Muse.

Sepstrup og Fruensgaard. *Tilrettelæggelse af kommunikation – Kommunikations- og kampagneplanlægning, 2010.*

Smith, C.S.*: The Future of the Museum*. In S. Macdonald (Ed.*), A Companion to Museum Studies* (pp. 543-554). Oxford: Blackwell Publishing, 2006.

VisitDenmark . Resultat *og retning 2012-2013. VisitDanmark, 2013.*

Wright. The Quality of Visitors' Experiences in Art Museums. IN The new museology edited by Vergo. 1989.

Taylor, B.L.: *Reconsidering digital surrogates. Toward a viewer-orientated model of the gallery experience*. In: S.H. Dudley (Ed.), *Museum Materialities. Objects, Engagements, Interpretations* (pp. 175-184). Oxon and New York: Routledge, 2010

Witcomb, A.: *The Materiality of Virtual Technologies*. In: F. Cameron & S. Kenderdine (Eds.), *Theorizing Digital Cultural Heritage. A Critical Discourse* (pp. 35-48). Cambridge: MIT Press, 2007

Zimmer, Robert & Janis Jefferies: *Accessing material art through technologies of mediation and immediation*, Goldsmiths Digital Studios, Goldsmiths, University of London, Elsevier Ltd., 2007

Mobile Technology and Museum Education for Schools Theory, Study Results & Use Cases from the Project Art.Lector

Michaela Götsch, Fares Kayali, Ruth Mateus-Berr, Tomáš Mikeska, Kasra Seirafi
University of Applied Arts Vienna & Fluxguide, Austria
http://www.fluxguide.com/artlector

Abstract: *Today's museums and cultural institutions face the challenge of how to engage important educational visitor groups like schools, teachers and students. Our presentation will discuss concepts and methodologies of technology-based museum education, and how to engage educational visitors using new, mobile technologies. We will outline ideas towards a holistic service, which exploits possibilities new technologies in order to significantly improve the quality of museum education for schools.*

We will present the project Art.Lector, an ongoing interdisciplinary research & development project carried out by the "University of Applied Arts Vienna" and "Fluxguide", a technology-innovator for heritage institutions. Art.Lector aims for a transmedial service for museums, enabling new opportunities for mediation of art and museum education. It connects interactive media guiding (Apps, Mediaguide, iPads, etc.) with an educational web platform for pre- and post-visit activities especially for school classes.

Centered around academic research and a design thinking methodology the "Art.Lector" is being designed with an constructivist approach. I.e. participatory workshops were co-designed (by University of Applied Arts Vienna and Fluxguide) in order to empathize with diverse users (scholars from secondary school, teachers from primary and secondary schools, museum educators, curators etc.) and further to unwrap their needs. Questions were co-designed to focus on possible innovative solutions. The University of Applied Arts Vienna evaluated the workshops and defined design guidelines for the co-production and a web-blog as immediate reaction for needs of more exchange between the target groups from school and museum.

Our presentation will put emphasis on (a) the constructivist educational underpinnings, (b) the results of a social scientific qualitative study which involved stakeholders both from museums and schools, and (3) real-life scenarios of the envisioned innovation.

Keywords: technology-based museum education, museum education for schools, holistic service, mediation of art, transmedial pre- and post-visit solutions, real-life scenarios innovations

Introduction

This paper will discuss concepts and methodologies of technology-based museum education. We will outline ideas towards a holistic service which exploits possibilities of new and mobile technologies in order to significantly improve the quality of museum education for schools.

We will present the project Art.Lector, an ongoing interdisciplinary research and development project carried out by the University of Applied Arts Vienna and Fluxguide.

Art.Lector aims at a transmedial service for museums enabling new opportunities for mediation of art and museum education. It connects interactive media guiding (Apps, Mediaguide, Tablets, etc.) at the exhibition with an educational web platform for pre- and post-visit activities.

Our paper will put emphasis on the constructivist educational underpinnings, the results of a social scientific qualitative study, which involved stakeholders both from museum and schools, and real-life scenarios of the envisioned innovation.

Related Work

The importance of constructivist educational underpinnings

Both the technological design and the research method design of the Art.Lector project are based on the concept of "constructivism". It is based on the idea that what we call "reality" is not a fixed given entity. Humans are not simply born into a „world" that determines thinking and acting. We are born into an environment which is open to interpretation and which we have to make sense of in order to be able to live and to perform actions. Gaining knowledge, meaning and factuality is not receiving something from "outside" as "input" but has to be integrated in an active ("self-determined") creation process. Emerging in early 20th century biology, this general idea was elaborated as "radical constructivism" (Glasersfeld 1995; Maturana & Varela 1980; Varela 1991) and as "philosophical anthropology" (Plessner 1928, 1976).

This has a significant impact on education (Overmann 2000, Siebert 1999) and consequently also on education at museums: "Visitors select and enjoy museum experiences based on their perceived ability to reflect and enhance particular self-concepts" (Falk 2009; Simon 2010, 18). In 2008, at the Meeting of the Ontario Science Center, the Associate Director noted to their core audience (families and school-age audiences): "Teens explore technology and they innovate. Those are exactly the kind of skills, attitudes and behaviors we´re trying to grow in our visitors" (Simon 2010, 291). The Viennese constructivist thinker Heinz von Foerster (one of the fathers of cybernetics) explained that human beings do not behave like machines (Riegler 2010). Von Foerster's famous distinction between trivial (input-output) and non-trivial machines (input – not predictable output) is a starting point to recognize the complexity of contemporary belief in measurement of quality and standardization of education, especially within the fields of art. Von Foerster (1993) describes a trivial machine, which is a machine whose operations are not influenced by previous operations and can be compared to a "well defined problem" (i.e., a single, guaranteed solution) in cognitive psychology (Schraw et al. 1995, 2006). It is analytically determinable, independent from previous operations, and thus predictable. For non-trivial machines, however, this is no longer true as non-linear equations define various solutions and cannot be foreseen; the human being is a non-trivial machine, if compared (e.g. Riegler 2010; Von Förster 1993, 134-151).

This constructivist view helps us to understand the importance of how museums (should) use technology for educational purposes. Artworks and exhibits, from a constructivist viewpoint, cannot simply be given things, but have to be meaningfully reconstructed by the viewer. Hence, an effective educational environment has to provide methods and tools which not only transfer information to visitors but enable them to engage in the active creation of meaning and perception, i.e. to create knowledge in its deeper sense. The constructivist underpinnings of our thesis are based on the idea that art mediation aims at encouraging and empowering students and school classes to engage in the active creation of meaning. The envisioned technology presented in this paper tries to come up with new ways to deconstruct traditional one-way communication. It tries to provide an interactive learning space for school classes which allows active engagement, self-created reconstruction of knowledge as well as a motivating environment to be actively committed to the content of the exhibition.

These insights also encourage our participatory research methods. As described at the symposium Remixing Art Education held at the Columbia University in New York in 2014, "Art and Design as Social Fabric. Push-Button-Artists and Antinomy Caused by Constructivist Approach," it is believed that a constructivist attitude

is needed in education (Hattie 2013, 286-287). This firstly stresses the viewpoint of the students and secondly expands the possibilities for individual solutions (Hattie 2013, 287). The target groups for Art.Lector are diverse and include museum mediators, curators, art educators, art (education) students as well as scholars. Art educators who focus on aesthetic education need to allow the existence of differences (f.e. Maset 2012), and museum educators need to investigate research into visitors (Simon 2010, 18).

Participatory Research

Over the last years involving target groups in the design process has become highly important. Through participatory research diverse expectations of users can be analyzed, and as a result customers will be satisfied to a higher degree. The University of Applied Arts Vienna together with its research partner Fluxguide co-developed four workshops with different target-groups:

- Students of the University of Applied Arts Vienna, Teacher Education (22, 13 female, 9 male, age range: 24-54) **(Group 1)**
- Teachers from secondary and tertiary level (3, age ranges: 25-30, 49-53) and art educators of museums (5, age ranges: 25-30, 49-53), just female participants **(Group 2)**
- Teachers from primary, secondary and tertiary level, Ministry of Education, art educators and curators of museums (26 participants, 24 female, 2 male, 13 museum representatives, age ranges: 27-35 (3), 36-45 (3), 46-55 (7), 13 school representatives, age ranges: 27-35 (6), 36-45 (4), 46-55 (3)) **(Group 3)**
- Scholars of the Secondary School "Bertha von Suttner" 1210 Vienna (lower grade secondary school with 20 scholars, 4 boys and 16 girls, age range: 13-14 and higher grade secondary school with 15 students, 4 girls and 10 boys, age range: 16-18) **(Group 4)**

The following methods were used: World Café and Applied Design Thinking, developed by the University of Applied Arts Vienna. The method World Café, invented by Juanita Brown and David Isaacs (Brown et al. 2005) at the beginning of the 1990s, is used by consultancies and companies, and is applied in schools and organizations as well. It was first applied as a research method in New Zealand in 2006/2007 (Fouché & Light 2010). World Café is designed to foster complex conversations with multi-faceted contents. In their research project Fouché and Light wanted to facilitate "a conversational process that helps groups to engage in constructive dialogue around critical questions, to build personal relationships, and to foster collaborative learning". The method World Café was used as a research method for a whole systems approach. The participants were assembled into random discussion groups. After 20-minute-talks the group set-up changed as well as the issue to be discussed. Group 2 discussed the following questions in 3 rounds: 1: *"What are your experiences when visiting museums with students?" 2: "What are your experiences when using technology in school visits to a museum?" 3: "How can technology support, widen and improve your work with students in the museum?"* Group 1 discussed in 2 rounds (question 1 was skipped). The reasons why we chose the World Café in our research setting was that it provides a suitable participative form for first "get-togethers" of different target-groups and that it provided a suitable format (workshop duration of 1.5h to 2h each) to bring together voluntary participants from the areas of teaching and museum mediation (Group 2). For the two other Groups (Group 3 & 4) Applied Design Thinking as research method (Plattner et al. 2012) was used. This method was originally developed as a method-tool by designers and later formalized by Stanford University. It is now used by designers all over the world and is an open source method which was developed further by its authors. In this method participants work in pairs, interview each other and the main objective is to empathize with each other, ideate, iterate, test and prototype. This allows persons to get to know each other and engage in user-oriented design praxis with a high degree of repetition and iterations based on feedback. Questions were asked on three levels; preparation for the museum, needs of new media technologies *in* the museum and new media as a follow-up to a museum visit. As a consequence, design guidelines for Art.Lector were conceptualized.

Conclusion and Findings

Within the museum itself tablets (e.g., iPads) were considered as the most attractive option for most, but not all target groups. Teachers, design and art educators (university students) and curators were cautious about the use of new media and technology in the museum and at exhibitions, but less so scholars from lower grade secondary school. It was established that a playful scenario must be designed which allows to cater to individual needs (Vygotsky 1978). Further on a system is needed that can easily be figured to relate to the school curricula, a system that can plunge the visitor into the atmosphere of times gone by, provides links to the everyday life of youth and facilitates interaction. The University of Applied Arts Vienna and Fluxguide developed an inclusive and participatory collaboration model, where both research and design steps are planned and conducted in close contact. The collaboration was extended by the methodological integration of stakeholders from museum, school and education backgrounds.

Real-life scenarios of the envisioned innovation

Fluxguide is an existing mobile guiding architecture which can be adapted to any exhibition context. Related to the constructivist underpinnings above, Fluxguide aims at transcending existing solutions at museums (audio / multimedia guides / Apps) which still rely on a one-way information flow from exhibitor to visitor. Fluxguide suggests extending and multiplying that flow of meaning by taking advantage of mobile computer technology to enable visitors to create and share interpretations in order to actively focus on artworks[1].

In the project Art.Lector, the existing Fluxguide architecture is expanded by a new component which is directed towards school education at the museum. The general idea is to offer visiting school classes a way to use mobile technologies at the museum for educational purposes but also to connect with the museum's expertise and information relevant to their school curricula – for a better exchange and transfer of knowledge before, during and after the visit. Art.Lector as an advanced technology should allow that at three levels:

a) Pre-visit preparation and integration of museum expertise into the curricula.
As an educational web platform of a museum, Art.Lector enables the museum to upload all (multimedia) content, which is supposed to be used by teachers and their students for preparation issues. After login, teachers are able to find information adapted to their needs, through curriculum-related tags of the content. Further, they have the possibility to create own content, such as individual tours for their visit at the museum.

b) Individual guiding, participative tools and mobile eLearning during the visit.
As a guiding and eLearning app, Art.Lector runs on museums' or visitors' mobile devices and creates an open and educational space at the museum. By getting only prepared and pre-chosen information, tasks, tours, quizzes, etc., the museum visit becomes an individual and exclusive experience that is automatically documented on the teacher's personal Art.Lector access.

c) Art.Lector automatically creates an interactive documentation of the visit.
All generated content (before and during the visit at the museum) and results (tasks, quizzes, etc.) can then be used by the respective teachers and their students for post-work or follow-up activities at the school.

[1] Along with usual features of existing guiding systems (like audio & video content), a Fluxguide system allows to comment and rate exhibits, or to engage in challenges or quizzes. This motivates to actively focus on artworks, as well as to generate own thoughts and interpretations. Additional interaction between visitors is stimulated by the possibility to read and reply to comments of others. Attending the exhibition then becomes an active, interpretative, and communicative event where visitors do not only receive information but also create meaning by themselves and share it with others. Furthermore, a „My Visit" feature offers an automatically generated, personal summary of the visit which can be stored as well as shared on social media platforms. For more information see http://www.fluxguide.com

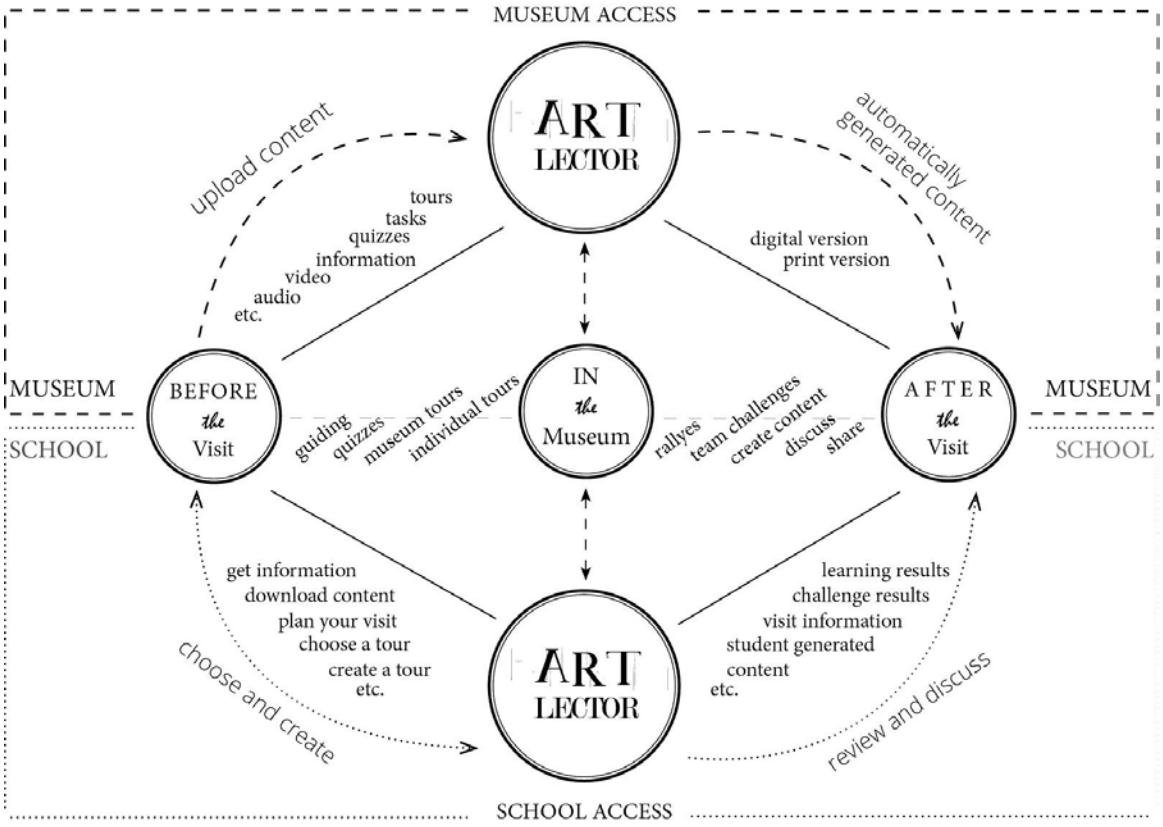


Figure 1. 3 phases of Art.Lector for museums and schools
Source: Fluxguide Ausstellungssysteme GmbH

Acknowledgements

Art.Lector project is funded by ZIT – The Technology Agency of the City of Vienna.

References

Brown, Juanita; Isaacs, David, World Cafe Community; Senge, Peter; Wheatley, Margaret J. (2005) The World Café: Shaping Our Futures Through Conversations That Matter. San Franscisco: Berrett-Koehler Publishers.

Falk, John (2009) Identity and the Museum Visitor Experience. Walnut Creek: Left Coast Press.

Fouché, Christa & Light, Glenda (2010) An Invitation to Dialogue 'The World Café' In Social Work Research. March 2011 10: 28-48, November 22, 2010, doi:10.1177/1473325010376016 Qualitative Social Work November 22, 2010 1473325010376016.

Glasersfeld, E. v. (1995). Radical constructivism: A way of knowing and learning. London u.a., Falmer.

Hattie, John. (2014) Lernen sichtbar machen. Überarb. deutschsprachige Ausgabe von „Visible Learning" (2009) besorgt von W. Beywl & K. Zierer. Baltmannsweiler: Schneider Verlag Hohengehren.

Maset, Pierangelo (2012) Ästhetische Bildung der Differenz. Lüneburg: Edition HYDE.

Maturana, H. R. and F. J. Varela (1980). Autopoiesis and cognition: The realization of the living. Dordrecht u.a., Reidel.

Overmann, Manfred (2000). Konstruktivistische Prinzipien der Lerntheorie und ihre didaktischen Implikationen.

Plattner, Hasso; Meinel, Christoph; Leifer, Larry (Eds.) (2012) Design Thinking Research: Measuring Performance in Context (Understanding Innovation). New York: Springer.

Plessner, H. (1928). Die Stufen des organischen und der Mensch; Einleitung in die philosophische Anthropologie. Berlin, Leipzig, W. de Gruyter & co.

Plessner, H. (1976). Die Frage nach der Conditio humana : Aufsätze zur philos. Anthropologie. Frankfurt, Main, Suhrkamp.

Reich, Kerstin (Hg.): Methodenpool. In: url: http://methodenpool.uni-koeln.de (31.7.2014).

Riegler, Alexander (2010) http://www.univie.ac.at/constructivism/HvF.htm (18.5.2013).

Schraw, Gregory, Dunkle, Michael E., Bendixen, Lisa D. (1995, 2006) Cognitive processes in well-defined and ill-defined problem solving. DOI: 10.1002/acp.2350090605.

Siebert, Horst (1999). Pädagogischer Konstruktivismus – Eine Bilanz der Konstruktivismusdiskussion für die Bildungspraxis. Neuwied: Luchterhand.

Simon, Nina (2010) The Participatory Museum. Santa Cruz: Museum ZO.

Varela, F. J. (1991). Über die Natur und die Natur des Erkennens. Formen des Konstruktivismus in Diskussion. M. F. Peschl. Wien, WUV: 88-107.

Vygotsky, Lev Semenovic (1978). Mind in society: The development of higher psychology process. Cambridge, MA: Harvard University Press. (Original published in 1930).

Von Foerster, Heinz (1993) KybernEthik. Berlin: Merve Verlag.

Transmedia & Charms: The Opportunities of Transmedia Storytelling in the Contemporary Museum

Kelvin de Veth
Tempero, United Kingdom

Abstract: *This paper assesses the opportunities and challenges in museum practice in the era of digital media and technological innovation. A digital generation is growing up and the border between the virtual and physical is fading. Using the concept of "transmedia storytelling" (Henry Jenkins), the paper will look into the use of transmedia practices and narration in the contemporary museum environment, fusing the use of traditional and digital media. The Wellcome Collection is examined in more detail, looking at how a transmedia approach generated results in the 2011 exhibition Miracles & Charms. The different media used in the exhibition and interviews with project staff are analysed to evaluate the impact of the approach.*

By using multiple media beyond the physical exhibition to deliver the narrative (including a mobile app, crowd-inspired illustration, postcard, film), the visitor has several ways to access it. These can be appreciated independently, and they can trigger an interest to learn more via the other media. It was found that the transmedia approach to the exhibition attracted new visitors, gave it a life beyond the physical exhibition dates, and inspired a new way of approaching exhibits going forward. At the moment, transmedia storytelling is still very much linked to the entertainment industry, but there are vast opportunities for the arts and heritage sector to benefit from it. Implementing the transmedia approach in exhibition design can lead to a broader network of visitors and a lasting legacy well beyond the physical exhibition dates.

Keywords: transmedia, storytelling, new media, narration

This paper assesses the opportunities and challenges in museum practice in the era of digital media and technological innovation. A digital generation is growing up and the border between the virtual and physical is fading. Using the concept of "transmedia storytelling" (Henry Jenkins), the paper will look into the use of transmedia practices and narration in the contemporary museum environment, fusing the use of traditional and digital media. The Wellcome Collection is examined in more detail, looking at how a transmedia approach generated results in the 2011 exhibition Miracles & Charms. The different media used in the exhibition and interviews with project staff are analysed to evaluate the impact of the approach.

The beginning of the 21st century saw digital media become prevalent throughout society. A digital generation is growing up, which "seems to be no longer content to remain passive receivers of messages but instead demands to be part of their creation." (Urbanski, 2010: 3). The need to satisfy this generation's demands is currently influencing museum practice. Susan Broadhurst (2007) elaborates on how these 'digital practices' become a source of tension between the virtual and physical worlds. The prevalence of technology in our physical environment requires that we add meaning to these digital developments and adopt a new way of thinking (ibid.: 187-194). This is where transmedia storytelling comes in.

Transmedia storytelling

Transmedia storytelling is a new form of narration, representing

> "a process where integral elements of a fiction get dispersed systematically across multiple delivery channels for the purpose of creating a unified and coordinated entertainment experience. Ideally, each medium makes its own unique contribution to the unfolding of the story" (Jenkins, 2010: 944).

Following Jenkins' definition, transmedia storytelling tells a fictional story across different media. The stories can be followed independently per medium, but they all complement each other in different ways. Jenkins gives the example of *The Matrix*, where film, computer game, animation shorts and Web comics all tell a different part of the story within the same world, complementing each other (Jenkins, 2006: 96-97). Transmedia storytelling may expand markets for a specific story as there are different points of entry (Jenkins, 2009: 57), and offering new levels of insight in the story can enhance customer loyalty and encourage further consumption (Jenkins, 2006: 98).

Despite transmedia storytelling functioning as a type of aesthetic across different media (Jenkins, 2006: 97), there are other motives for creative teams to embrace transmedia storytelling and engagement. By implement a transmedia approach, they aim to make the entertainment experience more meaningful and increase engagement by rewarding loyal fans (Jenkins, Ford and Green, 2013: 137). A different motive can be found in building audiences itself, with teams approaching transmedia content as a "profit centre", making material available to a much larger audience or expecting the early adopters to publicise the property among their own peer groups and social circles (ibid.: 138).

With many museums being aesthetic environments in their own right, and with the pressure of widening their audiences always present in the sector, it is worth exploring how the museum sector can benefit from a transmedia approach.

Transmedia storytelling in the museum

To apply transmedia storytelling in the museum, several obvious challenges arise when following the definition by Jenkins. The first is that in the definition, the story being told is fictional. Even though they are not fictional, museums construct narratives, using both interpretation and the artefacts on display (Bal, 1994: 103).

Second, one must question whether the museum itself can be considered a medium. In one of the first applications of transmedia storytelling in a museum, the Haus der Geschichte in Baden-Württemberg was considered to be the centre of the media (Strohmaier, 2012: online). On this occasion the project *The Thief of History* used a computer-based game alongside the physical exhibition, which told a story with a close connection to the exhibits, as an interesting alternative to simply transferring exhibition content to the Internet (ibid.). The museum itself however did remain the central medium in this process – the "mothership" (Jenkins, Ford and Green, 2013: 138), if you will.

As described above, museums need to adopt their way of thinking with the introduction of new and digital media. With the introduction of the Internet, museums slowly started using it as an information system, much like other traditional media such as books and leaflets. Lopez et al (2010) state that museums started using the Internet to give potential visitor details on ticketing, opening hours and the collection, but that the Web 2.0 (using the Internet as a means of interaction with others) started to change this. This marks the first step towards a new storytelling technique. Through the Web 2.0 the visitor could potentially connect to the museum and share their knowledge and opinions on the collection and exhibitions, which become the centre of discus-

sion, exchange, collaboration and sharing and building knowledge (Lopez et al, 2010: 236). This was the first time that visitors could discuss and engage with a museum's artefacts on such a broad scale.

These changes all happened in a very short time, and while some museums embraced it, many museum professionals were uncomfortable with technological developments that provided an ever-growing means of interaction within their fields of expertise. And over the next decade the changes will happen faster, demanding a completely new attitude towards technology and interaction within museums (Bearman and Geber, 2008: 399). This reserved attitude that Bearman and Geber mention can be underlined through the liquidity of digital media. An online presence, such as a website, but also collections or another means of interaction, is never complete, because the digital world favours participation. This is in contrast with traditional museum storytelling systems that provide closed narratives and fixed records. Curators were not used to visitors sharing beliefs and knowledge on their work and research, and therefore digital media were at first, and might still be, unsettling (Parry, 2007: 107). Yet it is necessary to keep up with technologies, and most major museums are starting to do this. One of the more recent developments that follow up the Web 2.0 are handhelds with web access, such as smartphones and tablets. Even though traditional handhelds like audio guides, booklets and pamphlets already gave visitors the possibility to create their own path through collections, handhelds with web access give it a new dimension. Visitors can now look up information on the collection while looking at it, and also share their thoughts and beliefs at the same moment. They are also able to start their museum experience at home and stay connected with the museum when they leave the physical building. This gives visitors the opportunity to have a museum experience separate from the physical building and the specific narratives told there (Parry, 2008: 183-184). This comes to its climax in the *personalised museum*. In the personalised museum, the museum lets go of the authorship and authority and gives audiences opportunities to participate and express themselves. With the visitors able to share their thoughts and knowledge from anywhere in the world (via the Internet) museums are forced to be more outward-looking and serve the public (Parry, 2007: 109-110).

Even though, as Bearman and Geber mentioned above, the attitude towards these changes was at first, and is sometimes still, quite negative, these developments do satisfy a need museums had even before the rise of digital media. Mike Wallace (1995) pleads for the democratization of museums, for museums to connect with communities and become centres of public debate where people can share their views and where new discourses can be developed. He encourages museums to share their authority: "I applaud efforts to demystify and democratize museums by sharing authority with communities, involving them in planning, collecting and evaluating, and helping non-professionals to mount displays" (ibid.: 122). Today, new media are making his wishes from two decades ago a reality.

Trant (2010) follows this up by stating that through digital media, museums receive an "onslaught of interpretations of culture from an incredible number of sources," and must realise they are no longer the only ones providing meaning to artefacts (ibid.: 306). A relatively recent trend in this is not just interaction through digital media, but more specifically mobile digital media. This creates Malraux's "museum without walls", which he described as an expansion of the museum outside its physical venue (Malraux, 1967). The "museum without walls" in 2014 means that museums can interact with audiences not just within the building or bound to a computer, but with mobile devices at any time or place (Arvanitis, 2010: 174-175). This not only enhances the visitor experience, but also enriches the museum's exploration, appreciation and interpretation of their own collections (Galani and Chalmers, 2010: 167).

On top of these possibilities for the museum sector within new media, Janet Murray (1997) touches upon another connection between museums and digital environments, by describing the latter as encyclopaedic: "a single comprehensive global library of paintings, films, books, newspapers, television programs, and databases, a library that would be accessible from any point on the globe" (ibid.: 83-90). The encyclopaedic capacity of digital environments makes it a compelling medium for storytelling, as "It offers writers the opportunity to tell stories from multiple vantage points and to offer intersecting stories that form a dense and wide-spreading

web" (ibid.). Murray mentions that it not only allows for endless expansion possibilities within the fictional world, but that a web of intersecting information can go through nonfiction as well. She still applies this to the fictional universe, stretching that the borders of the fictional universe seem limitless when linking into nonfiction (ibid.: 87), however one can see the potential of a nonfictional narrative or history via this medium.

Most opportunities for museums described above are all looking towards digital environments for a new way of defining the museum, with Bearman and Geber (2008) mentioning a reserved and conservative attitude among some museums. A cause of this attitude can be the fear of everything moving onto digital environments, making traditional media obsolete. However, the opposite is true. To explain the encyclopaedic nature of the digital, Murray (1997) gives the example of online fan cultures surrounding popular television drama series. As an adjunct to the television broadcast, the Internet becomes a discussion board where episodes can be analysed and long-term story arcs can be plotted (ibid.: 84-85). Strohmaier (2012), in his first experiments around transmedia storytelling for educational institutions, also explains that digital environments do not replace more traditional media, but are used to a similar extent (ibid.). This is where the main value of transmedia storytelling lies: it does not seek to replace traditional media (including the physical museum), but utilises both old and new media to create a broader, richer narrative. It creates new ways of entertainment and learning, rather than replaces the ones already established.

This is where the main value lies for museums: the physical museum visit can be enriched via transmedia narratives that give the visitor more insights and motivate further consumption (Jenkins, 2006: 98). Visitors of the physical museum might continue to interact with the collection or an exhibition by going online, or visitors already engaged in the subject matter online might get more from their visit to the physical museum than they would have otherwise (if they would have visited at all). It gives museum audiences the option to start their visit before going to the actual museum, and to continue their visit after they left the premises.

It might be tempting to integrate transmedia approaches into an exhibition, but it is important to bear in mind that the different media in transmedia storytelling all need to add an independent element of the narrative. The stories should be accessible in their own right, without needing to see the greater picture (Jenkins, 2006: 98). To demonstrate how this can be achieved, to demonstrate how this can be achieved I will be examining an exhibition where transmedia storytelling has been implemented already, namely *Miracles & Charms* at the Wellcome Collection in London.

Case study: Miracles & Charms

From 6 October 2011 until 26 February 2012, the exhibition at the Wellcome Collection was *Miracles & Charms*. This title covered two exhibitions: *Infinitas Gracias: Mexican Miracle Paintings* and *Felicity Powell: Charmed Life*. The Wellcome Collection took two separate topics (Mexican votives and British amulets) that could be enjoyed independently from each other, and brought them together to tell a metanarrative about the tribulations of human life. This has continued beyond the physical exhibition in the galleries. This complementary way of storytelling has manifested itself in the other media around this exhibition.

Before we look at how they come together, it is important to consider the separate segments:

Infinitas Gracias: Mexican Miracle Paintings

Infinitas Gracias illustrated the depth of the votive tradition in Mexico, with more than 100 votive paintings from around the country (Wellcome Collection, 2012: online). It explored individuals at the moment of crisis when their strength of faith was tested. This part of the exhibition explored the influence these vernacular paintings and their makers have in a contemporary context. The exhibition contained a physical gallery with modern-

day offerings from a church in Guanajuato: certificates, photographs, clothing and flowers. These artefacts could also be accessed on the Wellcome Collection website in the votives gallery (Wellcom Collection, 2012: online). There was also a book of postcards of the votives, rather than a conventional exhibition catalogue, as well as votives created by contemporary illustrators, inspired by stories of visitors to the exhibition (ibid.).

Felicity Powell: Charmed Life

Charmed Life featured over 400 amulets from the collection of amateur (Edwardian) folklorist Edward Lovett selected by artist Felicity Powell, complemented by ten of her own works (figure 1). Reflecting on the selected amulets, Powell found parallels with her own work, and bringing the two together brought a new interpretation to the objects (Wellcome Collection, 2012: online). She also made a seven-minute film, talking about her own wax artworks and the parallels with Lovett's amulets, which was on view in the gallery and online (Wellcome Collection, 2012: online). The physical exhibition was accompanied by an app, which requires further attention.

Figure 1.

The *Magic in Modern London* app is particularly interesting in this transmedia exhibition. The app is a geolocated treasure hunt for iOS systems, following Lovett's amulet collection (Birchall, 2014: online). In the app's story, the amulets are scattered throughout London and the player must physically explore the city (with iPhone or iPad), searching for the lost charms. Upon entering "areas of enchantment" the narrative is told through voice actors, historic photos and soundscapes. Clues lead the user towards amulets that are added to the in-app collecting case (ibid.) (see appendix). It incorporates the collections of many other museums and archives; in fact the app takes the player all around London (but never to the Wellcome Collection). Besides complementing the physical exhibition (and increasing awareness of Lovett's book), the app also served to develop the programme of game commissions at the Wellcome Collection, and currently the museum is working on a digital-wide commission strategy, using this app and the evidence coming from it in this process (ibid.).

Danny Birchall, digital manager at the Wellcome Collection, acknowledged *Miracles & Charms* as the museum's first transmedia experiment: *"We were specifically looking for a game project, which had some transmedia roots"* (Birchall, 2014: personal communication). Birchall has illustrated before that this way, even though an app like *Magic in Modern London* does not require a visit to the museum, the Wellcome Collection can expand its audiences to groups of people that might normally never have set foot inside its building:

> "If you want people to play a game, you put it where people play them, rather than where people might find the content interesting. We make games for gameplayers, because we want them to become engaged with what we do" (Imperica, 2012: online).

The app evolved out of a series of transmedia workshops hosted at the Wellcome Collection, through collaboration between the Wellcome Collection and Alex Butterworth of Amblr. Birchall states that it was not developed as an educational element of the exhibition, but more as a game, and treasure hunt for entertainment, and as all other Wellcome Collection games was designed to be enjoyed on its own, outside of the exhibition context (Birchall, 2014: personal communication).

It may now have become clear that many different narratives and histories are being told cross-media under the banner of *Miracles & Charms*. What makes this exhibition particularly interesting with regard to transmedia storytelling is that much like in Jenkins' definition of the concept, the different narratives can be enjoyed independently from each other. Birchall stated that the game was designed to stand alone from the rest of the exhibition, because Wellcome does not want to design games that are essentially a marketing tool for an exhibition (Birchall, 2014: personal communication).

This way of app-making doesn't come out of nowhere. Birchall mentions working together with a London agency who, before collaborating with the Wellcome Collection, often worked with media institutions such as BBC and Channel 4. The agency specialises in "games with purpose", apps and interactions that are intended to be educational. This can range from health to engagement and training, and is exactly the expertise that the Wellcome Collection was looking for at the time (Birchall, 2014: personal communication). Birchall adds that the Wellcome Collection wasn't that far ahead in the field; other institutions could teach them about the potential of these apps (ibid.). It was, however, the first time a "game with purpose" was developed in a museum context, under the banner of a feature exhibition.

The use of apps or games in museums is not a new practice. What distinguishes *Miracles & Charms* from other exhibitions is that the app tells a separate story around the exhibition that can be enjoyed and appreciated without visiting the physical exhibition. People exploring both get a better understanding of the full narrative, but each element also stands alone as a discrete experience.

Even though the app can be enjoyed without visiting the exhibition, it can raise questions that people could explore further by finding out more about the exhibition content. And having seen the exhibition first, one might want to learn more about the amulets in the context of their original locations, which the app can provide. The independent and yet complimentary narratives are also related to the votives, illustrations and postcards of *Mexican Miracle Paintings*, expanding the network further. *Miracles & Charms* has been one of the first experiments with transmedia storytelling in a museum context, which makes it very interesting to see how this was experienced by the audience. Yet this is where the exhibition is lacking. Birchall mentioned that there has been very little audience feedback and evaluation and that they haven't reflected on it enough (Birchall, 2014: personal communication). It did however lead to a new approach in gaming for the Wellcome Collection. Following on from the digital media approach, the Wellcome Collection developed a new strategy looking at better ways of targeting audiences in their digital projects and exhibitions. Part of this is not just looking at age groups and interests, but also at commuting times and other moments where one is without Wi-Fi, but still has access to the content on a smartphone. These new approaches will be used in a new transmedia project called *Forensics* (again games will be paired with a physical exhibition), which will have provision for audience feedback and evaluation, and therefore will shed more light on the strategy.

Conclusion and recommendations

In times where digital media have such a strong grip on society, it is inevitable for museums to start implementing this in their strategies. Many museums so far treat the digital environment as a space to explain their collections and visitor information, without offering much more. Implementing transmedia storytelling (and therefore taking it (partly) out of the entertainment realm), can make people enjoy the subject matter of a mu-

seum collection in an entirely new context. It also has the potential of attracting new audiences that never would have visited the museum otherwise. Even when these audiences don't visit, the museum can still attempt to educate around its subject matter, albeit in a non-traditional manner.

Similar to how entertainment franchises such as *The Matrix* and *The Walking Dead* take the fan on a journey across several types of media that never seems to be exhausted, *Miracles & Charms* offers a great stream of narratives and references to learn more (across media). Considering the ongoing challenge for museums to generate more audiences, transmedia storytelling is a concept that shows great potential, but needs further exploring within museum practice, with more space for audience feedback than the Wellcome Collection (and Haus der Geschichte) have allowed. A new transmedia exhibition taking this into account will be the right start in this journey.

Literature

Arvanitis, K. (2010) 'Museum outside walls: Mobile phones and the museum in the everyday', in Parry. R. (ed.) *Museums in a digital age*, Abingdon: Routledge.

Bal, M. (1994) 'Telling objects: a narrative perspective on collecting', Elsner, J. and Cardinal, R. (ed.)*The cultures of collecting*, Cambridge MA: Harvard University Press.

Bearman, D. and Geber, K. (2008) 'Transforming cultural heritage institutions through new media', *Journal of museum management and curatorship*, 23: 4, 385-399.

Birchall, D. (2014) *How we made the Magic in modern London app* [electronic]. Available: http://www.theguardian.com/culture-professionals-network/culture-professionals-blog/2014/feb/07/magic-modern-london-app-wellcome-collection [12 April 2014].

Broadhurst, S. (2007) *Digital practices: Aesthetic and neuroesthetic approaches to performance and technology*, London: Palgrave Macmillan.

Galani, A. and Chalmers, M. (2010) 'Empowering the remote visitor: Supporting social museum experiences among locals and remote visitors', in Parry. R. (ed.) *Museums in a digital age*, Abingdon: Routledge.

Imperica, (2012) *In conversation with Danny Birchall and Martha Henson* [electronic]. Available: http://www.imperica.com/en/in-conversation-with/in-conversation-with-danny-birchall-and-martha-henson [15 February 2014]

Jenkins, H. (2006) *Convergence culture: Where old and new media collide*, New York: New York University Press.

Jenkins, H. (2009) 'Transmedia storytelling', *Archis*, 19: 1, 56-59

Jenkins, H. (2010) 'Transmedia storytelling and entertainment: An annotated syllabus', *Continuum: Journal of media & cultural studies*, 24: 6, 943-958

Jenkins, H., Ford, S., and Green, J. (2013) *Spreadable media: Creating value and meaning in a networked culture*, New York: New York University Press.

Lopez, X., Margapoti, I., Margaliano, R. and Bove, G. (2010) 'The presence of Web 2.0 tools on museum websites: a comparative study between England, France, Spain, Italy, and the USA', *Journal of Museum Management and Curatorship*, 25: 2, 235-249.

Lovett, E. (1925) *Magic in modern London*, Croydon: Advertiser Offices

Malraux, A. (1967) *Museum without walls*, Garden City NY: Doubleday.

Parry, R. (2007) *Recoding the museum: Digital heritage and the technologies of change*, London: Routledge.

Parry, R. (2008) 'Afterword: The future in our hands? Putting potential into practice', Tallon, L. and Walker, K. (ed.) *Digital technologies and the museum experience: Handheld guides and other media*, Plymouth: Rowman & Littlefield.

Strohmaier, T. (2012) *The thief of history: Transmedia storytelling as a chance for public educational institutions* [electronic]. Available: http://timo-strohmaier.de/_files/_ex/timostrohmaier_paper_symposium0612_engl.pdf [12 February 2014]

Trant, J. (2010) 'When all you've got is 'The Real Thing': Museums and authenticity in the networked world, Parry. R. (ed.) *Museums in a digital age*, Abingdon: Routledge.

Urbanski, H. (2010) 'Introduction: Blurring rhetorical borders', Urbanski, H. (ed.) *Writing and the digital generation: Essays on new media rhetoric*, Jefferson NC: McFarland & Company.

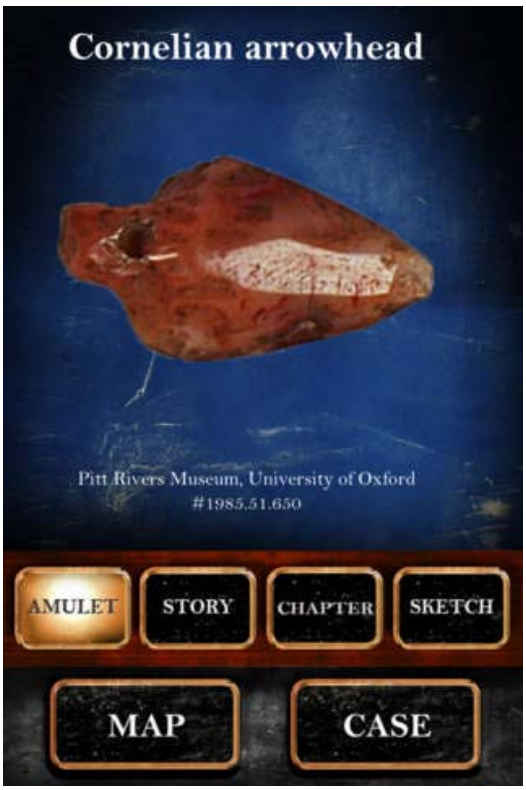
Wallace, M. (1995) 'Changing media, changing messages', in Hooper-Greenhill, E. (ed.) *Museum, media, message*, London: Routledge.

Wellcome Collection (2011) *Mexican miracle paintings*, London: Wellcome Collection.
Wellcome Collection (2012) *Felicity Powell – Charmed life: The solace of objects* [electronic]. Available: http://www.wellcomecollection.org/whats-on/exhibitions/charmed-life.aspx [14 March 2014]
Wellcome Collection (2012) *Infinitas gracias: Mexican miracle paintings* [electronic]. Available: http://www.wellcomecollection.org/whats-on/exhibitions/infinitas-gracias.aspx [14 March 2014]
Wellcome Collection (2012) *Miracles & charms* [electronic]. Available: http://www.wellcomecollection.org/whats-on/exhibitions/miracles--charms.aspx [14 March 2014]

Appendix: Screenshots of Magic in Modern London iOS app

Screenshot 1. Magic in Modern London.
Taken on 24 February 2014 using an iPhone 5

Screenshot 2. Magic in Modern London.
Taken on 24 February 2014 using an iPhone 5



Screenshot 3. Magic in Modern London.
Taken on 24 February 2014 using an iPhone 5

Screenshot 4. Magic in Modern London.
Taken on 24 February 2014 using an iPhone 5

Screenshot 5. Magic in Modern London.
Taken on 24 February 2014 using an iPhone 5

Mobile Solutions and the Museum Experience

Annina Koskiola
Finland Stockholm University, Sweden

Abstract: *Mobile solutions are the hot potato of the museum field in 2014. That is also the case in Finland – a country famous for its mobile technology. This paper presents four case studies from the Finnish museum sector that are using mobile technologies in diverse ways to enhance the museum experience. At the National Museum of Finland the mobile solution functions as an aid for providing translations in different languages and thus improving the aesthetic appearance of the exhibition. At Tampere Art Museum the outdoors mobile tour extends the museum visit outside the physical walls of the building, allowing the users to contemplate their familiar surroundings from a new angle. At Helsinki City Museum the mobile phone is perceived as a communication tool, providing a method for the users to participate in the exhibition and to communicate with other museum visitors. At Luostarinmäki Handicrafts Museum the mobile solution is recognized as a potential device for alluring new visitor groups to the museum. An Augmented Reality game, which combines digital narrative and real-world events, is hoping to attract young visitors to the museum under the disguise of entertainment, while still being educational and informative.*

These solutions are analysed in terms of the Contextual Model, developed by Falk and Dierking. The model divides the museum visit into three overlapping and interacting spheres – personal, social and physical. This paper looks at how mobile solutions may enhance or hinder the museum experience in regard to each of these three spheres. Additionally, the model is compared with the results of a visitor research conducted at the National Museum of Finland in October 2013. The aim of this paper is to identify the most successful features of these solutions and to explore how the field could be developed in the future.

Keywords: mobile solution, app, museum experience, Contextual Model, Augmented Reality

Introduction

During the last couple of years museums have started to realize the possibilities provided by mobile technologies for attracting new visitors and for enhancing the museum experience for the already active audience. In this paper I will look at how mobile technologies could be used to enhance and enrich the museum experience, concentrating on four case studies from the Finnish museum scene. The paper is based on a similarly titled thesis written by the author (Koskiola 2014). The term "mobile solution" is used in this paper for all online services, which are meant to be used on-the-go, mainly mobile apps and mobile websites.

My research questions can be summarized as following:
1) How are museums using mobile solutions at the moment and how do these enhance and intertwine with the museum experience?
2) How would visitors wish to use mobile solutions to enhance their museum experience?

Theory

I will approach the concept of 'museum experience' with a theory developed by Falk and Dierking. The Contextual Model of Learning explains the complex intertwined nature of the museum experience by dividing it into three overlapping and interacting spheres – personal, social and physical spheres (figure 1) (Falk & Dierk-

ing 1992). In 2012, an updated version of the theory was published, where time was added as a fourth layer (Falk & Dierking 2012). According to this theory, shortened by them as Contextual Model, the visitor does not enter the museum as an empty canvas, but their visit is directed by their own motivations, interests and prior knowledge. These aspects account for the personal context of the visit. The sociocultural context refers to the fact that visitors most typically arrive at the museum with family or friends or as a part of a larger group. Furthermore, their experience of the stay is shaped by their sociocultural background, such as belonging to a minority. The third context, physical, is the one that the museum personnel can most effectively alter by providing rich multisensory experiences, but also by taking care of basic necessities, such as providing seating and access to toilets. The more widely the museum exhibition is able to cater for these spheres the deeper impact the exhibition will have for the visitor. In this paper, this theory is used to analyse, how a mobile solution can help the museum to administer to these three contexts and thus enhance the museum experience. The model is also used to analyse visitor's perspective on how they would want to enrich their museum experience with the use of a mobile solution.

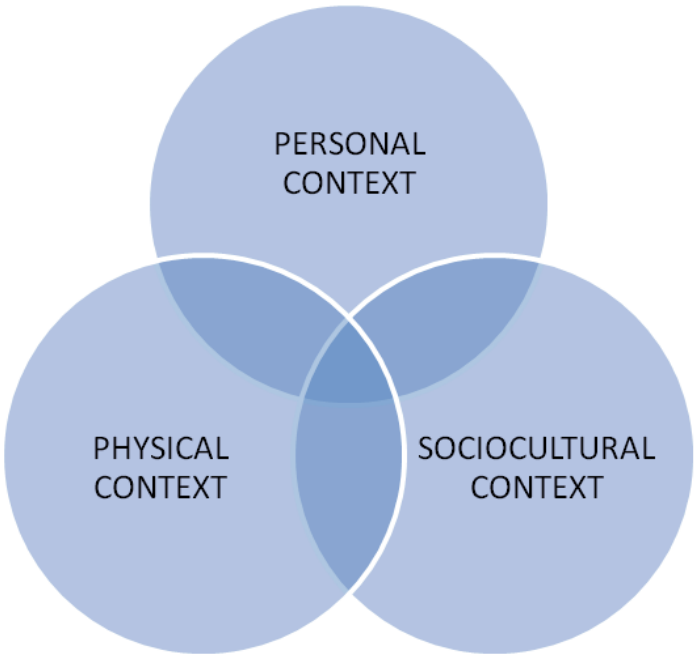


Figure 1. The Contextual Model, after Falk and Dierking, The Museum Experience Revisited, p. 26

Case study 1

The first case study was also the starting point for my research. It is a mobile website created for "The Emerging World – Map Treasures from the A. E. Nordenskiöld Collection" exhibition at the National Museum of Finland, displayed between 26th April and 27th October 2013. The first case study is a typical example of a basic text-based mobile solution that many museums are featuring. The website is simply a digital catalogue of the objects on display in the exhibition. The mobile website is accessible online at: http://skm.nba.fi/welcome. The website could be accessed from the visitors' own mobile device or from one of the 18 stationary iPads in the exhibition area. The basic layout of both solutions was the same, with a list of object numbers and titles corresponding to the numbering in the exhibition.

When compared with the Contextual Model, one can notice that the mobile has only a slight effect on the museum experience. From the physical aspect, the mobile website solves the problem of having to overboard the

exhibition with wall texts, bringing a visual enhancement to the exhibition. The simple fact that the information was provided on touch screen devices adds a sprinkle of interactivity in the exhibition in comparison with the traditional wall texts. However, when the mobile solution is analysed in the context of the entire exhibition, it must be acknowledged that due to the wide distribution of iPad tablets in the exhibition area, there was no real function for the visitors to access the texts with their own device. Furthermore, the personal and social spheres are rather completely ignored by the solution.

In order to grasp, if mobile solutions may indeed be effective in terms of the Contextual Model, three comparative examples are discussed. Even though these examples do touch on multiple spheres of the model, they are each discussed as examples of only one of them.

Case study 2 – the physical aspect

The second case study is an outdoor mobile tour called "Tampere Gals" (Tampereen Likat). The tour is developed by Tampere Art Museum in collaboration with City of Tampere Cultural Affairs, and was released in summer 2013. The tour can be accessed with a mobile app or via a website http://www.seinatonmuseo.fi/tampere (only in Finnish). The solution features 10 of the most striking public sculptures of women in the city. The tour, which spans over 5, 26 km in the centre of Tampere, can be followed in any order with the aid of a mobile app that features a real-time map showing the user's current location based on GPS-coordinates. At each of the stops, a plethora of information is delivered to the user, such as old photographs of the sculpture, stories of the artist describing the production of the artwork, historical narratives about what has happened on that spot and commentaries written by Roosa Meriläinen, a famous Finnish feminist author.

The tour is very physical. First of all, it has a very clear function both as a navigational aid and as a means to get information, where none exists. The tour takes the visitors on a pre-determined tour around the city, leading them to sites, where one might not venture otherwise, such as on a graveyard. On a beautiful day, the warm breeze and sunshine add an extra layer of pleasure into the walk. However, at parts, the traffic is very hectic and makes crossing the streets dangerous. Additionally, the length of the tour may be too wearing, especially for visitors with limited mobility. Unfortunately, the tour is completely missing on one opportunity of affecting the physical sphere of the experience – audio.

Case study 3 – the personal aspect

The third case study is a historic Augmented Reality game that has been designed to enhance a visit to the Luostarinmäki Handicrafts Museum in Turku. The game, which is still under development, utilizes brand-new technology called markerless tracking to locate the visitor in the outdoors area (Viinikkala et al, upcoming). Based on these coordinates, the game will add appropriate digital reconstructions from the 1850s on top of the real-time view of the site. The game features a main storyline about a wedding and a stolen ring, and the aim is to discover the hidden ring by talking to the digital characters scattered around the museum area. Along the way the player may explore the narrative's side paths by carrying out different tasks. AAs the story proceeds, the player will also find out more about the life and culture back in the 1850s. The aim is to create a game that will enhance the visit both by making the visit more informative, but also by adding an aspect of entertainment.

The game, in addition to being very physical, is a rare example of a solution with personalized features. It is targeted to a very specific audience, 20-30-year-olds, and will carry a special resonance for those, who are avid game players in their everyday life. The players are also able to personify the game by selecting either a female or male character. The scriptwriters were able to add in some scenes, where the attitude of the game characters towards the player will depend on the selected sex, further mirroring the gender roles in the 1850s. These small adjustments may strike a chord with the player and further affect them on a personal level.

Case study 4 – the social aspect

None of the four case studies are tailored for the use by multiple individuals. On the other hand, the fourth case study takes a step further, and perceives the mobile device as a tool for communication. The fourth mobile solution is a mobile website called "Mad about Helsinki", which was released simultaneously with a similarly titled exhibition at the Helsinki City Museum, on display from 6th June 2013 to 31st December 2015. The project is accessible online at http://m.hullunahelsinkiin.fi/ (only in Finnish), but may also be browsed inside the museum by a resting area with a statuary iPad stand and a pile of bean bags. The mobile solution is a website, where museum visitors can post images and stories about their favourite locations in the city. In addition to the browsable database, the website also features participatory aspects, where the website visitors may rate the sites on a scale from 1 to 5 hearts, write their own comments about the site, and add their own pictures. The target audience for the project was threefold: the museum visitors on spot in the museum; Helsinki citizens, who want to share their favourite locations with others; and Finnish and foreign tourists, who might be curious about knowing the hottest spots in the city.

Through the entirely user-contributed content of the website, museum audience receives an equal role as the exhibition's producers as the curators. Furthermore, participation is made possible on a multitude of levels (see e.g. Simon 2010). Those visitors, who wish not to write their own stories, but still want to leave their mark on the project, may do so by rating other visitor's posts, commenting the posts with a few words or by sharing their own personal favourites on Facebook or Twitter.

Visitor research

In order to grasp, whether the museums' perspectives on mobile solutions and their usability in the museum context matched with those of the visitors', a visitor research was carried out at the National Museum of Finland at the end of October 2013. The survey was conducted at "The Emerging World – Map Treasures from the A. E. Nordenskiöld Collection" exhibition, i.e. case study 1. A total of 79 visitors between the ages of 13 and 85 were interviewed.

According to the interviews, a total of 61 visitors (77%) had enhanced their museum experience by using the iPads provided in the exhibition space. The interviews revealed that the older visitors are not shying away from technology. Amongst the older age groups (83%) the use of iPads was even more popular than amongst the youngest visitor group (63%)! Some of the older interviewees even stated that reading from the iPad screen was easier than reading the wall texts due to the background lighting.

Only nine visitors (11%) had realized the opportunity to browse the exhibitions texts with their own mobile device. Out of those 9, only 2 people had tried this. The main reason cited for not trying the service was that the visitor did not have a QR scanner on their phone. Being informed about this opportunity during the course of the survey, 32 visitors (40%) said they might try it. In general, 54 visitors (68%) were interested or somewhat interested in using a mobile solution to enhance their museum experience. The youngest age categories are really interested in this opportunity (all respondents in the under-20-years-old category), whereas amongst the oldest visitor category under half of the visitors are keen on this option (42%). A notable difference could be noted between smartphone owners (91% interested) and non-owners (50% interested). However, the answers reveal that visitors are not interested in using their own mobile phone in the exhibition space just because they can, but prior to making the decision of downloading an app or accessing a mobile website they want to know exactly how this will enhance their visitor experience, and there needs to be a concrete need for it.

Further questions were posed to those visitors, who were positive towards using mobile solutions in a museum (55 people) to assess how the visitors would like to enhance their museum experience with the aid of the mo-

bile solution. The first questions assessed what types of media would be most suitable for a mobile solution in the museum setting. Both text and images were considered as default characteristics, but audio and video split the opinions (figure 2). Even though 40% of the audience were very keen on the opportunity to gain audio guiding, another 38% were not interested in this at all, and even suggested that this feature could be left out altogether from a potential mobile solution. Videos, on the other hand, were often seen as an alluring option only, if they were short. A majority of the visitors (78%) considered a map to be a useful function of the mobile solution. 40% of the visitors thought that a game could be interesting or somewhat interesting either for themselves or their children during a museum visit.

Further interesting aspects could be noted, when the results we divided according to different age categories. Amongst the youngest visitor category, under 20-year olds, one of the most notable features was a nearly non-existent interest towards using an audio guide. This can be explained by the fact that the youngest visitor group was typically visiting the museum in company, but even the one young visitor, who was visiting the museum by himself, displayed no interest towards the audio format. One interviewee specified that audio guides are "boring", whereas another young visitor referred to them as "annoying". Similar results have been discovered in a visitor survey carried out at the Victoria and Albert museum, where the authors argue that the traditional audio guide format is not necessarily the best method of providing mobile information to young audiences (Victoria and Albert Museum 2010).

The second set of questions addressed issues on participation. I asked visitors, if they would be interested in a) participating in the exhibition by e.g. voting for their favourite object in the exhibition or by commenting on an item; b) by communicating with other visitors; or c) by communicating with the museum staff by e.g. sending questions to the researchers, who have designed the exhibition. Especially when it comes to participation via voting or commenting on objects, the response was positive, with 36 visitors (67%) interested or somewhat interested about the opportunity (figure 2). However, the museum's status as an authority figure was clear from the next questions. Only one-fifth of the visitors were interested in communicating with other museum visitors, but four-fifths of them were interested in sending questions to the museum personnel. Some visitors expressed that this would be a really useful function, if they needed a response to a question that was not answered in the exhibition.

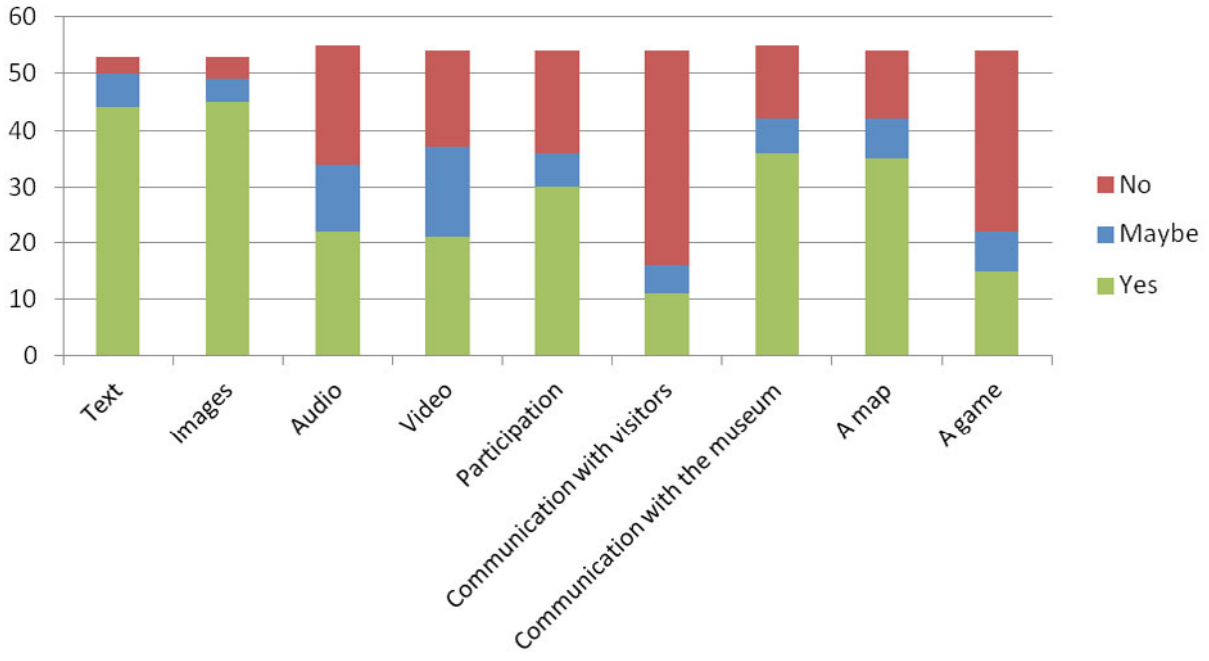


Figure 2. Interest toward various types of information and features in a mobile solution

Figure 3 displays the breakdown of the visitor survey results according to the Contextual Model. On the physical level of the experience, the visitors wish for a simple solution, which will serve to fulfil a practical function – for example giving information in places, where there are no wall texts. Many of the respondents answered that in this particular exhibition there was no actual need for utilizing the mobile solution with one's own mobile deice, as the text was readily available on the walls and on the iPads, and the exhibition area was relatively small. Some visitors, on the other hand, replied that they are not keen on the idea of walking around the museum with their mobile phone, but would be interested in using a mobile website after the visit, from the comfort of their own home. In order for a visitor to be motivated to take out their mobile device and download an app or go to a website, they not only need to be aware about its existence, but also be informed about the purpose it can be used for. Many visitors pointed out that their decision on the use of a mobile solution depends on how clearly the different functions and the knowledge that it provides you are marketed at the entrance.

What is interesting to notice from the visitor interviews is that a proportion of the visitors actually prefer to be very strongly led by the museum. A map was considered as a useful feature by a majority of the visitors (78%), and the museum was described as "labyrinthine" by a couple of interviewees. Even though some visitors stated that they prefer wandering around in the exhibitions on their own, others specifically wished to receive clearer instructions from the museum. One visitor stated that it would be good, if the solution had a map and a track that you could follow. Another visitor wished that the map would show "the vision that the exhibition planners had in mind". Instead of flâneuring, these visitors want the museum to take an even stronger control of their bodily movement through the exhibition areas. Similar arguments have been raised by Sung et al. During their research at the National Museum of History in Taiwan, they discovered that the map feature in their digital guidebook aided the visitors to a more "structured and directional pattern of visiting", which benefited their perception of the exhibition (Sung et al 2008).

Regarding the personal aspect, the survey answers highlighted the importance of a personal interest towards the topic. A personal motivation was a crucial factor in the decision, whether to utilize a mobile solution or not. Many visitors expressed their interest in using a mobile solution "if it provides me more information about a topic that I am interested in" (highlight by author). One visitor went as far as suggesting that the museum could develop a solution that recognizes the visitor and suggests them information based on their interests and their previous visits. Furthermore, it seems that the visitors could be assigned to different categories based on their preferred mode of information (visual or auditory) and their age, each wishing the mobile solution to carry different functions and features. Bearman and Trant argued already in 1999 that: "It is not sufficient that using and experiencing the Web becomes interactive. The objects and environments we encounter in the virtual world must expect our input, respond to our interaction and be personalized and connected to us through our involvement with them" (Bearman & Trant 1999). The personalization of content becomes a particularly valid question, when applied to content delivered via the visitor's own mobile device, which is a very personal device.

The social aspect of the visit appeared equally weighty to the visitors. A share of the visitors specified that they would be interested in using a mobile solution, were they visiting the institution by themselves. Especially what it comes to audio guides, the use of a mobile solution was considered as inhibiting from social interaction with the companion. Interaction with other visitors seemed like an off-putting idea to many, but the ability to participate in the exhibition by smaller steps, such as voting or typing in comments, were more alluring options, especially amongst the youngest audience group. However, the necessity of such features was also questioned. One visitor argued that it "only contributes to unnecessary data". Nevertheless, respect for authorities was obvious with nearly all visitors being interested in the option of sending questions to the museum staff.

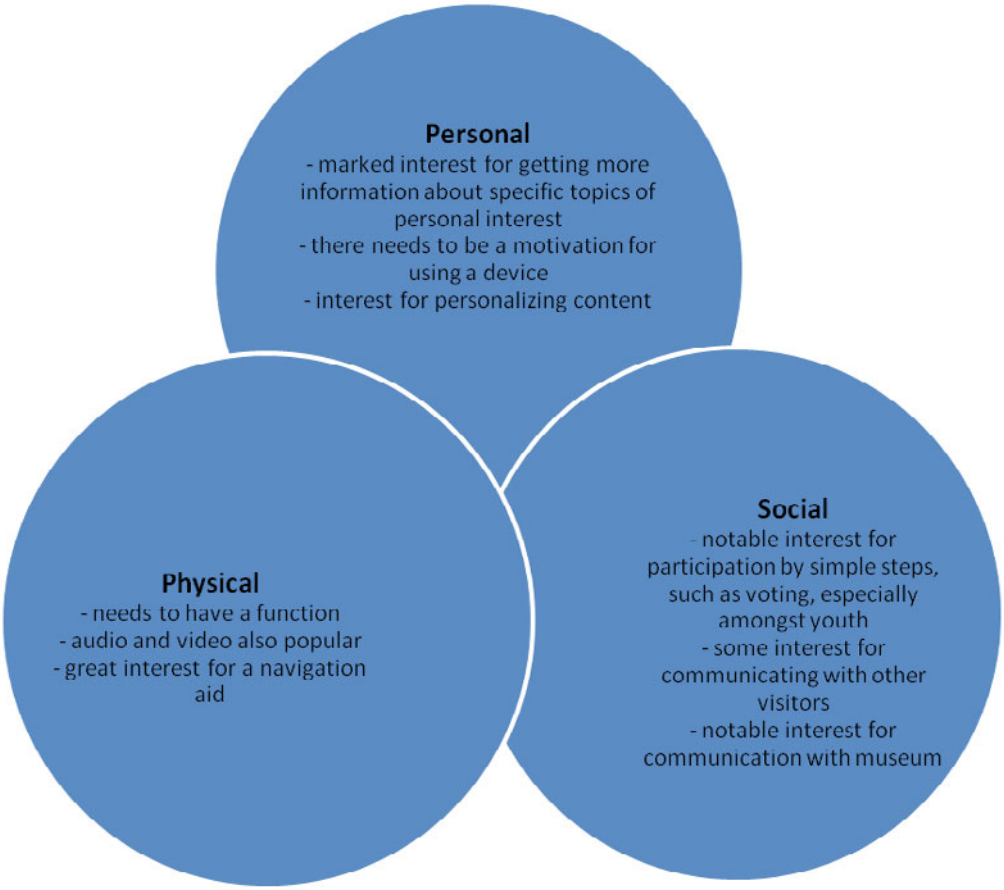


Figure 3. Breakdown of the visitor survey results according to the Contextual Model

Conclusion

Based on the analysis of four case studies from the Finnish field, it appears that mobile solutions can affect the museum experience in a manifold manner. A mobile solution, depending on its contents and mode of function, may either enhance or disrupt the physical, personal and social spheres of the Contextual Model. Even though it is difficult and perhaps even undesirable to develop a solution that would cater for all of the spheres of the Contextual Model, even with simple solutions at least one of these can be covered.

The visitor research has revealed that visitors have an open and positive attitude towards using their mobile device in the museum, and they have very specific wishes about what this solution should entail. The answers given by the visitors indicate that the Contextual Model is a useful tool for analysing museum mobile solutions. The personal, physical and social spheres were all considered as important factors in the visit, and would function as potential inducement or deterrent for using a mobile solution.

References

Koskiola, A. (2014). "Mobile solutions and the museum experience", master's thesis for the International Masters Programme in Curating Art at Stockholm University, Sweden, available online at: http://urn.kb.se/resolve?urn=urn:nbn:se:su:diva-105626, (accessed 29 September 2014).

Falk, J.H. and Dierking, L.D. (1992). *The Museum Experience*. Whalesback Books, Washington, DC.

Falk, J.H. and Dierking, L.D. (2012). *The Museum Experience Revisited*, Left Coast Press Inc., Walnut Creek, CA.

Viinikkala et al. (upcoming). Presentation at Nodem 2014 conference in Warsaw, Poland.

Simon, N. (2010). *Participatory Museum,* Museum 2.0, Santa Cruz, CA. Online version, http://www.participatorymuseum.org, (accessed 21 May 2014).

Victoria and Albert Museum. (2010). 'Understanding the Mobile V&A Visitor: Autumn 2012', 16 January 2013. http://www.vam.ac.uk/__data/assets/pdf_file/0009/231975/V-and-A-Mobile-Visitor-Survey-Report-FINAL-16-Jan-.pdf, (accessed 13 May 2014).

Bearman, D. and Trant, J. (1999). 'Interactivity comes of age: Museums and the World Wide Web', in *Museum International*, vol. 51, no. 4, pp. 20-24.

Sung, Y.-T. , Chang, K.-E., Lee, Y.-H. and Yu, W.-C. (2008). 'Effects of a Mobile Electronic Guidebook on Visitors' Attention and Visiting Behaviors', in *Educational Technology & Society*, vol. 1*1, no.*2, pp. 67-80.

Domus: An On-Gallery Digital Museum Experience in Two Parts

Merel van der Vaart, Christie A. Ray
PhD Candidates University of Amsterdam – NewMediaLab, Allard Pierson Museum, the Netherlands
http://mesch-project.eu/
http://www.v-must.net/

Abstract: *In September 2014, the Allard Pierson Museum, the archaeology museum of the University of Amsterdam, opened its new Roman gallery. Leading to the redevelopment, the Museum's NewMediaLab explored how interactive technologies, particularly virtual re-contextualization, could be used to aid visitor interpretation of the collections. Based on earlier studies, the Museum developed and tested an interactive prototype consisting of two parts. In the first part, visitors enter a virtual environment, exploring with gesture-based navigation. In this virtual Roman house they were challenged to locate and collect seven objects, all replicas of museum objects. In the second part, visitors could explore the original objects in a display case nearby and use a touch screen computer to uncover additional information. The study focused both on the effect of virtual contextualization, and the learnability of gesture-based navigation in the museum context. Through a series of observations and interviews with adult visitors, the Museum has examined the impact of instruction on the use of this kind of navigation. The study compared the ability for visitors to navigate the virtual space after receiving one of two forms of instruction and asked them about their instruction needs and ease of use of the installation. Furthermore, the Museum wanted to better understand how visitors see the relationship between both the virtual installation and the real objects. Through interviews and guided visits, the team examined whether the use of digital replicas and virtual environments in the museum served to support the interpretation of the physical collections. This paper will discuss the development of the installation, as well as the research outcomes, and will reflect upon potential future developments.*

Keywords: Virtual environment, re-contextualization, 3D models, instruction, museum, embodied virtual navigation, Microsoft Kinect, evaluation

Introduction

A bucket, a spoon, a jug, damaged through use or neglect, and their once shiny bronze surface has turned a greenish brown. They are every-day Roman objects from the Allard Pierson Museum's (APM) collection. Although not necessarily examples of great craftsmanship, they tell us about the lives of people that lived centuries ago. In preparation of the redevelopment of the museum's Roman gallery, which opened in September 2014, the APM expressed a desire to help visitors engage with objects that are physically less attractive, yet have interesting stories to tell. Re-contextualizing objects, showing them in (a representation of) their original context of use, is one way to achieve this.

The NewMediaLab of the APM carries out research related to the (digital) museum experience, both with regards to visitor engagement, and the usability of new tools. Building on previous research (Ray & Van der Vaart, 2013a; Ray, 2013), the NewMediaLab developed the Domus project, in which visitors were asked to collect seven virtual replicas of museum objects from a virtual Roman house. Afterwards, visitors could further explore the physical objects in a nearby display case.

One of the aims of this pilot was to better understand the relationship, as perceived by visitors, between physical museum objects and virtual environments. Secondly, the study wanted to investigate the impact instructions can have on the usability of novel digital tools.

Real objects and virtual environments

A virtual reconstruction of a Roman Domus-type house was projected on the wall of a cinema space near the Roman gallery. Seven virtual replicas of museum objects, modelled to look new, were placed in this virtual Domus. Visitors were invited to navigate the Domus and to 'collect' the replicas. Navigation relied on physical gestures. If visitors stepped forward, they moved forward in the virtual space. If they stepped back, they would move back. Stepping to the left or right meant a 90-degree turn in that direction. A Microsoft Kinect sensor was used to read visitors' gestures. The gesture vocabulary was developed based on earlier experiences with embodied virtual navigation (Ray & Van der Vaart, 2013b). One of the main challenges was to strike the right balance between autonomy and guidance. Visitors should be allowed freedom to explore the space, but be prevented from getting lost. The 90-degree angle turn was introduced to simplify navigation, as was blocking off spaces that did not contain any virtual replicas. Short audio clips gave hints that indicated where each object could be found. Visitors could collect objects by pointing at them. The object would then disappear from the virtual environment and appear in a bar at the top of the screen.

Figure 1. A visitor exploring the virtual Domus
Source: Merel van der Vaart, APM.

To emphasise the connection between the virtual and the real, it was important to present them in close proximity to each other (Ray & Van der Vaart; 2013b). The seven physical objects were placed in a built-in display case in the corridor adjacent to the cinema space. A touch screen was installed in front of it. Visitors who had successfully selected one or more objects in the virtual space were given a code with which they could unlock the touch screen content.

Embedding virtual contextualization in the museum visit

As described, the Domus project had dual research aims. On the one hand, there were questions in relation to how visitors experience and appreciate the relationship between virtual environment and physical objects. Secondly, there was a desire to better understand how instruction could help visitors engage with novel technology, such as embodied virtual navigation.

The study consisted of observations of un-recruited visitors engaging with the virtual environment, as well as guided visits to both the virtual environment and the physical objects, combined with questionnaires and a semi-structured interview. For the guided visits, participants were recruited from visitors to the temporary exhibition of the museum. Over a period of three months, 40 visitors were observed using the installation and 17 guided visits took place.

The guided visits, followed by a structured interview and questionnaires focussed on the question: How do visitors perceive the combined offer of virtual environment and physical objects? The expectation was that allowing visitors to encounter the virtually restored replicas in their 'original environment' before being presented with the originals in a museum display would enable higher levels of visitor engagement. To test this hypothesis, participants were presented with one of two experiences. Nine participants (Group 1) first interacted with the virtual environment and looked at the physical objects afterwards. Eight participants (Group 2) were asked to look at the objects, before navigating the virtual space. While looking at the physical objects, all visitors were asked which objects they found interesting and what questions they would ask about these objects. They were then given time to interact with the touch screen application in front of the display case, which contained more in-depth information about the objects. Afterwards, participants were asked if they remembered where they had found the objects they had collected in the virtual space, and if they knew why the objects were located there.

Figure 2. The original museum objects on display together with touch screen application
Source: Merel van der Vaart, APM.

The visitors who participated in the guided visits matched the museum's general visitor profile. The age group 50 to 64 was well represented, with eleven out of 17 participants falling within that age bracket. Five participants were younger than 49, and one was 65 or over. Nine participants said they somewhat knew what

a Roman house looked like, while eight claimed to know outright. There were no great demographic discrepancies between Groups 1 and 2, except for the fact that six out of nine participants of Group 1 were male, while the genders were equally represented within Group 2.

The goal of virtually re-contextualizing, was to help visitors engage with the objects on display. Therefore, it was expected that participants who had explored the virtual environment first would ask more questions about the objects on display. Interestingly, the opposite was true. When asked what objects interested them and what questions they would ask about the objects, the participants from Group 1 together identified 13 objects they wanted to know more about. In total they asked 14 questions about these objects. The participants of Group 2 equally identified 13 objects, but asked a total of 21 questions. In addition, participants of this group asked more varied questions about the objects. Furthermore, participants of Group 1 spent less time with the touch screen application, which provided more information about the objects.

The study also showed that participants of the second group were slightly more successful at navigating the virtual environment. Together, the participants of Group 2 collected 27 objects, as opposed to 19 objects collected by Group 1. The individuals in this second group also had a better understanding of the navigation concept (e.g. the automatic 90 degree turn) and needed less guidance with regards to finding various objects. Although it must be said that almost all participants, of both groups, indicated they found navigating the virtual environment challenging. As the first group, which was least successful in navigating the virtual Domus, had a majority of male participants, the difference in gender balance must be taken into consideration. Interestingly, most research into gender differences in virtual navigation has identified men to be more successful than women (Tlauka *et. al.*, 2005; Tan, Czerwinski & Robertson, 2006), making the discrepancy between the two groups all the more striking.

In order to measure how much participants engaged with the content of the virtual environment, they were asked if they could remember where they found the objects they had collected and why they thought the objects were in that location (see table 1). Here, again the participants of Group 2 had an overall better score than those of Group 1. Not only were they able to describe the correct find location in more instances, they also described more locations in detail. There were also less instances when a participant could not remember where s/he had found an object, although there were slightly more instances when an incorrect room was described. It is important to note that for Group 1 more time passed between finding the virtual objects and answering questions about their location. However, in the interview it also became clear that the participants who had first seen the physical objects (Group 2) were better at linking the information they had acquired through the touch screen application to the virtual replicas in the Roman Domus. When discussing the objects in the virtual environment, after the guided visit, they were more likely to rely on information they had read in the touch screen application than those participants who had read the information *after* navigating the virtual environment.

Table 1. Number objects for which the virtual location was described by participants

	Group 1	**Group 2**
Vaguely described correct room	8	10
Described correct room in detail	4	11
Describes the wrong room	1	3
Does not remember	6	3

Source: Domus research NewMediaLab APM.

To summarise, contrary to expectations, the participants who were first asked to look at the objects on display, and were asked to navigate the virtual environment afterwards (Group 2), appeared to be more engaged with the physical objects, were more successful in navigating the virtual environment, and seemed to remember what they had seen in the virtual space better than the other group. They also asked more questions about the original objects, spent more time with the touch screen application, and were also more likely to link information they had acquired through this application to the virtual experience.

Often, the museum visit is an act of browsing, rather than attentive engagement (Falk & Dierking, 1997; Serrell, 1997; Rounds, 2004). The guided visit that was part of this research, however, expected rather high levels of engagement from visitors. Of the two parts of the installation, engaging with the objects on display in combination with the touch screen application was the easiest task of the two. Failure was not a risk, as the task was based on visitors' interests and opinions. In comparison, navigating the virtual environment was more challenging and some visitors failed to navigate the space successfully. In this light, it might be helpful to use S. Bitgood's model for attention to explain the discrepancies between both groups described earlier. According to Bitgood, 'attention' has three main characteristics; attention is selective, attention is motivated, and one only has a limited amount of it (Bitgood, 2000). If one only has a limited amount of attention, it is to be expected that participants who first engage with a more difficult task will have less attention for their second task, than participants who are given the easier task first. This could explain why Group 1 was less engaged with the physical objects, after starting with the more difficult task of navigating the virtual environment. When we also take into account the second characteristic of attention, it being motivated, it seems logical that those participants who successfully completed their first task would be more motivated in the second. This explains why Group 2 was more successful at navigating the virtual Domus. Since all participants were given tasks as part of the guided visit, the selective nature of attention is less relevant in this case.

Instructions for novel technology

The aspect of the study that focussed on the impact of instructions on visitors' understanding of novel technology mainly focused on the effect of two different kinds of instructional videos. The first video, presented to 20 observation participants (Group A), aimed to engage visitors with the installation through a quest-like fictional narrative. This video was 1.46 minutes long and combined scenes representing a family archive, with spoken and ambient audio. The second video, also shown to 20 participants (Group B), consisted of three stills giving clear, step-by-step instructions of how to use the installation, with focus on navigation and object collection. This video did not use audio and lasted 15 seconds. This second video duplicated the instructions provided on a printed text panel on a wall to the right of the projection.

By replacing the storytelling introduction with clear and concise instructions for interaction, the authors hoped to observe a higher success rate in the navigation of the space and collection of objects, as well as a longer period of interaction among users. Surprisingly, the average length of observed interaction was relatively balanced; excluding the time of the instruction videos, Group A had an average interaction time of 2.38 minutes, while Group B had an average interaction time of 2.00 minutes.

The most significant difference was the observed use of supplemental instructions, notably the instructive text panel. Members of Group A were observed looking to the instruction text panel more consistently throughout their interaction, with 40% (8 of 20) of participants actively seeking the instruction on the text panel both before and during their interaction in the virtual environment. From Group B, on the other hand, only 5% (1 of 20) of participants were observed looking to the instructive text panel before and during their interaction. This seems to indicate that the instruction needs of Group B were satisfied through the instruction given in the instruction video, whereas Group A had to rely on the instructions given on the text panel in order to use the installation successfully.

Looking now from a perspective of instructional design, M. D. Merrill's principles of instruction provide a basic framework for the ideal approach to instruction for the purpose of learning. To paraphrase the five principles, learning may be best achieved through instruction that is (1.) demonstrated, (2.) applied, (3.) task-centred, (4.) activates relevant previous knowledge, and (5.) is integrated with everyday lives (Merrill, 2002). Developing instruction panels for a museum installation that can adhere to each of Merrill's principles is somewhat challenging, especially when the learning outcome is to be able to interact with a new or unfamiliar piece of technology in the museum context.

In its original version, the storytelling video was meant to introduce visitors to three things: the storytelling narrative, the virtual Domus environment, and the task of collecting objects within the virtual Domus. All of this was presented in less than two minutes, culminating in the visitor being placed in the virtual Domus environment with the expectation to collect objects in a limited amount of time. Unfortunately, what this introduction failed to do was instruct visitors on the interactions they would need to navigate through the virtual environment and collect the objects. The authors came to the conclusion that the storytelling introduction was not suitable for instructing visitors, as it only provided the task-centred instruction described by Merrill (2002). Observation showed that visitors seemed to know *what* they were meant to do in the virtual Domus, but the introduction film was not instructing *how* to navigate.

In creating the second introduction video, to be shown in place of the storytelling introduction, the primary goal was to provide visitors with instructions for navigation and object selection. The team wanted to be certain that visitors would understand *how* to interact in the virtual Domus (i.e. navigation) before providing information about *what* should be achieved in the virtual environment (i.e. object collection). The gesture-based interactions required for navigation and object selection were demonstrated through the text and figures used in the instruction introduction. Through visual and textual demonstration of the interaction, followed by application of the interaction, the first and second of Merrill's principles of instruction are met, albeit in a limited way. The instruction for object selection also provided an opportunity to reintroduce the task of collecting objects located throughout the virtual Domus, meeting the third principle of instruction.

The two remaining principles of instruction, activation of previous knowledge and integration with everyday lives, are more difficult to incorporate into museum instruction relating to on-gallery digital technologies. The context of a museum creates a unique learning environment and offers learning opportunities that most visitors do not experience on a regular, let alone daily, basis (Falk et al, 2011). Additionally, the activation of previous knowledge is challenged by the use of new (approaches to) interaction technologies that visitors may be unfamiliar with.

The differences in interactions between the two groups who experienced the two different introductions are especially noted in the success of user navigation. Group A participants, who had to read the text panel for instruction on navigation, were observed to be much more cautious with their physical movements and were more likely to walk away from the installation when navigational errors occurred. For Group B participants, the observed attempts at navigation were made with more confidence and were met with greater success and fewer errors than those in Group A.

While the change in instructional approach had an impact on the success of navigation, it also had an unexpected impact on the objects collected within the virtual Domus. Participants in Group A, who experienced the storytelling introduction that emphasized the task of collecting the objects for a family archive, were likely to collect more objects (and a wider variety of objects) than participants in Group B. Although navigation for Group A participants was problematic, the storytelling introduction provided clear instruction for the task of object collection. Alternatively, participants in Group B were more successful at navigating through the virtual space, but only ever collected the most obvious and easily collectable object. Despite being more confident and capable with navigation, the task of object collection was not prioritized by Group B participants, as it had been by those in Group A. This suggests neither introduction video was completely successful in instructing and motivating visitors.

Conclusion

This research set out to answer two questions. First, it wanted to better understand how visitors perceive the relationship between physical objects and their virtual re-contextualization. Secondly, it asked how instructions could influence the usability of novel digital installations.

Findings from the guided visits and interviews seem to indicate that virtual re-contextualization can help visitors engage more deeply with museum objects. Also, it shows that visitors are able to link information about the physical objects to the experience of navigating a virtual space. However, the research also shows that the level of engagement is highly influenced by the ordering of content and experiences within the visit as a whole. A higher level of engagement with both the virtual environment and the objects seems attainable when visitors are first encouraged to engage with an exhibit's content in a way that is easy and without risk of failure, before being confronted with more complex and demanding tasks, such as virtual gesture-based navigation.

Through observations it has become clear that although different types of introduction video might not influence the time visitors spend interacting with a virtual installation, it can influence their level of confidence and the way they interact. Although a fictional narrative can stimulate deeper engagement with the task at hand, a lack of practical instructions as to *how* to complete a task might result in visitors being less confident about their abilities.

The results of this study have influenced the final design of the APM's new Roman gallery. The fictional narrative and practical instructions, which are both part of the introduction video of the gallery, have been separated. Also, rather than starting the gallery visit by virtually navigating a Roman house, this experience is now used to finalise the visit. Future research will explore other ways in which visitors can be encouraged to engage with, and closely look at, museum objects that are less visually attractive.

Acknowledgements

The Allard Pierson Museum is the archaeology museum of the University of Amsterdam. The Domus project was a pilot for the new Roman Gallery, Keys to Rome, and made possible with funding from the SNS Reaal Fonds Digital Innovation in Museums 2012 Programme. The museum would also like to thank all the visitors who participated in the study and made it possible for us to learn and develop our digital offer. We could not have developed the pilot without the contributions of Robotfunk, Visual Dimension, the 3/4D Research Lab of the Archaeology Department of the University of Amsterdam, Grhound Office, Wil Theuns and Hans Fieggen.

References

Bitgood, S. (2000). The role of attention in designing effective interpretive labels. *Journal of Interpretation Research, 5(2)*, 31-45.

Falk, J.H., Dierking, L.D. (1997). *The Museum Experience*. Washington, D.C.: Whalesback Books.

Falk, J.H., Dierking, L.D., & Adams, M. (2011). Living in a Learning Society: Museums and Free-Choice Learning. In S. Macdonald (Ed.), *A Companion to Museum Studies*. Pp. 323-39.

Merrill, D.M. (2002). First Principles of Instruction. *Educational Technology Research and Development*, 50(3), 43-59.

Tlauka, M., Brolese, A., Pomeroy, D. & Hobbs, W. (2005). Gender differences in spatial knowledge acquired through simulated exploration of a virtual shopping centre. *Journal of Environmental Psychology, 25*, 111-118.

Ray, C.A. (2013). Virtual Reconstructions in the Museum: Evaluating User Experiences of a Virtual Museum Application Embedded in an Exhibition. In C.A. Ray and J. Vos (Eds.), *Etruscanning: Digital Encounters with the Regolini-Galassi Tomb*. (pp. 97-109). Amsterdam: Allard Pierson Museum.

Ray, C.A., & van der Vaart, M.J. (2013a). Contextualizing Collections: Using Virtual Reality in Archaeology Exhibitions. *Exhibitionist, 32(2)*, 73-79.

Ray, C.A., & van der Vaart, M.J. (2013b). Towards an Integrative Approach to Interactive Museum Installations. In A.C. Addison, L. de Luca, G. Guidi & S. Pescarin (Eds.), *Proceedings of the 2013 Digital Heritage International Congress* (pp. 701-704). Marseille, France: IEEE.

Rounds, J. (2004). Strategies for the Curiosity-Driven Museum Visitor. *Curator: The Museum Journal, 47(4)*, 389-412.

Serrell, B. (1997). Paying attention: the duration and allocation of visitors' time in museum exhibitions. *Curator: The Museum Journal, 40(2)*, 108-125.

Tan, D.S., Czerwinski, M.P. & Robertson, G.G. (2006). Large displays enhance optical flow cues and narrow the gender gap in 3-D virtual navigation. *Human Factors: The Journal of the Human Factors and Ergonomics Society, 48*, 318-333.

Innovative Museum Exhibits: Telling a Story by Means of an Engaging Experience

Roberto Frasca, Davide Pantile, Matteo Ventrella, Giovanni Verreschi
ETT S.p.A., Italy
http://www.ettsolutions.com

Abstract: *In the presentation, starting from a theoretical analysis on possible approaches to exhibition design, we shall illustrate a storytelling approach based on and using Immersive Visitor Engagement Technology, and describe a series of practical examples and case histories of ETT projects in the museum sector.*

Museums are becoming more aware that boredom is the most fearsome enemy and that a museum, to attract, must surprise every visitor. Starting from the message that the organisers want to get across, together with the exhibition theme, the best use of the most effective Immersive Visitor Engagement Technology must be correctly planned.

Some of the successful ways that advanced technologies can be used to enhance visitor engagement and 'absorb' them into the storyline are outlined here: the 'Excavate & Learn' exhibit, at the Sestri Levante Archaeological Museum; exhibits at Portofino Park '202 Chiappa Artillery Battery Visitor Centre'; the 'Liguria Heritage' Augmented Reality mobile app; the multi-sensory '4D Storm Chamber' at the Galata Sea Museum in Genoa.

Application of Immersive Visitor Engagement Technology to the model of current exhibition design means that everyone gets something from the visit; children, adults, schools / universities etc. This leads to positive visitor feedback and increased visitor-numbers.

Keywords: interactive museum exhibit, visitor engagement, gaming simulation, touch screen interface, 3D avatar, augmented reality, multi-sensory experience, NFC technology, RFID technology, ETT S.p.a.

Premise

This presentation focuses on some of the projects developed by ETT, an ICT company, in the field of museum exhibits. We shall illustrate and describe a series of practical examples and case histories, based on a storytelling approach and using Immersive Visitor Engagement Technology.

Thirty Years of Change, Inside and Outside Museums: the shift towards a "visitor-oriented" experience

Over the past 30 years, major changes have affected the world of museums.

In the first place, recent decades have witnessed an endless growth in quality. According to the definition of the term 'Museologie' in the **Encyclopaedia Universalis** (which is the French version of the Encyclopaedia Britannica): "…. In 1970 the total of museums in the world were estimated in the area of 17,000-18,000 – France 1,183, URSS 1,012, Italy 972, the UK 964 and Canada 764. The country with the highest figure is the USA, with about 6,000. But today we know that there are 38,000 museums in Europe alone and 17,500 in the USA. Today

ICOM indicates (***"Museums of the world 2012"*** report by De Gruyter Saur) the total number of museums in the world to be 55,000, which means a spectacular quantitative development of the museum sector.

Besides this, looking at the number of museums that have undergone substantial renovation of buildings and equipment, through processes that have made them virtually 'new', we realise that they have enjoyed nearly 50 years of uninterrupted growth; making the museum sector one of the most dynamic "cultural industries" in Europe – in spite of the static image conveyed by the media.

This renewal process also involved the testing of new "languages" for communication and enjoyment. This evolution has been strongly influenced by the digital revolution that, with the advent of the Internet, has involved all aspects of modern society, including museums.

The first application of ICT technologies was focused on the "digital" conservation of museum collections. One of the first recorded definitions of "Virtual Museum" is dated January 1997, written by Jamie McKenzie and published in the ***Technology & Learning Magazine:***

> "A virtual museum is a collection of electronic artifacts and information resources – virtually anything which can be digitalized. The collection may include paintings, drawings, photographs, diagrams, recordings, video segments, newspaper articles, transcripts of interviews, numerical databases and a host of other items which may be saved on the virtual museum's file server. It may also offer pointers to great resources around the world relevant to the museum's main focus."

With the development of technology the "virtual dimension" has grown, offering spaces and experiences that go beyond architectural spaces and beyond museum collection limits. In ***Report 1 – The Virtual Museum*** of ***The Learning Museum Network Project***, prof. Massimo Negri identifies some of the functions that a virtual museum can specifically fulfil:

- *On-line exhibitions*
- *Active role of users in building their own collections*
- *Visual archives of past temporary exhibitions*
- *Experiencing the museum "behind the scenes" (storages, restoration workshops, etc.) via a webcam, etc.*
- *Exhibitions of objects destined to disappear in a short time and digitally recorded for 'eternity'*
- *RSS: following history in the making*
- *Objects on-show coming from any possible point of the world at the same time*
- *The possibility to compare digital objects of the most divers physical natures*
- ***Enrichment of the user experience: closer access to masterpieces…but at a distance (Google Art), augmented reality, 3D modelling….***

Focusing on the last point, we can identify – in recent decades – an important shift from the idea of a **collection-oriented** museum to that of a **visitor-oriented** one, and in recent years another shift to a **user-oriented** one, in which the relationship between the museum and individuals (who, in the near future, will all be "digitally native") goes well beyond the specific moment when he/she visits the exhibition.

Museum objects are no longer the central element: the communication aspect is becoming prevalent. New communication tools, such as social networks, have expanded in an incredible way, and many of the "users" are also users of museums. As a measure of this phenomenon, a significant example is given by the New York Museum of Modern Art (MOMA): in the year 2013 it was visited by 8 million people, but it can consider 92 million "virtual visits" on its Facebook profile.

A New Approach to Museum Exhibition Design

Within this evolutionary process, as we have seen, museums have become increasingly digital: not only for cataloguing and conservation, but also for enjoyment and communication.

The central point, on which ETT has focused its development activities, is the **enhancement of the visitor experience.** The trend towards improving visitor experience has taken, in recent years, a great leap forward. We are entering a new era in museum design as the technologies for immersive, interactive experiences become more sophisticated and widespread.

This new approach to museum exhibitions is based on the use of the most recent technologies and devices in order to:

- **enhance visitor engagement** and **interaction**
- give visitors an **active role to play**, part **visit**or – part **actor**: a **"visit-actor"**
- define the goal of an **"immersive museum"**, in which the visit-actor is **absorbed into the storyline**

Museums are, in fact, becoming more aware that boredom is the most fearsome enemy and that a museum, to attract, must surprise every visitor. Starting from the message that the organisers want to get across, together with the exhibition theme, the best use of the most effective Immersive Visitor Engagement Technology must be correctly planned.

Some of the successful ways that advanced technologies can be used to enhance visitor engagement and "absorb" them into the storyline are outlined here.

"Excavate and Learn": visitors put on an archaeologist's shoes

The 'Excavate & Learn' exhibit, released in April 2013 at the Sestri Levante (province of Genoa, Italy) Archaeological Museum, turns visitors into archaeologists.

Figure 1. "Excavate and Learn" exhibit

In this project, ETT designed and developed an innovative museum installation that integrates different technologies (touch screen and NFC – Near Field Communication), allowing the visitor to simulate what happens in an excavation and learn about a part of an archaeologist's work, as well as about archaeological objects. In this installation, museum visitors choose copies of archaeological objects that are placed in mock-ups reproducing archaeological excavations (prehistoric and medieval). Every object "found" by visitor includes an NFC tag: when object is placed near the device, an NFC reader identify it and activates specific contents on an embedded touch screen monitor. Using the touch screen, Museum visit-actors study the objects and try to understand their usage, what they are made of, why they are located in that specific point, in which age they were used, etc.

Portofino Park "202nd Chiappa Artillery Battery Visitor Centre": a time trip back to World War II

Built in 1939 and abandoned at the end of World War II in 1945, the 202nd Chiappa Artillery Battery is a group of German military buildings located on the south-western side of the Portofino promontory (province of Genoa, Italy) above Punta Chiappa. The restoration work of the structures (bunkers, lookout stations and a military base) included setting up a museum area managed by the Portofino Park Authority. ETT developed a set of exhibits for this visitor centre, including a touch-screen station, a rear projection station, a sound system and a tablet app.

The touch-screen station presents visitors with a German soldier's diary found on site, a photo gallery and a video gallery with content divided into thematic areas.

Figure 2. A digital reconstruction based on Green Screen technique in "202nd Chiappa Artillery Battery Visitor Centre"

The rear projection station is activated by photocells and offers content, with professional actors, shot using the Green Screen technique and graphics effects made with 3D technology.

The mobile app includes content about the installation and history of The Batteries, with information and many pictures and videos about paths around the buildings and shows georeferenced (using GPS location) Points Of Interest on an interactive map.

The final result is the "animation" of the German fortification: visit-actors use various interactive instruments to "transport" them back into WW II history, getting first-hand experience of an active combat site.

"Liguria Heritage": a virtual meeting with historic characters

One of the most interesting tools now available, used to enhance visitor experience, is augmented reality; the layering of digital elements over a real-world experience.

In this context, ETT created the Liguria Heritage augmented reality mobile app in April 2014. The use of 3D replicas of historical characters lets visitors relive past events through the words of those who lived then.

Arriving near historical sites for which augmented reality content has been prepared, enabling the application starts a digital reconstruction of the original site structure, as well as the exact points where historical character avatars tell their stories.

Figure 3. The "Liguria Heritage" mobile app user interface

By navigating the menu in each room, visitors access audio-visual content showing art and culture, weapons and war, daily life, working tools and documents of the period, increasing their knowledge of the historical context of the events that characterize the site.

In this way, visit-actors enter into an augmented reality and associate with characters and customs of the time; reliving history in an innovative and engaging way.

The "4D Storm Chamber": a multisensory experience

An important best practice for ETT is to be found among the multimedia exhibits produced by the company for MUMA – Galata Sea and Migration Museum in Genoa. The most noteworthy results generated by this partnership were illustrated in a presentation at the 2013 NODEM Conference, held in Stockholm in December 2013.

The latest "frontier" of this partnership is a **multi-sensory experience**: the **"4D Storm Chamber"**, opened in December 2013.

Taken from a true event, this is the story of a Genoese ship, the *Cincinnato*, which sank off Cape Horn in 1870. ETT has recreated an emotional experience in which the visit-actor finds himself in the shoes of a shipwrecked survivor on board an open lifeboat, in a turbulent sea-storm off Cape Horn.

Figure 4. The "4D Storm Chamber" exhibit at Galata Sea Museum in Genoa

ETT coordinated the multimedia part of this highly immersive exhibit. Virtual 3D wraparound views of stormy seas are synchronised with the movement of the boat at the mercy of the waves, with spray, wind, sound effects and music.

Conclusions: what have we learnt?

The use, when creating these projects, of the ETT "immersive" approach has contributed to improved and positive user response.

Over the last Christmas holiday, for example, the 4D Storm Chamber was visited by over 15,000 people. Besides, "Excavate and Learn" was chosen as a best practice and presented at the first edition of the "Digital Heritage" international congress, dedicated to the application of digital technology to cultural heritage protection, documentation, and understanding – held in Marseille at the end of October 2013.

These projects have taught some very important lessons.

- It's essential to cater, simultaneously, to different levels of understanding, so that children, adults, casual visitors and experts have a positive reaction to the visit.
- Visit-actors need/expect new content to be on offer each time they come back. Progressive technological and content upgrading needs to be part of the philosophy.
- Applications must be used to get the exhibition message across effectively; it's important for the message to be more perceived than the technology.

Acknowledgements

The authors would like to thank Ms Serena Boglione, Mr Peter Twinn and prof. Massimo Negri for their support in the preparation of this paper.

References

LEM – The Learning Museum Project: working group "New trends in museums in the 21st century" – Final reports:

- Report 1 – "The virtual museum": http://www.lemproject.eu/WORKING-GROUPS/museums-in-the-21st-century-1/1st-report-the-virtual-museum
- Report 7 – "New trends in museums of the 21st century": http://www.lemproject.eu/WORKING-GROUPS/museums-in-the-21st-century-1/7th-report-new-trends-in-museums-of-the-21st-century

Case histories from ETT website:

- "202nd Chiappa Artillery Battery Visitor Centre": http://www.ettsolutions.com/ProjectDetails.aspx?id=235
- "Liguria Heritage" mobile app: http://www.ettsolutions.com/ProjectDetails.aspx?id=244
- "4D Storm Chamber" exhibit: http://www.ettsolutions.com/ProjectDetails.aspx?id=232

P. Campodonico, R. Frasca, D. Pantile, M. Ventrella, G. Verreschi: "*Galata Sea and Migration Museum: An Immersive and Interactive Visitor Experience*": presentation at NODEM 2013 conference – Stockolm. http://repo.nodem.org?objectId=157

"Excavate and Learn" case history on Digital Heritage 2013 website: http://www.digitalheritage2013.org/excavate-and-learn/

Liguria Heritage project presentation website: http://www.liguriaheritage.it/heritage/en/Progetto/LiguriaHeritage.do;jsessionid=2BAD5D70236AD2A24637BC52C92E51CB.node3

Materials Story of Sir John Soane's Life

Xinglin Sun, Dr. Kevin Walker
Information Experience Design, Royal College of Art, United Kingdom

Abstract: *Based on research about cognitive architecture in mental and physical space, the project mapped phases of Sir John Soane's life story onto particular building materials relevant to both the museum space and his life. This piece was acquired by the museum for its handling collection, and there is follow-up research being conducted about visitors' experience using the piece, in order to understand the relationship between Soane's life and the museum architecture. The piece uses materials relevant to different periods of his life.*

Keywords: material, emotion, architecture, cognition

Project background

Sir John Soane's Museum is the former home of the neo-classical architect Sir John Soane. It was established in 1837 and is located in Lincoln's Inn Fields, London. The Museum has a complex interior design and hundreds of exhibits. Soane designed the space himself, and stories are everywhere. This project aimed to investigate the semantic qualities of materials related to Soane's life, and how they could serve the museum experience. Several building materials were used, trying to convey different emotions through the sense of touch.

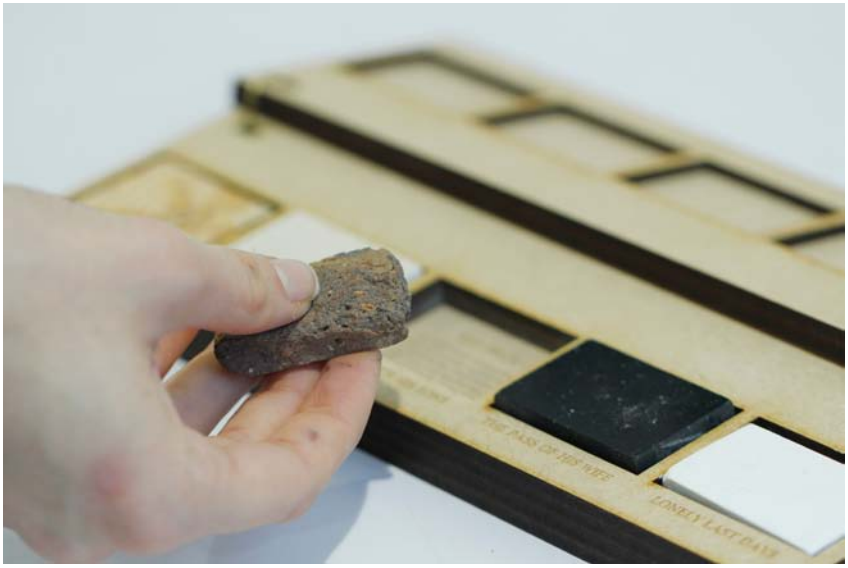


Figure 1. A visitor holding a piece of brick, 2014, Photo by Xinglin Sun

Related work

According to Susan Stewart:

> In museum today, when we turn quickly from the untouchable art work to the written account or explanation placed beside it, we pursue a connection no longer available to us – the opportunity to press against the work of art or valued object. As public museums and forms of collective memory supersede devotion and private manipulation, the contagious magic of touch is replaced by the sympathetic magic of visual representation.[1]

Touch is an active behaviour in cognition, linked to emotions and feelings, which correspond to contemporary topics in modern museum curation and design, such as having more interactive engagement with narratives. "Being able to touch, feel and manipulate objects in an environment, in addition to seeing them, provides a sense of immersion in the environment that is otherwise not possible." (Srinivasan and Basdogan 1997:393)[2]

Pallasmaa argues that "All the senses, including vision, can be regarded as extensions of the sense of touch… Vision reveals what the touch already knows. We could think of the sense of touch as the unconscious of vision." Pallasmaa quotes Berenson:

> When experiencing an artistic work, we imagine a genuine physical encounter through 'ideated sensations'. The most important of these he called 'tactile values'. In his view, the work of authentic art stimulates our ideated sensations of touch, and this stimulation is life-enhancing.[3]

We may thus able to say that visual perception can become a perception of touch when our eyes scan surfaces or focus on objects. Moreover, there is evidence that haptic perception is enhanced when combined with visual information, particularly in navigation. According to Zucker:

> Space is perceived by the visualization of its limits and by kinesthetic (The sensation of movement of the body) experience, i.e., by the sensation of our movements. In the state of 'visual tension,' kinesthetic sensation and visual perception fuse more intensely.[4]

Project description

This project aimed to investigate the semantic qualities of materials – expressing emotion through space and form. Material acts as medium – for example, cold black marble reflects the sorrow of the tragic death of Sir John Soane's wife. When touching a certain material, a past sensory memory is evoked and an emotional connection is made.

The work is comprised of a wooden box with five different pieces of building materials in it. Visitors can handle the piece when visiting the museum, and when the box is opened, visitors find five pieces of materials lying in a line with the name of rooms in the museum on top, and life periods of Sir John Soane described below. The building materials are placed from left to right in chronological order of his life, and also correspond to the visiting order from the ground floor to the basement of the museum. The design of the piece encourages visitors to lift one material at a time when in a specific room, where the relevant story is revealed in the engraved slot in the box.

---

[1] Susan Stewart, "Prologue: From the Museum of Touch", in *Material Memories,* ed. Marius Kwint, Christopher Breward and Jeremy Aynsley, (Oxford: BERG, 1999), p. 30.

[2] Mark Paterson, *The Senses of Touch*, (Oxford: BERG, 2007), p. 133.

[3] Juhani Pallasmaa, *The Eyes of The Skin*, (Chichester: Wiley, 2012), p. 46-48.

[4] Paul Zucker, *Town and Square,* (Boston: MIT Press, 1970), p. 6.

Figure 2. A story revealed beneath a piece of brick, 2014, Photo by Xinglin Sun

The piece uses materials relevant to different periods of Soane's life, as follows:

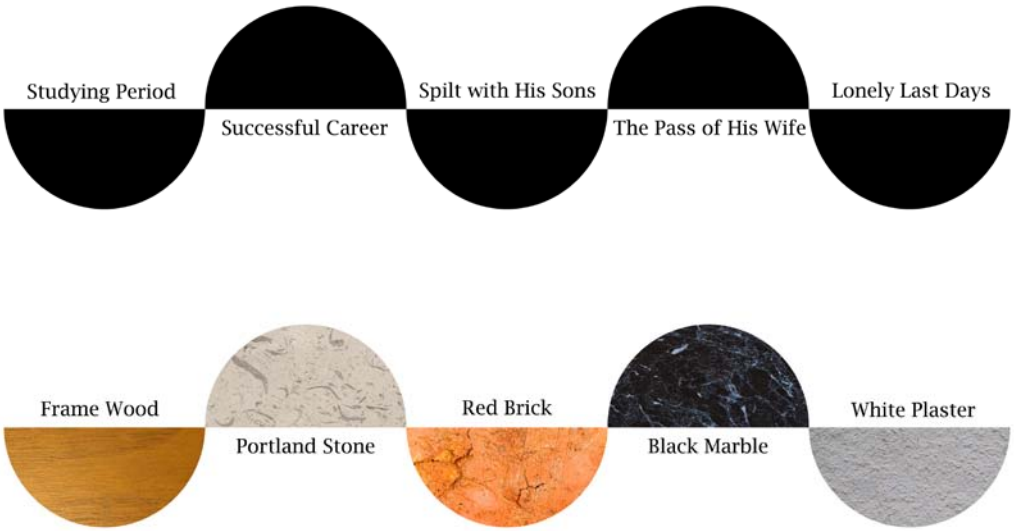


Figure 3. Sir John Soane's life periods mapped to building materials, 2014, Illustration by Xinglin Sun

STUDYING PERIOD – FRAME WOOD – PICTURE ROOM

During his architectural study at the Royal Academy, Soane was awarded the Academy's gold medal for his drawing of a Triumphal Bridge, and awarded a travelling scholarship afterwards.

SUCCESSFUL CAREER – PORTLAND STONE – DINING ROOM

Portland stone was Soane's favoured building material. He used this stone, quarried on the Isle of Portland, for the verandah on the front of his home.

SPLIT WITH HIS SONS – RED BRICK – MONK'S PARLOUR

Soane wanted his sons to become successful architects like their father, but this went against his sons' will and finally caused their irreparable split.

THE PASSING OF HIS WIFE – BLACK MARBLE – THE CRYPT

George Soane, Sir John Soane's youngest son, wrote an article in The Champion, which personally attacked his father in public; this directly caused the death of Mrs. Soane from grief.

LONELY LAST DAYS – WHITE PLASTER – MONK'S YARD

After the death of his wife and elder son, Soane's last days were lonely and he devoted a lot of time to his grandson Fred, who also let him down in the end.

Conclusion and next steps

The project reveals a potential to empower visitors to touch, feel and manipulate objects corresponding to museum environments, while seeing them and reading related narratives aims at helping visitors to gain better understanding about the environments.

This piece was acquired by the museum for its handling collection, and follow-up research is being conducted about visitors' use of it, in order to evaluate visitors' understanding of the relationship between Soane's life and the museum architecture. One interesting perspective would be what kind of experiences can be produced when museum designers and curators attend to haptic perceptions in museum interaction design, and whether this could enhance visitor's cognitive experience. Another perspective emerging from this project is how to embed narrative into the museum experience through haptic experience, and it is hoped that the follow-up research will provide insights grounded in actual practice.

Spiritual Wonder Project: Crossing Boundaries to Create Engaging Spaces for Experiential Spiritual Journey, Critical Thinking and Creative Discovery Inside and Outside the Museum

Vibhavari Jani
Kansas State University, United States

Marianna Kistler
Beach Museum of Art, United States

Abstract: *Museums around the world today are challenged to raise funds for new projects and technologies that would encourage visitors to return again. The "Spiritual Wonder," a multi media project, was developed by an interdisciplinary team to assist Marianna Kistler Museum of Art, located on the campus of Kansas State University in Manhattan, Kansas to promote a new exhibition titled "Museum of Wonder: A Great Land Grant University Collects" and raise funds for other new projects. In this paper, the author will share research, design and installation methods adapted for the "Spiritual Wonder" project installed in honor of the Museum of Wonder exhibition. The author will discuss how research of published literature, various ancient cultural traditions, and rhythm and dance movements inspired the design team in developing the design of this project, the reasons for the selection and placement of the site specific sculpture in the museum garden, and the use of "seen and unseen" elements utilized in this project. The author will explain the experiments undertaken for sound and lighting design and discuss how design team developed guided path and engaging places to connect art inside and outside the museum and how it stimulated one's senses, connected one with nature and the Universe, and provided a spiritual experience. The author will also discuss new digital technologies utilized in this project. The author will conclude by sharing her own and the participants' experiences.*

Keywords: museum, interactive, architecture, design, site-specific art, sculpture, spiritual experience

Introduction

Museums are cultural institutions and enrich our lives through its programming and various events that they host. Museums play variety of roles including educating the community, providing them a voice, and assist the citizens in developing their own identities. Museums are sources of credible information and can assist the community members in making meaningful, informed decisions (Dowson, 2008). Museums can also uplift our spirits, sooth our souls, tantalize our senses and ignite our minds. Thus the main goal of a museum is to develop culturally aware, well-balanced, enlightened members of society. This can only be possible if museums can provide engaging, memorable and powerful educational experiences for its patrons. If they fail to do so, museums lose their relevance and visitor rates dwindle. To stay relevant, museums have to keep producing new programming, exhibitions, and events. Unfortunately, each new exhibit, project or educational program that the museum develops, requires funding. In the current economic condition, museums around the world are challenged to raise funds for new projects and technologies that would encourage visitors to return again.

The University Museum this author worked with was no different. "Spiritual Wonder" project was developed to assist Marianna Kistler Beach (MKB) Museum and its "Friends of the Museum" committee members in their effort to raise funds for their upcoming new exhibition "Museum of Wonder: A Great Land Grant University Collects." The author; along with other faculty members of the University, were invited by the Friends of the Museum committee to develop a gala event titled "Night of Wonder" that they were hosting in honor of this new exhibition. This gala was designed to raise funds for the new projects of the museums. The committee members wanted to host the "Night of Wonder" gala within the museum galleries and in the museum garden so that the patrons can enjoy the art displayed within the museum galleries and outside in the garden and experience the museum in "different light." Thus the "Spiritual Wonder" project was developed by an inter-disciplinary team of the College of Architecture, Planning and Design at Kansas State University. The design team comprised of Architecture, Interior Architecture and Product Design, Landscape Architecture, Regional and City Planning Department faculty and students. Their main mission was to assist the Friends of the Museum committee in raising funds and providing memorable and engaging experience for the museum patrons. Faculty members of the Department of Music and Dance served as the consultants for this design project and music and dance students prepared and performed site-specific dance near and onsite of the actual installation of the Spiritual Wonder project. The team members utilized different design and construction technologies and installed variety of sensorial portals, and musical instruments on the ramp connecting the garden and the museum and a large (12' X 6') sculpture in the center of the Museum garden. Thus this research based project was conceived as a multi-media installation to represent the "Museum of Wonder" theme and connected the patrons with the art inside and outside of the Museum.

Spiritual Wonder | Art as a Catalyst for Spiritual Journey

In the beginning of this project, the design team debated about what title they should select for this project? Taking the lead from the title of the exhibition "Museum of Wonder," team members discussed what does "wonder" mean? Why is it important? Evans' (1973), interpretation of Cabinets of Curiosities as providers of "solace and retreat for contemplation" became principle "guiding light" for this project. The design team adapted this concept to enhance the connection with nature and designed "retreat like contemplation places" within the gallery and the garden. Kauffman (1973), described the Holy Roman Emperor Rudolf II, who governed Rome during 1576-1612, and his "Kunstammer" as "demonstration of his imperial magnificence and power" and its "symbolic arrangement of their display, ceremoniously presented to visiting diplomats and magnates." This description assisted the designers in developing the connection between the museum lobby and the ramp where the symbolic threshold changes were designed to be seen as ceremonious walkway connecting the art within the museum and the natural wonder within the garden. The idea of connecting the art within the gallery with nature, and how it can provide a "spiritual experience" led the team to consider "Spiritual Wonder" as a title for this project. Thus art became the catalyst for the spiritual journey in this project.

Research: Inside | Outside

The design team decided to adapt "Evidence Based Design" approach for this project. Evidence-Based Design (EBD) is the process of basing decisions about the built environment on credible research to achieve the best possible outcomes. (https://www.healthdesign.org/edac/about). To collect the evidence for their design, the design team adapted various qualitative research methods including interviews, site observations, analysis and documentation, literature reviews and precedent studies. The personal interviews with the museum director, curators and the Friends of the Museum committee members assisted the design team in understanding the concept of the Museum of Wonder project and its genesis of "Cabinet of Curiosities" of the past. It was also useful in understanding the Night of Wonder Gala expectations and why inside-outside connection was

important for this project. The review of published research on the subject matter assisted the design team in understanding what "Cabinet of Curiosity" represented in the museum project development and how they can utilize its various historic roots and concepts to enhance their own exhibition design and installation inside the museum and outside in the garden. Precedent reviews were conducted to understand and identify how other successful projects enhanced "inside – outside" connections, how site specific sculptures can serve as point of interest and provide focus, and how the design team can adapt some of these strategies in their project development. Each research method contributed in clarifying the requirements for the Spiritual Wonder project, and assisted designers in developing this project and achieving their goals.

Research | Interviews

The "Museum of Wonder" exhibition at the MBK Museum displayed objects related to science, history, art, agriculture, and other fields, borrowed from colleges and departments all over the University. To understand the "Museum of Wonder" exhibition concept, the design team organized a visit of the Museum and met with the director and curators of this exhibition. In the initial meeting, the design team asked the Museum director Ms. Linda Duke, what was the main purpose of this exhibition and why she wanted to display the borrowed objects side by side without any distinction. The director explained that "the mingling of these diverse objects intentionally referenced the "Cabinets of Curiosity" that were displayed in Europe from the time of the Renaissance and which represent the origin of the modern museum. The Cabinet of Curiosity displays predated the modern tendency to separate knowledge into disciplines and fields of study" and "therefore one might find an unusual fossil displayed with a fine sword or a beautifully drawn map, for example." (Duke, 2013). By contrast, "in the science-dominated culture of today, material culture is displayed in specialized museums of art, science, culture, or history. The Museum of Wonder installation at the University Museum was intended both to celebrate the rich and diverse work of the university and to prompt thinking about categories and the way they shape our understanding of the world." (Duke, 2013).

The design team also met with the committee members of the Friends of the Museum to understand their requirements, aspirations and goals. The design team also met with the curators and the exhibition designer to understand their views and requirement. The curators were excited about the exhibition within their galleries, but wanted to develop connection with the garden that they had not been able to achieve as yet. The exhibition designer highlighted the site specific challenges, and how the design team can overcome it. He also pointed out some of the major obstacles including the placement of art which cannot be removed, the lack of lighting within the garden area, the back patio and its connection with the museum lobby along with other issues. The Friends of the Museum committee members wanted patrons to move within the art galleries and enjoy the garden and wonders of nature. These interviews assisted the design team in identifying and understanding various interior-exterior connections that existed within the museum. Although the museum entrance and garden both were located on the ground floor, there was no direct connection between the main entrance of the museum and the garden below the gallery level. Thus the design team decided to develop a "connection piece" on the ramp between the museum lobby and the garden to lead the patrons to the garden and connect them to the wonder of nature.

Literature Reviews

The design team also researched historic roots of the Museum of Wonder exhibition theme. The idea of "Cabinet of Curiosity" developed during sixteenth century in Europe. Elementary collections had existed before this time as assortments of objects, but it did not categorize the objects in any way. In fact, the term "cabinet" was described as a room not as a furniture piece in the beginning. At that time, the "Cabinets of Curiosities" were

also known as *Kunstkabinett, Kunstkammer, Wunderkammer, Cabinets of Wonder*, and *wonder-rooms*. Fiorani (1998), states that "the Kunstkammer was regarded as a microcosm or theater of the world, and a memory theater. The Kunstkammer conveyed symbolically the patron's control of the world through its indoor, microscopic reproduction." (p.268). Fiorani's writings helped the design team in understanding the interior centric design of the "Museum of Wonder" layout and how to provide "control" in patron's hand. This "control" aspect led the team in designing the "guided-experience" where the patrons can feel that their own movement within the museum was their own choosing, despite being carefully designed by the design team.

Figure 1. Example of Cabinet of Curiosity. Fold-out engraving from Ferrante Imperato's Dell'Historia Naturale (Naples 1599), the earliest illustration of a natural history cabinet
Credit: http://en.wikipedia.org/wiki/Cabinet_of_curiosities#mediaviewer/File:RitrattoMuseoFerranteImperato.jpg

In seventeenth century, the description of "cabinet" changed from the "wonder room" to that of a piece of furniture. These cabinets were crafted from very expensive, exotic materials and displayed artifacts with ornamental details. These displays of artifacts symbolized the entire cosmos, albeit on a "miniature scale." This particular aspect touched the design team in a profound way, and helped in forming the concept of "Spiritual Wonder" project where the ramp and garden represented the cosmos or well-ordered universe, and the site specific sculpture placed within the center of the garden as the sun, the illuminator, and its light as enlightenment, giver of knowledge.

In the 17th-century, meaning of a "cabinet" changed from a "wonder room" to collections of works of art in France and England. The emphasis now was on "an assembly objects of *"virtu"* or "curiosities" which a *"virtuoso"* would find intellectually stimulating. This aspect was considered very important in the design of "Spiritual Wonder" project and thus the journey from within the museum to the garden was designed where certain parts of the path were seen, while others cannot be seen. This "seen-unseen" aspect of design was developed to make patrons curious to see what is out in the garden, and the journey itself was designed to make them think about their own place within the universe, why they are here on earth and what is the purpose of their life.

Precedent Studies

The design team reviewed many contemporary museums and how art is displayed within and outside of the museum. Of primary importance were the garden designs and the placement of site specific sculpture in the open environments. The various museums reviewed included the Fort Worth Museum of Modern Art designed by Tadao Ando, Nasher Sculpture Center in (Dallas, Texas), designed by Renzo Piano, National Gallery of Art, East Wing addition (Washington DC) designed by I. M. Pei, Kimball Art Museum (Fort Worth, Texas), designed by Louis Kahn, Hishhorn Museum and Sculpture Garden (Washington, DC),designed by Gordon Burnshaft, Isamu Noguchi Sculpture Garden in Bronx, New York, MAXXI (Rome) designed by Zaha Hadid, exterior garden of Rijksmuseum in Amsterdam, Guggenheim Museum (Bilbao, Spain) designed by Frank Gahery. The design team was especially interested in understanding how connections between inside and outside were designed in these museums and how "path – place" relationships were developed. What kinds of art were displayed in the open environment was also investigated. James Terrell and his lighting sculptures, Serra and his metal sculptures, Rodin and his sculptures, Calder and his large kinetic sculptures were researched. Importance of lighting, materiality, tectonics, and color, sun and wind movements, shade and shadows were also studied. How Louis Kahn and Corbusier utilized light to highlight building features, how Phillip Johnson employed Mark Rothko's color sensibilities in his Rothko Chapel design were also examined. How various concepts mentioned in the literature review can be incorporated through use of light, colors and materials were also studied in detail.

Figure 2. Exterior Garden View: Hirshhorn Museum and Sculpture Garden
Credit:http://en.wikipedia.org/wiki/Hirshhorn_Museum_and_Sculpture_Garden#mediaviewer/File:Hirshhorn_Museum_Sculpture_Garden_2007.jpg

Site Observations | Analysis | Documentation

The design team conducted multiple site visits to understand the challenges and opportunities presented by the museum environment and documented various project sites that they can potentially utilize inside and outside the museum. The potential sites were photographically documented as well as field measured and verified to understand the current site conditions and to get correct dimensions. The museum design itself posed the challenge. The locations of the entrance of the museum and garden were on opposing direction, and the museum galleries were located on the first floor. This meant that the patrons first arrive at the entrance of the museum but have to ascend upwards to the first floor to visit the galleries.

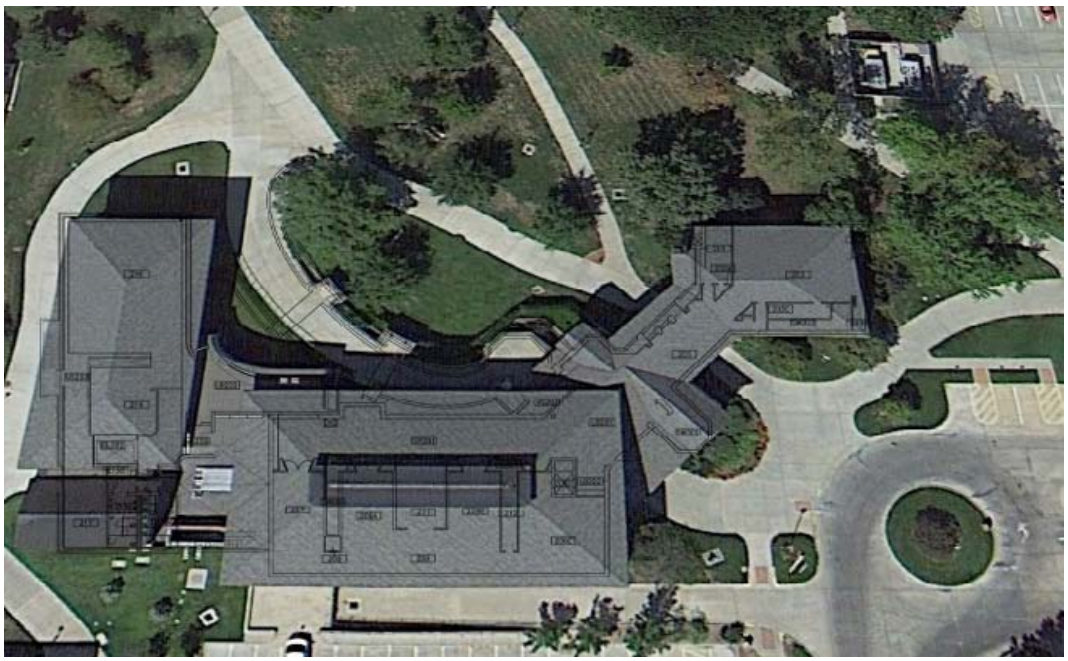


Figure 3. Arial view of Mariana Kistler Beach Museum of Art
Credit: Nicholas Mercado, Landscape Architecture Student, APDesign, Kansas State University

Figure 3a: Mariana Kistler Beach Museum of Art: Front Entrance
Credit: http://www.kstatecollegian.com/wp-content/uploads/2013/08/17a5351a-10fa-40d2-975e-a88c704ddca7.jpg

However, the garden can only be accessed through the back ramp located on the first floor of the museum gallery. This posed a challenge for the design team: how to guide patrons who are enjoying art within the galleries to outside to view the art in the garden. The accessibility of the art in the garden also was a challenge. The back patio therefore was utilized as a connection between "inside and outside." This unique site condition of two different levels between galleries and garden, led the designers to develop a threshold change at the entrance of the patio to signifying the inside-outside connection. Lighting was another challenge as there were not many power connections available in the center of the garden. A huge tree in the corner of the garden could potentially also block the view of the sculpture that the designers wanted to place in the garden.

Figure 3b. Mariana Kistler Beach Museum of Art: Back ramp and garden
Credit: Christina Regenfus, Study Aboard Student, APDesign, Kansas State University.

The long length of the ramp also posed many challenges including how this ramp can be developed as a journey, what kinds of threshold changes can be installed, and what these threshold changes signify. The building construction materials too impacted the design decisions. The concrete building façade and ramp were difficult to distinguish, and the design team did not want to disturb its "Zen" like simplicity by adding other materials. But this challenging environment and materials also were considered as opportunities and were utilized as projection screens, assisted in developing lighting design solutions, material selections for the portal design which served as threshold changes and in development of other solutions.

Figure 3c. Mariana Kistler Beach Museum of Art, Manhattan, Kansas. Back garden and Path connecting to other campus building
Credit: Christina Regenfus, Study Aboard Student, APDesign, Kansas State University.

Design Process

Once the location of the project was determined, the design team started developing ideas for the project. Many aspects of the project were explored including what does "art" mean? Why do we classify certain objects as art and others not? What does "categories" mean? What does "collection" mean? Can art only mean manifestation of an idea in material sense? This debate started a new line of inquiry: Can art be viewed in different ways? Does it have to be installed only in the galleries, or can it be installed outside in the open? Does it have to be static or can it be dynamic, kinetic, all encompassing? The design team decided to design and install a site specific, static sculpture within the center of the garden as a focal point for this project and the portals on the ramp as a threshold changes that are dynamic to pay homage to Bredekamp's (1995) idea that "the juxtaposition of disparate objects, encouraged comparisons, finding analogies and parallels and favored the cultural change from a world viewed as static to a dynamic view of endlessly transforming."

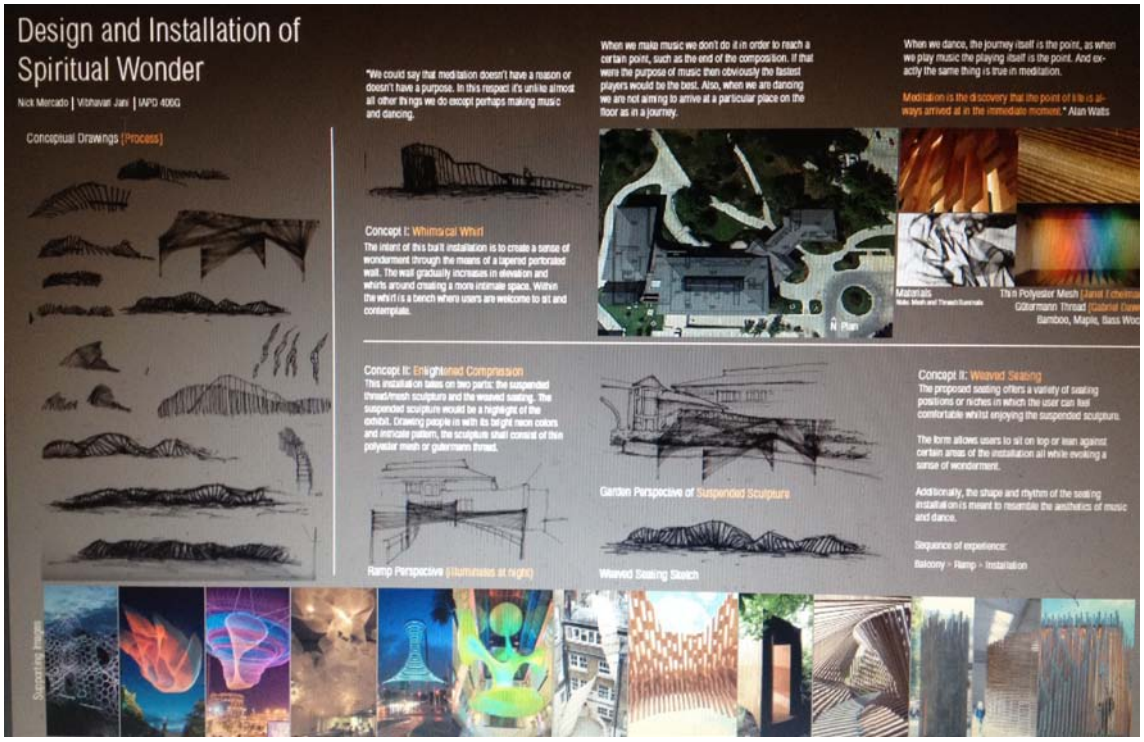


Figure 4. Spiritual Wonder Project: Design development presentation board
Credit: Nicholas Mercado, Landscape Architecture Student, APDesign, Kansas State University.

Inside Outside Connection | Seen – Unseen

The design team then explored how they can develop connections between exterior and interior spaces of the museum. What does "connection" mean? How can one design a "connecting piece" to attract the patrons to come out to the garden? This then led the thought process further and the design team explored the meaning of "path" and "place." What role thresholds play in development of this "path" and "place" connection? Do they have to be physical, or can it be "philosophical" by extension, not visible? Should it be clearly seen, or can they be experienced, but can remain unseen? This lead to the development of the concept "seen – unseen" for this project and the design team developed the idea of kinetic sensorial portals for the ramp that can be seen from certain angle of the museum but not visible all the time if the patron remained static in one position inside the museum.

Inside – Outside | "Connection Piece" as an Engaging and Interactive Experience

This "seen- unseen" theme then became a point of contention and further research: how can one design this "connecting piece" as an "engaging place" that one can experience? Can one design an experience that feels like a journey that transport one from material world and transcend them to the "other realm?" What does "realm" mean? What does "journey" mean and what is a "destination?" What this journey "from inside to outside" symbolize? Does it needs to represent just the physical movement, or can it be experienced as spatial as well as spiritual journey? Can one experience spirituality through art? All team members agreed that art can lead one to experience spirituality. The design team then debated what does spirituality mean? How can one define spirituality? Is it religiosity or is it connection with larger energy source then us? All notions and connotations of religiosity were rejected. However, the spiritual aspects of all religious traditions were carefully considered and where appropriate, adapted in designing the threshold changes, and development of inside-outside connections.

The design team considered Nature and Universe as "larger energy sources then humanity." Varieties of ancient cultural traditions were explored to understand this aspect of design including ancient Indian tradition of playing drums to create sound vibrations to awaken the inner self. The idea of monks walking within the cloisters and the circumambulation of pilgrims around a temple or a stone were also researched to augment the development of the movement from "within – to out." This circular movement within the cloisters and temples or stones matched the design of the ramp. Design efforts were then focused on how to connect the patrons who might view art objects only as material manifestation displayed within the gallery and not see nature as awe inspiring art? This then led to exploration of natural elements and what do they symbolically represent? How can one represent water, fire, air, and earth in design? How can it be utilized in construction? Many architectural and natural precedents were examined and studied in detail to understand the importance of all the questions mentioned above. Each discovery was documented through sketches, diagramming, model making.

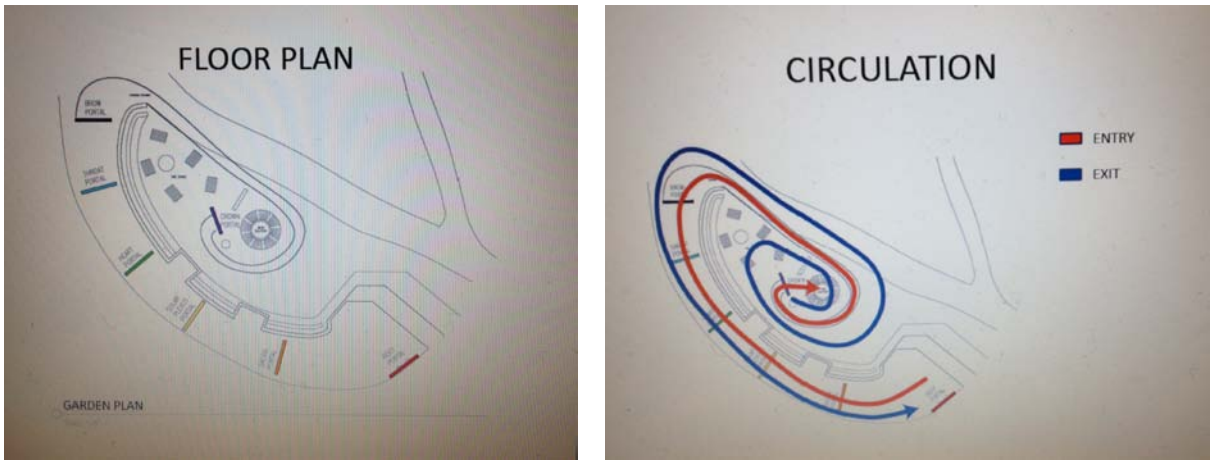


Figure 5. Design development phase: Portal design and circulation and path-place relationship diagram
Credit: Laura Stockdell, Interior Architecture and Product Design Students, APDesign, Kansas State University.

Art as Catalyst For Critical Thinking and Creative Discovery | Experiments in Sound and Lighting Design

To develop this project as an "engaging experience," the design team started developing design ideas for the ramp and garden area. The dance and music department collaborators were invited to provide their input. The design team reviewed the music and dance performances being prepared by the students and shared their

initial sketches with the collaborators. The dance and music movements inspired the design team in developing ideas for the thresholds. The designers installed an exterior exhibit utilizing various sensorial portals on the ramp leading to the museum garden as a tribute to the new exhibition inside and to connect the visitors to the art within the museum and the garden. The design team then researched ancient cultures to understand the importance of sound and its influences on human beings. After careful considerations, designers designed the sensorial portals which incorporated musical instruments to invoke ***"anahat naad"*** (the sound of the celestial realm according to Indian Vedanta Philosophy). These sensorial portals invited the participants to touch and play the musical instruments made by hand from the found objects, and hear the sound it generated. Utilizing ***"dhwani"*** (sound vibration) as call to attention, these sensorial portals (seen as threshold changes) connected the patrons with the universal reality of time and space as they move through the portals playing the instruments. Large gongs were also utilized to develop the sound vibrations and were placed around the "Eternal Light" sculpture. The sensorial portals also symbolized threshold changes in everyday life and initiated the need for evaluation of one self, and invited one to take the spiritual journey within. In this guided experience, the designers provided participative places on the ramp and in the garden where the participants became the performers. A 12' x 4 foot sculpture tilted "Eternal Flame" was designed and installed in the center of the garden and lighted from within, symbolizing the intellectual and spiritual awakening through art. A lighting design instructor was consulted and decision was made to use site specific lighting for the eternal flame sculpture while the sensorial portals were lit by energy saver solar lights. Fiber Optic lighting was also utilized to create the effect of water, the solar lights were utilized to symbolize the sun and to highlight threshold changes.

Figure 6. Eternal Frame Sculpture being installed on site
Photo Credit: Vibhavari Jani, Interior Architecture and Product Design Students, APDesign, Kansas State University.

The designers envisioned various portals to serve as guide posts, a "spiritual guide" on the path of self exploration and developed engaging places that stimulated one's senses and connected one with nature and the Universe. The idea behind this project was to create an engaging experience that could start one on the path

of self-realization, and to elevate individual consciousness symbolizing that boundary crossing is a catalyst for critical thinking and creative discovery.

Use of Technology

The Eternal Flame sculpture was designed and fabricated using digital technology: the sculpture was designed using Revit software and fabricated using CNC router in the College of Architecture, Planning and Design's digital lab. Each 8' X 4' feet MDF CNC cut panel was then mounted on the wooden frame work. Plexiglas panels were then cut the same way and mounted on the MDF panels. The sculpture weighed a ton and required a flat-bed truck to move it from college lab to the museum garden! Twenty students, technicians, and a truck drive physically lifted the sculpture to place on the flat bad. The portals were also designed using Revit software but were fabricated by hand as they were made from bamboo. To mold it, first bamboo stocks were soaked in water. A wooden frame work denoting the specific shape of the arch was designed for the portals. The water soaked bamboo then was placed in this frame. To keep them in shape, jute strings were used to tie them in place and these jute strings provided much needed tension/compression for keeping the bamboo arches in shape.

For the lighting filter design, designers utilized Revit software again, but this paper filters were cut using laser cutter. The Fiber Optic technology was used to create illusion of water on the garden wall. Projection technology was used to enhance dancers' body movements, and various lighting technologies were used to cast shadows in some places while create pool of lights in other areas. Video and digital cameras recorded the dancers', and participants' movements within the museum, on the ramp and within the garden. Cell phones were used to tweet onsite "happenings" while live videos and photographic images were posted on facebook for patrons and other members of the team to view who were not able to be present at the event.

Figure 7. Eternal Flame Sculpture panel being cut at the CNC machine
Photo Credit: Dusting Headley, Interior Architecture and Product Design, APDesign, Kansas State University.

Participants' Experiences

The team constructed the environment as a piece of visual art, and designed an engaging guided experience in which the participants became the performers. The designers provided a participative place for the patrons to step outside their normal world for a few moments and let them explore the world outside the museum. A balcony above the installation allowed viewers who did not travel through the exhibit to participate through sight, and sound as others completed their journeys. Using video and photography the team highlighted the construction of the environment and public interaction with the installation. While minimal and elemental, the sensorial portals provided patrons and design team members, museum staff and the Friends of the Museum Committee members to explore and experience music as an art form. The large gongs placed near the eternal flame sculpture created surprise when played as it's resonance filled the air. The patrons followed the dancers and their movements through the museum windows, and at times were lured in by the dancers to move away from the interior galleries to come out and "play" with sensorial portals and patrons enjoyed it a lot! This author kept following patrons and dancers to see each other's next action and reactions and took hundreds of pictures. The journalists and photographers invited by the museum and the Friends of the Museum Committee members too were completely smitten by the engaging journey designed by the design team and local and college newspapers highlighted this project. The patrons embraced various dichotomies and complexities of this project and understood and experienced the "seen and unseen" aspects of this project and appreciated and accepted the transparency and opacity, emptiness and plenitude, light and dark, silence and sound, creation and destruction as part of life.

For this author, this was a very rewarding creative project, which gave her the opportunity of a lifetime for her to teach and learn at the same time with her students. In true sense, this project allowed her and her collaborators to cross the boundaries to create engaging spaces for experiential spiritual journey, and provided great learning opportunities and the time and place for creative discovery, and to critically think about the issues of displaying art inside and outside the museum for her students.

References

Dowson, R. (2008). *14 key issues in the future of museums.* Retrieved from http://www.lemproject.eu/in-focus/news/14-key-issues-in-the-future-of-museums

Evans, R. J. W. (1973). *Rudolf II and His World: A Study in Intellectual History.* Oxford Press.

Fiorani, F. (1998). *Reviewing Bredecamp 1995*. Renaissance Quarterly 51.1 (Spring 1998:268-270), p 268.

http://www.museumofwonder.com/

http://www.beach.k-state.edu

https://www.healthdesign.org/edac/about

Kaufmann, T. (1978). *Remarks on the Collections of Rudolf II: The Kunstkammer as a Form of Representatio*, Art Journal 38.1 (Autumn 1978:22-28).

Lawrence, W. (1995). *Mister Wislon's Cabinet of Wonder.* Pantheon Book Publishers.

Strachan, Tavares. (n.d.) "SEEN/UNSEEN." Retrieved from http://seenunseen.com/#/intro

A Case Study to Make Use of Cross-channel User Experience for Interactive Exhibition Design

Simge Esin Orhun
Ozyegin University, Turkey

Abstract: *Current improvements in the media landscape paved the way for the techniques used in interactive exhibition design based on the dynamics of pervasive computing. However, varying interaction modes of each tool and spatial constraints caused highly fragmented narratives, which raised conflicts concerning the nature of these technologies and the organization of the information. The aim of this study was to explore hints for the design of cross-channel user experiences that would guide the alteration of the exhibition areas into engaging places to overcome this problem. Rather than using traditional approaches for design, we focused on making use of the obstruction method of disabling environment, which approached the interaction design problem to be solved for a tactual, auditory or visually disabled visitor profile or the generated disabled environment itself. The analysis of the conceptual interactive exhibition design projects developed in between 2011-2012 in the design studio course by the undergraduate students of the Department of Communication Design of a well-established university, reflected a solution that sustained the theme by maintaining the synchronous information flow between participatory digital tools through the integration of an additional wearable or mobile interactive tool for personal use. The outcomes reflected the potential of this approach to improve the role of museums as a bridge between the physical and the digital while reflected the traces for future solutions to unify the scattered urban experiences at a larger scale.*

Keywords: interactive exhibiting, pervasive computing, cross-channel user experience, disabling environment

Introduction

Today, contemporary life is shaped by the different alternatives for communication, storytelling and information technologies (Jenkins, 2006), which emphasizes the act of experiencing and interacting for many achievements including learning. As processing of information in daily life has changed, museums' roles have shifted from being institutions that host collections to environments that serve for experiencing (Locker, 2011) (Soojin Jun, Hyun-Kyung Lee, 2014). As we reconsider museums with their new roles and responsibilities, the need to understand how visitors experience and engage in exhibitions gains importance.

From the recent researches, most exhibitions were identified to make extensive use of terminals, projections and multi-touch displays in their display areas. Making use of these tools could be considered as a form of displaying and dissemination of information, but they did not exactly act as the complimentary components of an engaging space. Actual improvements within this area in terms of interaction and experiencing started to happen when the traditional forms of art were replaced by participatory installations, which defined the new visitor profile as the kinaesthetic learner (Hughes, 2010) due to his active role in the process of learning by experience. Gjedde and Ingemann (2008) also indicated the importance of process by pointing out the fact that visitors acquired personal and cultural meanings revealed by the design of the exhibitions. However, this improvement, which includes the integration of technologies with the artworks, lacks spatial unity that will support the visitor's perception of the exhibition as a whole. With the technological advancements contributing to every part of our lives, our perceptions of the process and our expectations of its outcome are constantly

evolving (Andrea Resmini, Luca Rosati, 2011), which calls for the understanding of the distinctive aspects of visitors' engagement and reflect their changing interests (Simone, 2010) (Soojin Jun, Hyun-Kyung Lee, 2014) (Herman Kossman, Mark de Jong, 2009).

This paper was based on the foundations of a 3-year research about interactive exhibition design. After having worked on different aspects of design to bridge the physical and media space, the core problem was recognized to lie in the change of the context that applied not only to the physical artefacts but also to the physical space. While the solution to this problem extended beyond the technical and functional elements, integrating the behavioural aspects to the design process seemed to be a way to formulate a productive relationship among people, materials and media.

The aim of this paper is to provide an alternative structural design of shared information that will enhance the exhibition experience through behavioural means by merging the principles of design, architecture and interactivity supported by the digital media. In order to reach our aim, we focused on developing alternative ways to maintain cross-channel user experience for interactive exhibiting. With the outcomes of this study, we tried to develop alternative structures of interactivity in exhibition design in order to fulfil the gaps in the dissemination and communication of information.

Cross-channel user experience to combine technical, functional and behavioural aspects in exhibiting

Interactive exhibiting is an area that intends the visitor to acquire the role of the actor, who contributes directly for the realization of the exhibition himself by navigating in a structured narration and interacting with tools, artworks and applications (Bullivant, 2006) (Lorenc, Skolnick, & Berger, 2006). This research started 3 years ago, with the purpose of discovering the extent of improving interactivity for exhibition design by making use of the potential of pervasive computing. In order to provide a solid theoretical foundation to understand the dynamics of visitor engagement, the idea of creating an exhibition design that entailed participation in pervasive computing environments has to be defined together with the identification of the aspects that effected the design. From the literature and the analysis of recent works, the solution for the functional aspects of design, which includes the spatial layout, organization and staging of the interactive experiences, are fulfilled in the geometric qualities of the space (Dade-Robertson, 2011). The technical characteristics that pointed the design of non-linear navigation within the content for visitor manipulation are realized through the concept of interactivity (Kolko, 2007), where pervasive computing is concerned due to its concentration on the design of embedded information in environments, tools, appliances, displays and systems (Saffer, 2007) (Herman Kossman, Mark de Jong, 2009)

In order for the research to proceed, the relationship between the design of an exhibition and the architectural space was examined first, with the intention to understand how to use the potential of an exhibition space. In the frame of this objective, the research focused on making use of architectural approaches concerning the spatial organization of activities that support the theme, the navigation in the space and maintaining a suitable relationship between the theme/ story and the geometric qualities of the space that undertake the behavioural aspects. Having experienced the design of conceptual exhibitions for different architectural spaces, creating a linear storytelling proved to be an advantageous solution in maintaining the spatial compactness of exhibition and showed flexibility to be applied to many different physical forms (Orhun, Study On Transforming The Museums Through Interactive Exhibiting, 2012) However, trials to develop exhibitions that involved non-linear storytelling reflected fragmented results in terms of functional and technical aspects of design and the focus of the research shifted to creating possible strategies supported by pervasive computing to enhance behavioural means. The traditional multi-channel strategies were helpful in keeping the intended communi-

cation and participative qualities on technical basis; but failed at the point which signalled the possibility of the visitor's focus to move away from the exhibition to the interactive tools, with a probable decrease in his concentration in the theme (Orhun, Designing Interactive Exhibitions Based on Innovative Narrations Guided by Architectural Space and Digital Technologies, 2013).

Based on the analysis of the research works mentioned above, it was possible to identify the problem of fragmentation of the theme, due to the variety in the visitors' engagements to exhibitions as well as the demand for a non-linear storytelling in multi-floor exhibition spaces. These needs and identifications guided this research to move away from traditional multichannel strategies of interaction and to examine cross-channel user experience, which was defined by Resmini and Rosati (2011) as,

> "a single service to be spread across multiple channels in such a way that it can be experienced as a whole only by interacting with a number of media".

This definition actually funnelled to start working on the ways to create multi-channel user experience, with the aim of compensating the behavioural aspects of design. In order for the exhibition space to be an engaging place, the memories, experiences, social and psychological patterns associated with the local had to be integrated within the design process. Actually, the difference between the concepts of space and place could be understood as the variance between impersonal and personal or objective and subjective. While the concept of space denotes the base experience of our embodiment, the notion of place includes the behavioural patterns associated with locale (Norberg-Schulz, 1979) (Steve Harris, Paul Dourish, 1979). In the process of connecting varying channels and environments, place-making was recognized to be a crucial aspect of designing interactive exhibitions in shaping the overall user experience (Andrea Resmini, Luca Rosati, 2011)

In the light of identifications and discussions indicated above, we have come to the point to search for ways to relate the technical, functional and behavioural aspects of exhibition design with the place-making approaches through the possibilities provided by cross-channel user experience provided by pervasive environments. With the aim of generating a strategy to overcome the fragmentation of theme or storytelling in any interactive exhibition, this research looks for the hints of a holistic approach to develop alternative ways to structure pervasive information architecture within physical space. Based on the findings, the advantages and disadvantages of making use of cross-channel user experience for an interactive exhibition will be discussed.

Method for the Research

This research was based on the analysis and examination of the outcomes of undergraduate students' studio design projects. From the starting point of the research, the design brief was planned to focus on the generation of possible solutions for specific physical spaces. After a revision, the design brief given to students concentrated on developing technological solutions to enhance the visitor participation. However, the intension to develop engaging spaces that would combine functional, technical and behavioural aspects of design, called for a different strategy in order to arrive at original solutions.

In the light of this opinion, rule-breaking approaches were chosen as the strategy to solve the research problem defined in the previous section. Among many approaches used in the frame of this strategy, the obstruction method was found suitable due to its compatibility with interactive media design education. The obstruction method constructs the design problem by placing obstacles in the users' way (Evren Yantaç, Oguzhan Ozcan, 2011) (Oguzhan Ozcan, Evren Yantac, Mary Lou O'neil, 2008). The design brief was revised on the basis of the idea of creating an exhibition, which assumed the disability of visitors due to the fail of one of their senses as a result of an environmental factor. This method was used as a design education strategy in the same department in previous semesters for the development of novice interfaces and physical artifacts. However, it was the first time to be used for the context of spatial interaction.

In order to structure the information architecture for pervasive environments, a studio design course based on spatial interaction was planned and implemented in 2012-2013 within the Department of Communication Design of a well-established university with a total of 12 undergraduate students. Within the design brief, the students were given 2 different architectural spaces, upon which they would develop their conceptual designs based on the selection of one space. At the beginning of the studio course, students were asked to do background research for the concept of interactive exhibiting. Afterwards, a review for the technological platforms and tools that could be made use in physical spaces was carried out. The general tendency of the studio was set to develop experience design projects that led the visitors to learn by interaction, while being disabled by the environment. So, the students formed the theme and the storytelling of their exhibition designs that defined a specific disabled environment and developed the scenario of visitor experience in parallel with the obstruction method. When the students got ready to start to work on their projects, they were guided to work on preliminary sketches and layouts that would help them to discover different modes of interactions. Subsequently, they developed the idea more by structuring their interaction scenarios in terms of activities, actions and operations (Victor Kaptelinin, Bonnie Nardi, 2006). With the completion of their work at the end of 12 weeks, a jury evaluated their work for their success in maintaining the interplay of action, interaction and controls through the mapping correlations of the designs.

Evaluation of the works

In parallel with the aim of the design brief, students developed conceptual interactive exhibition designs that were based on specific disabling environment themes, interactions for the obstructed user and the use of navigational features. While some of the projects failed in maintaining the unity of the exhibition, others came out with a design idea that attempted to connect the spatially distant and separate interactions and experiences.

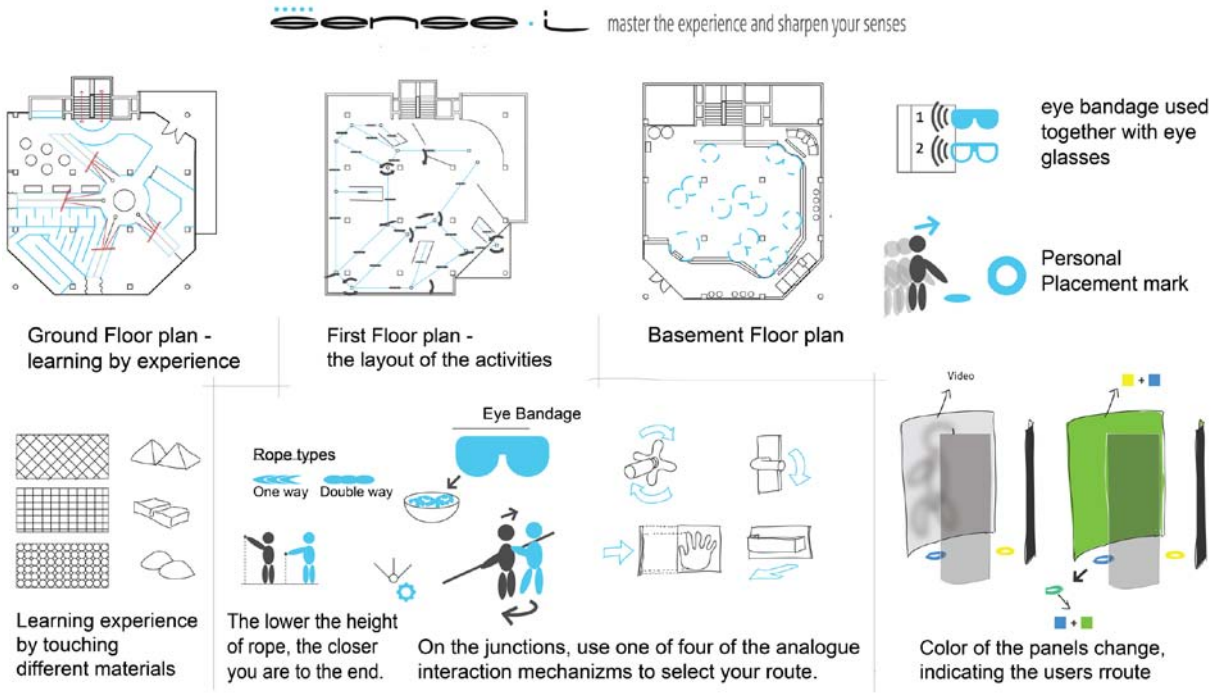


Figure 1. An example of a conceptual exhibition design for the multi-story space

The successful projects were recognized for their approach to bond the performed experiences with a personalized additional mobile or wearable tool, which were generated special to the themes and to be used by the visitors along their tour. These tools were planned to be active in the whole process and in close connection with the experiences performed throughout the exhibition. The effective integration of these tools with the theme yielded fruitful results as they collected and linked the information gained from interactions and let the visitors create their own experience of the exhibition. So, even though the visitors did not interact with each technological tool, they were capable of getting the big picture through the cross-channel user experience provided by the personal gadget.

The project above by Meir Benezra named "Sense-I", focused on the learning experiences in a blind environment and this conceptual exhibition project aimed to enhance the visitor's way finding capability by improving his sense of touching (Fig.1). In order to provide blindness, a special eye bandage that also worked as a pair of eyeglasses was given to the visitor at the start. Within the project, the visitor was first introduced to the blind atmosphere in the entrance floor, where he was given the bandage and asked to practice materials, surfaces and interactions by sensing while moving in the dark. Afterwards, the visitor was taken to the first floor, which was designed as a labyrinth and inhere he was expected to manage his route by manipulating the analogue interfaces. His route in the first floor was traced and saved by the interactive eye bandage. These tools, which maintained the blindness of the visitors, were also a collector of information, that linked the experience gained in three floors and displayed it. The basement floor was composed of the panels that were mapped and placed in parallel with the interactions in first floor. On this floor, the information collected by the eye bandage revealed the navigational route of the visitor, while eye bandage changed into eyeglasses. Each visitor was assigned with a specific colour, which functioned to leave a personal placement mark to help the visitor understand and observe his personal experience. The routes of all the visitors were indicated on the coloured panels and the colourful floor reflected the visitors' tendencies for touring in a blind atmosphere.

The students envisioned these personal digital tools to be designed to collect data in parallel with the objectives of the theme and the context of the exhibition design. Although these tools had different forms and were integrated for different achievements, all of them were planned to collect location-based data, which would effect the latter interaction of the visitor or his circulation or the end result.

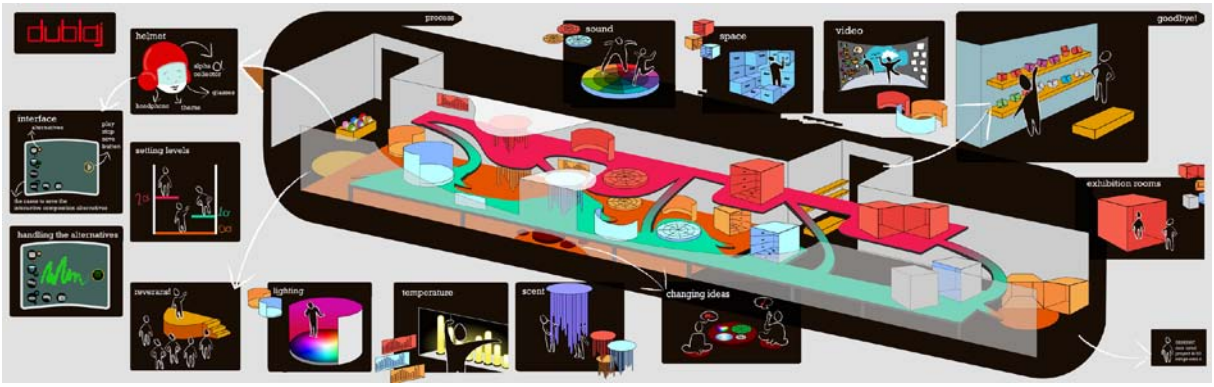


Figure 2. An example of a conceptual exhibition design for the multi-story space

A project by Nice Uysal named "Dubbing", intended to provide a critical look at the manipulative character of words, sentences and language and focused on developing each visitor's nonverbal communication through other means or the alternative communication modes (Figure 2). The visitor was planned to go to different stands to experience nonverbal communication for specific concepts or materials. Sound, colour, temperature, gestures, dancing, brainstorming were favoured modes. The student assumed every visitor not to pay the same

amount of attention and devotion to each and every interaction placed in the exhibition area and wanted to guide the visitor's route through the calculated energy he placed on each activity. In order to realize this cross-channel user experience, the student integrated a wearable helmet that collected the energy revealed during the visitor's performance and transformed this data into usable information to guide for the visitor's navigation in the exhibition space. The exhibition space was organized for 3 floors. The helmet would direct the visitor's navigation in parallel with his will to perform and the degree of participation in the exhibition. The helmet would also collect the information about his overall experience in the exhibition and convert into a sculpture, which was given as a reminder gift to the visitor at the end of his visit.

As seen from the conceptual works, the physical form of the interactive tool was shaped by the theme of the exhibition. Therefore, these tools were well-integrated with the exhibition and played a leading role in developing engaging spaces. Tablets, eyeglasses, gloves, headphones, flashlights, helmets, memory sticks and cards were among the tool choices of students.

Another significant issue recognized with the analysis of this group of conceptual design projects lied in the competence of these personal tools to improve the capability of the media space to adapt itself to the needs of the users as well as to support the multiple information obtaining strategies. The area of pervasive computing supported the idea of establishing the sense of place, by helping the visitors to reduce disorientation and increase legibility and way-finding in digital and physical environments. This approach provided the space of communication to be unique and resilient, while supporting the exhibition to be perceived as a compact spatial experience sustained by functional, technical and behavioural means of design.

Conclusion

With the aim of sustaining their role as the centres of cultural heritage, museums have started to try new approaches for communication in recent decades, by housing interactive exhibitions that make use of digital technologies and tools. This research, which aimed to improve the potential of the exhibition space as an engaging environment, was carried out since 2009. Throughout the research, solid outcomes were obtained, which involved the identification of the possible aspects that effected the design of interactive exhibitions and their possible contributions to visitor participation and, the findings brought this research to a level of maturity. However, the compactness of exhibition was fragmented either due to the geometric qualities of the spaces or the traditional multi-channel user experience strategies concerning the structuring of the information system. This general tendency reflected the necessity to reconsider the visitor engagement from a holistic point of view that involved the behavioural aspects of design to join the functional and technical issues. In order to maintain the above-mentioned intentions in design, at this stage of the research, creating cross channel user experience supported by pervasive computing environments were chosen as the focus area.

With the group of undergraduate students under the Department of Communication Design, several projects were developed on the basis of obstruction method. The students were advised to develop a theme and a storytelling for a disabling environment that would prevent the visitor to use one of his senses. The disabling approach proved to be suitable for the aimed context and yielded the solution of combining a mobile or wearable interactive tool for personal use. This approach brought successful outcomes for creating the individualistic experience and brought freedom to navigate physically and virtually within the content of the exhibition while saved the continuity of the theme and information flow. The experiences performed within these conceptual design works were tracked and saved by these personal digital tools in the form of location-based data, which denoted the transformation of exhibition space to an engaging place. It was understood that, while digital tools favoured the media space, being dependent on location could not be denied in the reliability of any design work. Another important proposition of these projects was the efficient relationship provided between the need, the form and the technology of the personal gadgets, which had shown great

potential to guide the future. As a result, with the integration of the behavioural aspects of design in terms of building a sense of place supported the endurance of the theme and storytelling across the whole space and among all artefacts.

It is possible to say that the exhibition space has huge potential to be perceived and designed as a layered artefact. When the physical, technical and behavioural aspects are treated as layers of information, it becomes possible to create real engaging environments. As seen from the exemplary works, engaging places do not necessarily need to rely on the technological innovations or a specific spatial geometry. This brings us closer to the idea of a constructivist sense of meaning-making, in which the learning process is viewed as communication and experiencing. It also brings the possibility of both externalization of information by the structural design of the theme and the spatial layout of the digital tools together with the internalization of the knowledge obtained by the visitors' personal gadgets. By making use of this approach, it becomes possible to construct new knowledge from their experiences revealed by interactive exhibitions, which will strengthen museums' roles with added social responsibilities in the society.

Similar to other institutions, museums also go through a transformative period in terms of their responsibilities and roles in the society, which depends on the extent they improve their efficiency. With the use of the strategies and approaches for the design of interactive exhibitions described in this research, museums will have the chance to play a leading role as engaging spaces and will be one of the building blocks in the communication infrastructure of the future cities.

References

Andrea Resmini, Luca Rosati. (2011). *Pervasive Information Architecture: Designing Cross-Channel User Experiences.* MA: Morgan Kaufman Publishers.

Bullivant, L. (2006). *Responsive Environments.* London: Victoria and Albert Museum.

Dade-Robertson, M. (2011). *The Architecture of Information.* NY: Routlage.

Evren Yantaç, Oguzhan Ozcan. (2011). Participatory Study in Interactive MEdia Education: Disabling Environment and Augmented Reality Case. *Digital Creativity*, 44-48.

Herman Kossman, Mark de Jong. (2009). *Engaging Spaces: Exhibition Design Explored.* Amsterdam: Frame Publishers.

Hughes, P. (2010). *Exhibition Design.* London: Laurance King Publishers.

Ingemann, Lisa Gjedde and Bruno. (2008). *Researching Experiences: Exploring Processual and Experimental Methods in Cultural Analysis.* Newcastle: Cambridge Scholars Publishing.

Jenkins, H. (2006). *Convergence Culture: Where ld and New Media Collide.* New York: New York University Press.

Kolko, J. (2007). *Thoughts on Interaction Design.* Georgia: Brown Bear Publication.

Locker, P. (2011). *Exhibition Design.* Lauseenne: Ava Publishing SA.

Lorenc, J., Skolnick, L., & Berger, C. (2006). *What is Exhibition Design?* Mies: Roto Vision SA.

Norberg-Schulz, C. (1979). *Genius Loci: Towards a Phenomenology of Architecture.* New York: Rizzoli.

Oguzhan Ozcan, Evren Yantac, Mary Lou O'neil. (2008). Breaking The Rules in Interactive Media Design Education. *Digital Creativity*, 115-124.

Orhun, S. E. (2012). Study On Transforming The Museums Through Interactive Exhibiting. *DREAM: Transformative Museum*, (str. 279-288). Copenhagen.

Orhun, S. E. (2013). Designing Interactive Exhibitions Based on Innovative Narrations Guided by Architectural Space and Digital Technologies. *NODEM 2013: The Collaborative Museum and Its Challenges*, (str. 33-40). Stockholm.

Saffer, D. (2007). *Designing for Interaction.* Berkeley: New Riders.

Simone, N. (2010). *The Participatory Museum.* Santa Cruz, California: Museum 2.0.

Soojin Jun, Hyun-Kyung Lee. (2014). Dialogue and carnival: understanding visitors'. *Digital Creativity*, 247-254.

Steve Harris, Paul Dourish. (1979). Re-Place-ing Space: The Roles of Place and Space in Collaborative Systems. *Proceedings of the 1996 ACM Conference on Computer Supported Cooperative Work*, (str. 67-76).

Victor Kaptelinin, Bonnie Nardi. (2006). *Acting With Technology.* MA: MIT Press.

The Luostarinmäki Adventure – An Augmented Reality Game in an Open-air Museum

Lauri Viinikkala, Olli I. Heimo, Timo Korkalainen, Tuomas Mäkilä, Seppo Helle, Veijo Pönni, Juha-Pekka Arimaa, Frans Saukko, Juho Pääkylä, Sami Jokela, and Teijo Lehtonen
University of Turku, Finland

Olli-Pekka Leskinen
The Museum Centre of Turku, Finland

http://ar.utu.fi/project/luostarinmaki-adventure/

Abstract: *Our paper deals with the creation of an augmented reality (AR) adventure game in Luostarinmäki open-air museum in Turku, Finland, as a part of the Futuristic History research project. The focus of this case study was to research how to create an informative yet engaging and entertaining AR game within a museum environment.*

The Luostarinmäki Handicrafts Museum consists of 18 blocks of original late 18th century – early 19th century buildings on their original location – the largest part of the city to survive the great fire of 1827. The museum represents crafts and town life in early 19th century.

Provided with an iPad, the player of the Luostarinmäki Adventure can explore the area and be able to see not only the buildings that are actually there, but also the people and the life in the 1850's as digital layers added on top of the camera view. The game mechanics are based on interaction between the player, the virtual characters, and the real-world environment. Several technical and usability issues have been identified and improved during the development of the adventure, which cannot yet be considered complete.

Keywords: augmented reality, mixed reality, open air museums, visualization, virtual reconstructions, games, gamification, engagement

Introduction

Imagine yourself in an open-air museum consisting of 18 blocks of an 18th century city. The buildings around you are preserved on their original location. Every object is an authentic remnant of the past. Everything you see has something to tell about life more than 200 years ago. But yet, something is missing: the life itself. Streets are quiet and the buildings are empty with the exception of other visitors and guides. You experience more like a ghost town than life in the 18th century city. Imagine then that everything comes to life. You can see the people and the animals of the past and feel the bustle of the city. You can discuss with the people you meet and have an effect in what happens around you.

This is not a scene from a science fiction story, but instead, using a tablet computer, already reality in part at the Luostarinmäki Handicrafts Museum in Turku in 2014. An augmented reality adventure game shows the museum visitor the life in the city in 1850's by combining the reality and the virtual, the physically existing contemporary buildings and digitally created characters (figure 1). The game was created as a part of the Futuristic History project.

Somewhat similar research projects applying mixed reality technology to location-based games have been reported previously. (Herbst & al 2007), (Carrigy & al. 2010). One main objective for our project was to search for cost-efficient, co-operative production workflows and tools for such applications.

Figure 1. Looking through the tablet application, museum visitor meets digitally created characters in the streets of the Luostarinmäki museum

Futuristic History is a research project conducted by the University of Turku and the VTT Technical Research Centre of Finland. The multidisciplinary project has studied the possibilities offered by mixed reality technologies for representing and recreating past events, people and life. The two-year project started in January 2013 and ends in December 2014, and it is funded by TEKES, the Finnish Funding Agency for Technology and Innovation. (Mäkilä & al. 2013)

Augmented reality and mixed reality

Augmented reality (AR) is a technique that layers digital effects on top of real-life spaces in real time using computers and mobile devices such as smart phones, tablet computers and data glasses. Some of the augmented digital effects can be physically manipulable by the person viewing them (Cabiria 2012). AR is a subdivision of mixed reality (MR) which stands for the continuum between reality and artificial environment, as illustrated in figure 2. Virtual reality (VR) is a pure computer generated environment that can simulate a real or imagined world (Milgram & Kishino 1994), while augmented reality and augmented virtuality are set between the fully virtual and entirely real environments.

Figure 2. Reality-virtuality continuum

Modern Augmented Reality technologies are built upon mobile devices. A common practice is to use the cameras on these devices to capture video, include additional virtual content over it, and display the result on the screen of the same device. All this is done in real time and possibly with complex modification to the original video feed involving virtual 3D models and imaging algorithms.

The Luostarinmäki Handicrafts Museum

In 1827 the city of Turku in southwestern Finland was mostly destroyed in the most devastating fire in the Nordic countries through history. The only larger part to remain intact was the Luostarinmäki area on the outskirts of the city. The area was sheltered by a high hill located between the area and the city center. (Viitaharju 1990).

On those days Luostarinmäki consisted mainly of the dwellings of workers and craftsmen. The houses were built between 1785 and 1803, and due to the limited wealth of the owners and occupants they were rather modest and cramped. Since most of the residents in the city had lost their homes, many of them took a room in Luostarinmäki, which became very crowded until the city was rebuilt. In a new city plan drawn after the fire, the Luostarinmäki area was rearranged and thus the old houses were ordered to be demolished (Viitaharju 1990).

Rebuilding of the city took time and the demolition of the old houses in Luostarinmäki was never carried out, and the houses preserved their 18th century features. In the first half of the 20th century the cultural-historical value of the area was recognized and the buildings were conserved. The Luostarinmäki Handicrafts museum was opened in 1940 to represent traditional handicrafts and life of the people of limited means in 18th and 19th century city. (Sjöberg-Pietarinen 1990).

Game-based museum education

According the definition set out by ICOM, the duties of a museum include promoting education, providing enjoyment and communicating information about humanity and its environment (ICOM Statutes). Museums are also particularly suitable places to provide education, experiences and information to a wide range of groups. At its best, a museum is also an experiential and creative place where learners can investigate and experiment firsthand.

Seen from this context, it is interesting to consider how an augmented reality game serves the learning environment of the Luostarinmäki Handicrafts Museum. What kinds of potential influences could gamification and augmented reality have on the museum experience and learning at the site?

A place like the Luostarinmäki Museum can be an unfamiliar and challenging learning environment to present-day people, many of whom have never lived without running water, electricity and other necessities of modern housing. Few visitors know how or for what purpose the tools they see were once used. Augmented reality and gamification can help visitors to process the historical details and connect them with things learned earlier.

Gamification, the use of video game elements in non-gaming systems to improve user experience and user engagement (Deterding & al. 2011), is participatory and experiential, and as a rule makes use of progressive inquiry methods. Learning and assimilation of new things can take many forms, and learning through experience has long been recognized as of great significance (Hooper-Greenhill 2007). Games can help learners find the motivation needed for all learning. In the game there is a main aim, possible intermediate aims, and challenges. Overcoming the challenges results in the player being rewarded. By experimenting and practising, everyone has the opportunity to succeed, which gives different kinds of learners the opportunity to learn. A successful game engages the player, becomes personalised with experience, motivates, and creates strong memory traces (see e.g. Kapp, Blair & Mesch 2012).

Although the Luostarinmaki game is fictional and tied to a storyline, learners are provided with a lot of information about history, objects and life in the olden days. The game motivates learners to investigate and look for more information about the site. The combination of physical and digital environment gives learners new opportunities to see, hear, feel and experience things that would not be possible without augmented reality.

The Story

The focus of the Luostarinmäki Adventure lies in representing the daily life in 19th century city through an entertaining experience. The aim was to create a mobile adventure game for young adults, which would be entertaining enough to keep the player engaged in playing.

The museum staff was asked to list things in the 1850s life they considered worth representing but which have been impossible to bring forward until now. Already the first version of the manuscript was based on these wishes and written by history and museology students in co-operation with the museum staff and history researchers at the University of Turku. The aim was to integrate interesting facts within the events and the plot, instead of presenting them traditionally in textual form.

The events in the game take place on one Saturday in the summer of 1855. The player takes the role of Frans Hakala, a 23-year-old man from the countryside, coming to Luostarinmäki to take part in the wedding of his cousin. Because the character comes from countryside, he, just like the player, is unfamiliar with many things in a 19th century city, and people he meets must explain them to him. The first task is to deliver the wedding crown of the family to the bride's mother (figure 3). It is soon revealed that the wedding ring has been stolen from the groom. The game then takes a form of a detective story in which the player has to follow clues and find the thief and the ring to save the day.

Figure 3. Attempting to deliver the wedding crown

During the first task the player will among other things learn that there were no street addresses in the 19th century city, that nearly every house had some domestic animals, that master and mistress had the right to discipline their servants, that water had to be brought from a distance and that there were saunas inside some town houses.

The Luostarinmäki adventure seems to turn a tablet computer into a window to history. Yet, there lies a risk in being too realistic. Representations of the past are always only interpretations made by the museum staff, the historians, the artists and the engineers. The more complete the given interpretation, the less the users need to make their own (Marcus, Stoddard & Woodward 2012). At worst this may lead to an oversimplified and one-dimensional picture of the past. Visitors have to be encouraged to be critical, and it should be made clear that the representation is not the absolute truth about the history. In the case of the Luostarinmäki adventure this means explaining the player the all but self-evident relationship between fact and fiction in the story.

The tools and processes

For augmented reality, it is essential to accurately measure the location of the device in relation to the environment. For this the system may rely on data from device's sensors, such as GPS, compass, gyroscope and the camera. When the exact location is found the system is able to calculate how the virtual elements must be drawn on screen to merge them with the real view of the camera. Keeping track of the location is called tracking and if it gets lost, the augmented content can't be accurately displayed until the tracking is recovered.

The goal with the Luostarinmäki application was to allow the user to experience the augmented world while moving freely around the museum. There are several AR solutions readily available, but many do not fulfill our initial requirements. Many solutions are based on highly visible graphic prints (markers, triggers or targets) placed in the environment to aid the tracking process. Such markers would not be acceptable in the museum environment, so a solution without added visual aids was needed. Some such solutions are available, too, and eventually the choice was one from VTT Technical Research Centre of Finland called point cloud tracking. From a large amount of photographs of the environment a virtual representation of the area is calculated algorithmically. This virtual version, the so-called point cloud, is then used as the tracking target, eliminating the need for any additional markers in the environment.

Development tools

An application targeted to wide audiences should work in a variety of mobile devices, thus the concept of multi-platform development was adopted from the start. The Unity3D game engine (see Unity) was chosen as the main software development tool. Unity provides much of the initial architecture needed in complex 3D games and supports common desktop and mobile platforms.

Requirements for immersive and successful AR applications resemble the ones of modern video games. These set the expectations for content quality especially among the game-playing youth and young adults. In addition the professionals of history and learning set their own high demands on the authenticity of the content. To meet these expectations on limited budget, new work methods and efficient tools are needed.

The initial script from student writers was refined with a scripting tool called Articy:draft2 (see Nevigo). With it the storylines can be visualized (figure 4) and the non-technical script writing process integrated into the actual implementation of the application.

Creating realistic human characters is very time-consuming. A single lifelike 3D model of a person, with realistic clothing, fluid motions, and natural voice can require weeks of work by several skilled professionals. Limited-budget work requires more efficient methods.

New tools have emerged that utilise data created using high-fidelity 3D scanners and stored as base models, from which artists can more effectively make new characters by modifying the body and facial features of the models. Also specialized clothing tools exist that allow creating generic clothes that fit different characters and make it possible to share them among different productions. Extensive libraries of characters, accessories,

animations, and other components may play a key role in cost-efficient making of high-quality applications in the future, and also offer new business opportunities.

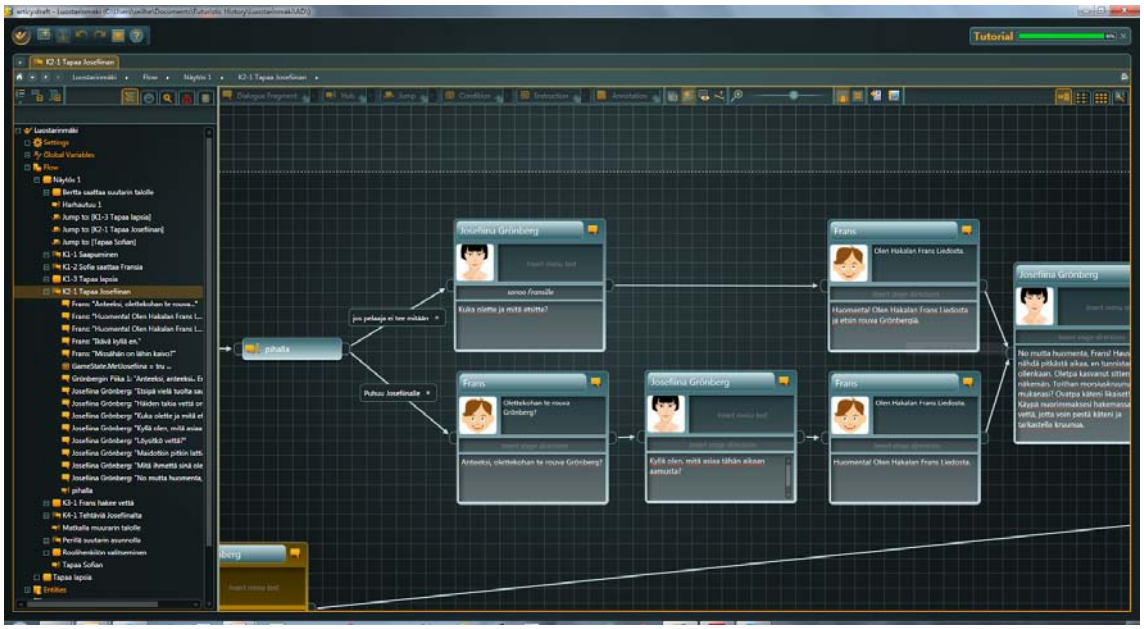


Figure 4. Articy:draft2 tool was used to create the script for the story with all the discussions and user choices. The visual interface helps planning the optional routes through the story

To achieve a workflow similar to one based on content database, we used the Unity plugin Unity Multipurpose Avatar (see UMA) that provided us with all the necessary basic functionality to reuse and mix both character and cloth base models (figure 5). For animating the characters we used data from the CMU Motion Capture Database (see Mocap). No proper database of clothes of the era exists, and hence they were modelled within the project.

Figure 5. A simple interface for UMA to customize characters

A crucial aspect was co-operation between specialists of different disciplines, most importantly historians, museum personnel and application developers. The clothing, for example, was chosen by museum staff from the museum's wardrobe. The costumes were worn by museum guides, photographed, and then modeled using the open source tool Blender (see Blender) (figure 6). The process was iterative, so that certain simplifications could be made for technical reasons while keeping the essential characteristics accurate. Similar kind of co-operation was also used in scripting of the entire story and locations of the events in the museum.

Figure 6. Clothes for the characters were modeled using Blender

User interface in the game

The goal of the project was to develop a gamified adventure, inheriting elements from the adventure games genre but still "not obviously being a game". Many of the users of such an application are first-time users, so it must be easy to adopt, yet efficient and – while being an entertainment software – error-proof and satisfying to use. (Nielsen 1993, p. 26-36, 40-42.)

Visual design was to skip traditional game elements such as crosshairs, health bars and minimaps. Although such elements serve for usability and utility, they were scrapped in favor of a clutter-free interface of the main adventure view (figure 7). One compromise is the dialogue interface: the virtual characters' lines of speech are drawn visible over their heads, and the user can reply by tapping on one of the alternative sentences (figure 8).

Figure 7. The main interface was kept as clean as possible of any additional graphical elements

Figure 8. Dialogue interface. While discussing with game characters, the user chooses one of the alternative lines as his/her reply

Supporting elements like task hints and a map were placed into a separate view (figure 9) that appears when the tablet is leveled down into horizontal orientation.

Figure 9. Map view. Holding the tablet horizontally, user sees the map of the area with indications of the current location and the place that should be found next. The small photo gives a further hint of the place to look for

When the user gets involved in a task, there is typically some interaction with virtual objects. Those things are carried in a virtual "backpack" (figure 10), and they can be given to the virtual characters.

Figure 10. The inventory can be opened by tapping the backpack icon in the bottom right corner of the screen (see figure 7). The items carried are now seen on the bottom area of the screen

User Testing Results & Discussion

After the initial software development phase, some user tests were carried out in parallel with UI (User Interface) and application development. Someone from the development team was always following the test user and helping with technical or usage problems. Opinions of the test users were also collected with a simple questionnaire about the content, usability and user experience of the application. A few questions concerning commercialization of the application were also posed. However, since the game and the questionnaire were both modified through the testing period, and since most test persons were in some way connected to either the museum or the research unit, the results can only be considered indicative. The testing primarily served for development of the user interface and technical solutions.

The main phase of tests comprised of 56 users in total. According to the questionnaires, 86% of the users thought the first impression of the application was interesting or rather interesting. 73% found the experience of augmented reality pleasant or rather pleasant, and 63% thought that the application provided added value to the museum tour.

Users with previous experience with adventure games were typically quicker to learn the UI conventions than total novices. Still, we saw that the details of UI design should be easier to learn, and for some actions more than one supported means of interaction would be needed, as different users will try different ways of accomplishing tasks.

The storyline of the game was considered clear, interesting and long enough. Only the number of playable areas and dialogue was considered somewhat scarce. The maximum length of the story for adult audiences seems to lie between 30 and 60 minutes. For younger audiences the optimum length is likely to be shorter. Naturally this depends heavily on how interesting and addictive the story itself is.

Our primary design of the adventure relied on users picking on information from the conversations with the virtual characters and then head out doing the "missions". Soon it was noticed that people were not that adept in parsing the "missions" from the conversation text and required help to find out how to continue. The application should help the user forward considerably more than was the case in the development phase.

According to preliminary assumptions, the tablet was thought quite heavy and thus the users' hands got tired after some time. Moving from one place to another was a welcome relief to some of the users. One practical issue was that the scenes occurring in the courtyards could interfere with other visitors. Therefore scenes should be arranged at the sides and corners of the courtyards. The tracking was also found to work more reliably when the camera would not see moving people in the area.

A clear source of frustration for the users was losing the tracking; they both blamed the software and questioned their own computer skills – usually simultaneously. The loss of tracking made the users move the pad more rapidly, only making the reacquisition of tracking harder. This is an example of a serious technology issue that can consume the whole experience. Technical problems were common, and they obviously affected the opinions.

One important issue noticed during the user testing was some kind of loss of the traditional museum experience while using the adventure. Some users felt they were too immersed in the application and forgot to pay attention to the surrounding museum. Similar findings have been reported in a study by Carrigy & al (Carrigy 2010).

Most of the respondents seemed to be willing to pay for this type of application. The suitable price level remains unclear, as there are currently few points of reference.

Conclusions and further work

An important issue found during the project is the notion that users tend to forget the museum around them while concentrating in the game. Our view is that the tablet should not be the be-all-and-end-all solution, but instead more about enhancing the experience. It should only be used occasionally, and otherwise the users should be let to rest their hands, move safely, and enjoy the new, spiced-up museum experience.

We learned that the application should guide the user better in the game. Since this could lead to a more game-like experience than was the initial idea, more study is needed to find good solutions.

Technical issues have affected user experience significantly during development as the tracking technology was often not robust enough. We do not consider the application complete at this point. Development has continued until the writing of this paper, and work is planned to continue in another project starting after Futuristic History closes. Especially more complete user studies are planned as part of further work.

Using AR technology, information can be provided without interfering with the physical reality in museums like Luostarinmäki, where outside areas and interiors have been kept as authentic as possible. It also allows for a much more diverse provision of multimedia learning content than physical solutions could offer. Technology can open up things that are difficult to understand or topics that are abstract, making them as concrete and easy to understand as possible. Augmented reality and gamification will probably transform museum education. Combining physical and digital environments gives new opportunities to learning experiences.

References

Blender: http://www.blender.org

Cabiria, J. (2012) Augmenting engagement: Augmented reality in education. In Increasing Student Engagement and Retention using Immersive Interfaces: Virtual Worlds, Gaming, and Simulation. Vol 6, part C. Edited by Charles Wankel and Patrick Blessinger. Bingley: Emarald.

Carrigy, T., Naliuka, K., Paterson, N., Haahr, M. (2010) Design and evaluation of player experience of a location-based mobile game. NordiCHI '10, Proceedings of the 6th Nordic Conference on Human-Computer Interaction, Reykjavik, Iceland, October 16-20, 2010.

Deterding, S., Sicart, M., Nacke, L., O'Hara, K., Dixon, D. (2011) Gamification. using game-design elements in non-gaming contexts. CHI '11 Extended Abstracts on Human Factors in Computing Systems

Herbst, I., Braun, A-K., McCall, R., Broll, W. (2008) TimeWarp: Interactive time travel with a mobile mixed reality game. In the Proceedings of Mobile HCI 2008. Amsterdam, Netherlands.

Hooper-Greenhill, E. (2007) Museums and Education. Purpose, Pedagogy, Performance. New York and London: Routledge.

ICOM Statutes, Article 3, Section 1 : definitions of terms

Kapp, K., Blair, L., Mesch, R. (2012). The Gamification of Learning and Instruction: Game-based Methods and Strategies for Training and Education. San Francisco: John Wiley & Sons.

Marcus, A.S., Stoddard, J.D., Woodward W.W. (2012) Teaching History with Museums. Strategies for K -12 Social Studies. New York and London: Routledge.

Milgram, P., Kishino, F. (1994). A taxonomy of mixed reality visual displays. IEICE Transactions on Information Systems, Vol E77-D, No.12 December 1994.

Mocap: The [motion capture] data used in this project was obtained from mocap.cs.cmu.edu. The database was created with funding from NSF EIA-0196217.

Mäkilä, T., Helle, S., Lehtonen, T., Viinikkala, L., Korkalainen, T., Arimaa, J.P., Pönni, V., Heimo, O. (2013). Futuristic History Project Presentation – Recreating History with Augmented Reality Solutions. In Beyond Control – The Collaborative Museum and Its Challenges. NODEM Digital Repository http://repo.nodem.org?objectId=158

Nevigo: http://www.nevigo.com/en/articydraft/overview/

Nielsen, J. (1993). Usability Engineering. San Francisco: Morgan Kaufmann Publishers.

Sjöberg-Pietarinen, S. "Fröken gör ju snart hela stan till museum" In T. Bergroth and M. Söderström (Ed.) "Först kom skomakaren". Hantverksmuseet på Klosterbacken 50 år. Åbo: Åbo landskapsmuseum.

UMA: http://u3d.as/content/uma-steering-group/uma-unity-multipurpose-avatar

Unity: http://unity3d.com/

Viitaharju, J. (1990). Stadens bakgård. In T. Bergroth and M. Söderström (Ed.) "Först kom skomakaren". Hantverksmuseet på Klosterbacken 50 år. Åbo: Åbo landskapsmuseum.

Service Design for a Unique Experience at Ajanta Caves, India

Anshumali Baruah, Pramod Khambete
Indian Institute of Technology, Bombay, India

Abstract: *The project defines a service for an enhanced user experience at Ajanta Caves, a world heritage monument at Aurangabad, India. A brush with history can be a memory for a lifetime, whether by creating awareness about the rich art-form of vegetative paintings or enhancing the experience of this marvel of Buddhist architecture. By planning a service that caters to the varying needs of different kinds of visitors, I designed an experience that effectively spreads knowledge about Ajanta. A quantitative study of the factors influencing visitors' experience at these caves based on intent of visit, knowledge acquired at the site and cultural construct that the site offers was carried out both on- and off-site. I conducted (1) Contextual Enquiry [7 visitor groups], (2) Retrospective interviews [5 visitors]; and employed (1) Shadowing and (2) Critical Incident Techniques. Secondary data from 4 case studies and publications was also referred to. These studies helped me identify the physical factors viz., availability of basic amenities, travel and stay and intangible factors viz., the best time of the year to visit, which affect a visitor's overall experience in the form of a journey map to arrive at possible design directions. The project aimed at bringing character into the existing experience of the visit by setting correct visitor expectations. In keeping with the factor of people travelling together as families, friends or individuals, the design allows for the freedom of choice of the kind of touch-point, at times integrating multiple touch-points in the service. The design facilitates easy navigation within the historic site, allows the user to create a plan of visit beforehand as well as on site, provides necessary information on amenities, etc. Regardless of whichever touch-point the user employs, there are other standby touch-points, facilitating ease of experience and continuity of flow during the visit.*

Keywords: experience of a heritage monument, service design for experience, digital media in enhancing experience

Introduction

The historic Ajanta Caves in the Aurangabad district of Maharashtra, India date from the 2nd century BC to about 480 or 650 BC. These are about 30 rock-cut Buddhist caves, which house paintings and sculptures, with figures of the Buddha and depictions of the Jataka tales. The Ajanta caves are carved into the side of a cliff that is on the south side of a U-shaped gorge on the small river Waghora. The caves have been numbered 1 to 28 according to their place along the current pedestrian path, beginning at the entrance. The caves form the largest group of early Indian wall-paintings. The paintings were done on a base of mud-plaster in the tempera technique by using glue as a binding medium. The pigments used for paintings were yellow and red ochre, lime, kaolin, gypsum, terra verte, lampblack and lapis lazuli. (UNESCO Archives)

The earlier conservation efforts were: providing pathways in front of the caves; lighting arrangement through optic fibre lighting inside major caves; for the easy management of the visitor flow construction of two pedestrian footbridges and provision of drinking water in the cave complex for the benefit of the visitors (UNESCO Archives). Among these two foot- bridges, one of them is non-functional at present. During monsoons, along with rain water, tiny rock particles used to fall onto the pedestrian pathway running in front of the caves. Ajanta Visitors Centre is a Ministry of Tourism Project (under construction) aimed at tourist who come for less time or are disabled in any way to climb up to the caves and visit every cave. It houses Info-graphic Panels, Maps, Narrative Movies, Interactive Screens, Sculptures and Cave Replicas.

A project called myindieye, an app, which allows a virtual tour of a historic monument- more like a pre-cursor to the actual real-time visit to the site is trying to address this need to create a wholesome experience. But fails to integrate services offered at the site. Place: Hampi, an installation of augmented high resolution panoramas which re-create historic Hampi at any other place/ setting and The Mysore Palace virtual are again examples of the same. Thus, the work intends to examine the importance of integrating better services for a unique experience at Ajanta Caves.

Research Method

Initially, a quantitative study of the factors influencing visitors' experience at these caves based on intent of visit, knowledge acquired at the site and cultural construct that the site offers was carried out both on- and off-site. I conducted (1) Contextual Enquiry [7 visitor groups], (2) Retrospective interviews [5 visitors]; and employed (1) Shadowing and (2) Critical Incident Techniques. Visitors mostly recounted bad experiences as these seem to leave a much deeper imprint than the overall experience. Some of the most commonly recounted experiences were: the entry at the foothills did not look like an entry to Ajanta Caves, the sculpture of the sleeping Buddha was at the end and they looked everywhere for it.

Not much data on the caves is displayed on the information boards. Also, inside the caves complex, the signages that show the location of drinking water and public conveniences are insufficient. Even though there are two routes that can take a tourist till the caves, there are no signages that inform the tourists.

ASI appoints the tourist guides who direct the visitors inside the caves. These guides speak Hindi, English and Marathi. Many things that they say have been taken up from travelling monks, not necessarily approved or updated. They charge about 800 INR for a tour of 5 caves. Indian tourists are generally hesitant to pay such huge amounts. Most of the foreigners do opt for tour guides or rely on their tourist guide-books.

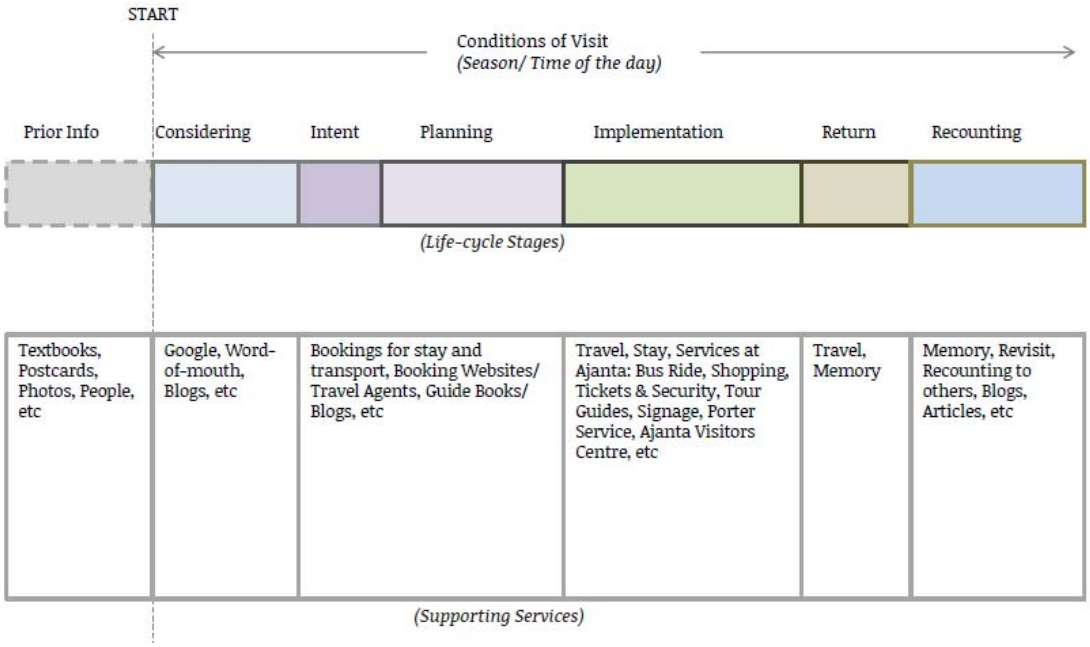


Figure 1. Journey of a visit to Ajanta Caves
Source: Author

Secondary data from 4 case studies and publications was also referred to. These studies helped me identify the physical factors viz., availability of basic amenities, travel and stay and intangible factors viz., the best time of the year to visit, which affect a visitor's overall experience in the form of a journey map to arrive at possible design directions.

Journey Mapping of a visit to Ajanta Caves

Journey till Fardapur: The visitor is in anticipation about the visit. The visitor might not have much information about Ajanta, but he expects to find all that out at Ajanta itself.

At the Foothills of Ajanta: The user needs to procure tickets twice (amenities & bus shuttle). The entry directly leads the visitor into a Shopping Plaza where half of the visitors lose out on precious time or the ones who are not interested are pestered.

Bus-ride to the caves: Once the person is out of the Shopping Plaza, he/she reaches the Bus Drop-off point, where they buy the next ticket (bus) and board a bus to the cave entry (about 4 kms away). The Bus-ride lasts about 10-15 minutes. All that the user does is sit idly.

Entrance to the caves: On reaching the cave entrance, the visitor needs to purchase the actual ticket for visiting the caves. This is where the visitor might want to grab a bite, use the public conveniences or hire a porter for the trip ahead.

Visit to each cave: Here, the visitor starts his walk from Cave No.1 onwards; the visitor might hire a guide, refer his guide books or discover the monument on his own. The excitement reaches a high point as caves 1 and 2 are the painted ones and the beauty of those paintings over-shadow any other details like the way of building, rock-cut architecture, etc. It's only after Cave No.2 that slowly the actual magnitude of the art and architecture starts to sink in. The places for drinking water on this trek are next to Caves 4, 8 and 11. The very famous Chaitya Halls of Ajanta, Cave 19 and Cave 26 are something that one should not miss. But most visitors remain ignorant of the beauty of these caves and trek back to the spots near the drinking water supply or climb back to the bus-drop-off point.

Return Bus-ride: With all the trekking and walking, the visitors are mostly very tired and one can notice the difference between the earlier bus-ride and this-one. Most visitors are quiet by now. The return journey is more of a contemplative time, where each visitor is immersed in his own world.

Return Journey & Re-call of the experience: Visitors, who came in the same group, tend to share their experiences with each other. This is more of like an informal chat about who observed what in the group. This leads to a collective understanding of the monument and its ethos. Visitors recall the experience on being triggered. This trigger could be anything, ranging from the child-at-home who needs to write an essay on Ajanta as part of his homework or a random update on social media.

Scope for Areas of Intervention

Some tourists do a pre-cursory search for information before leaving for a historical monument, while most others wait till they reach the monument to seek information. The Bus-ride from the foothills till the entry to the caves provided for an ideal setting to impart basic information about the Ajanta Caves. We constantly collect information. The moment anyone narrates a tale, if the story creates an impact and helps form strong visuals, they stay on in the mind for a long time. During the visits to every cave at Ajanta, there are opportunities

for such intervention. The knowledge acquired lingers on in our memory. And many factors like re-counting the experience; re-visiting the photos, videos, etc., keep the memory alive. When we re-count an experience and can identify with it, the knowledge takes the shape of wisdom. Any medium that helps keep the memory fresh is a possibility for an intervention.

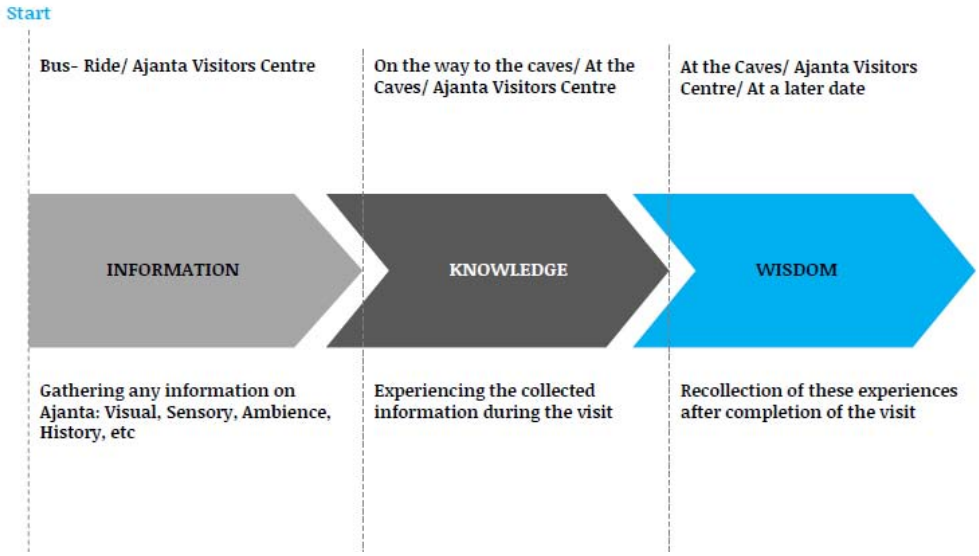


Figure 2. Scope for areas of intervention
Source: Author

The System Overview

With intent of visiting Ajanta, the visitor would land on the Ajanta webpage from many sources, be it a poster at any hotel/ bus-stand/ airport/ railway station, etc, or be it the bookings to Aurangabad on a travel booking website. The visitor can browse through and pre-book all the information on the services that are available for tourists. The 3 step ticket reservation is reduced to a single step.

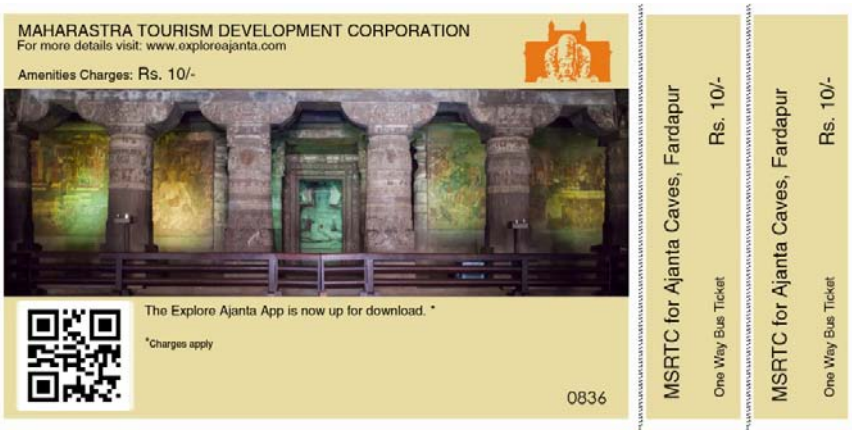


Figure 3. The entry tickets to Ajanta – redesigned
Source: Author

On reaching Ajanta, depending upon the services that the visitor has opted for, they could proceed towards the caves with a hands-free device (wristband+ headset), a video interactive device or nothing at all.

Figure 4. Visitors with interactive devices
Source: Author

The Bus-ride is used in a subtle way to give out primary information about the Caves that lie ahead. It tells about the Major sights, the facilities available to the visitors, helps in navigation and tells them how to create their "I-was-here" marks and leave behind a Emo-Trail.

On reaching the Caves, the users could disperse and trek till the caves and experience the place. The Light and Sound show is interactive and the amount of energy used is generated by the very footfall of the users at this site. Special shows and narratives could be held here from time to time. Also the concept of an Ajanta Festival could be brought in.

Once the visitors go back, they can refer to a log account of their visit on the Ajanta website. They could also answer queries of travellers to Ajanta and share their "I was here" marks across different platforms.

Acknowledgements

I would like to thank my project guide, Dr. Pramod Khambete for his generous inputs; IDC, IIT Bombay for the opportunity to work on a project like this. Ar Abha Narain Lambah for introducing me to the beauty of Ajanta Caves and Mr. Deepak Bhavaskar for allowing me a sneak-peek into the Ajanta Visitors Centre which was then under construction.

References

UNESCO Archives- Periodic Reports
http://www.peterjwild.org/papers/Del%20I15.5.pdf
http://www.myindieye.com
http://www.place-hampi.museum
http://www.mysorepalace.gov.in/360_Eng/

https://commons.wikimedia.org/wiki/ File:Carnuntum_Heidentor2.jpg
Seonaidh McDonald, 'Studying Actions in context: A Qualitative shadowing method for organizational research'
http://www.youtube.com/watch?v=RCOBA3Yfm1k
Moscardo Gianna (1996), 'Mindful visitors- heritage tourism', Annals of Tourism Research, Vol 23, No.2
Vassilios Vlahakis, John Karigiannis, Manolis Tsotros, Michael Gounaris, Luis Almeida, Didier Stricker, Tim Gleue, T. Christou, Renzo Carlucci, Nikos, 'ARCHEOGUIDE: First results of an Augmented Reality, Mobile Computing System in Cultural Heritage Sites'

Multi-narrative Serious Game Design Applying Learning Style Model for Cultural Heritage Education
Conceptual Frameworks: The Guardians 2.0

Seul Lee, Minseok Do, Juhee Suh, Jayeon Ahn, Jungwha Kim, Young Yim Doh
Graduate School of Culture Technology, KAIST, Republic of Korea
The Guardians 2.0

Abstract: *Cultural heritage preservation is one of important extra curricular issues. However many people, especially young generations tend to think cultural heritage as boring and old. For those children, games can be an effective platform for learning. 'Serious Game' is a game designed for a purpose other than enjoyment, including education, health care and management. 'The Guardians' is a mobile-based serious game designed for learning cultural heritage and promoting the awareness of its preservation. In 'The Guardians 1.0 (Rhim et al. 2013)', four characters were created as 'guardians' who were on their missions to protect the endangered UNESCO world heritages from threatening elements by playing mini-games. However, it lacked variety in its structure because the distinctiveness of each character was absent; we conduct follow-up research to improve it. The core design concept of 'The Guardians 2.0' is multi-narrative structure based on the studies of experiential learning theory and learning styles (Kolb 1984, Schaller et al 2007, Honey and Mumford 1989). The aim of this multi-narrative design is to increase game players' narrative engagement, which is related with enjoyment and story-consistent attitudes. We construct an integrated learning style model, multi-narrative structure and a practical framework matching learning elements with game elements. And we designed a concept work of 'The Guardians 2.0' dealing with the 'Royal Tombs of the Joseon Dynasty', one of UNESCO world heritage in Republic of Korea. These multi-narrative structure and game mechanics framework reflecting learners' learning styles can be applied to various cultural heritage and also can possibly be expanded to another fields of education.*

Keywords: cultural heritage preservation, serious game, multi-narrative, experiential learning theory, learning style

Introduction

Preservation of cultural heritage is important for the passing on of traditional culture and for the forming of both personal and community identities (Silverman & Ruggles 2007). Nowadays, heritage preservation issues are mainly dealt with by governments or certain organizations, but such institutions cannot handle all matters about heritage preservation; awareness and active participation of community members is necessary. Public education about cultural heritage will be helpful for heritage preservation because one's awareness of issues can be raised by learning and understanding them. Difficulties in cultural heritage education are that there are certain people, especially young ones, think learning about heritage is a tedious and difficult process. The approach of using games for heritage education can be an easy and acceptable way to teach digital children, who tend to feel bored with traditional education.

Serious game is a term for games that have specific purposes beyond pure entertainment, including education, therapy, and healthcare. Clark Abt first used the word "serious game" in 1968. He defined a serious game as a game that has an explicit and carefully devised educational purpose and is not intended to be played pri-

marily for amusement (Abt 1970). There have been many studies dealing with possible applications of serious games, especially in the field of education for digital generation children.

Games can be a platform for active learning, which is characterized by learning by doing rather than by reading; such games can be customized to learners, allowing immediate feedback and active discovery (Ulicsak 2010). Learning by doing results in retention rates that are higher than those of learning from lectures (Magennis & Farrell 2005). Games can provide people with integrated experiences of diverse activities. Serious games are adopted in many fields including military, health care, commerce, and business; they are also used for teaching and raising awareness of subjects without formal education curricula like social issues. Cultural heritage preservation is one such issue, extracurricular but integral to our lives. UNESCO has argued that heritage is threatened not only by natural causes but also by changing social and economic conditions that can make situations worse.

In this context, a study on the design of a serious game to raise the awareness of the cultural heritage preservation was conducted in 2013 (Rhim et al. 2013). The game is named "The Guardians". It is a mobile-based game for promoting players' awareness of cultural heritage preservation. During gameplay, players become members of a cultural heritage preservation organization "The Guardians" and participate in preservation missions including information taking, solving quizzes, and playing mini-games protecting endangered UNESCO world heritage sites from threatening elements. User testing demonstrated the possibility of a serious game as a learning tool for cultural heritage. However, there were some limitations that appeared in the post-experiment interview. The participants reported issues including lack of narrative and lack of character-specific playing routes.

Narrative is an important component of games, especially ones that seek to convey meaningful messages because such messages can be delivered through narrative. Also, as Carey mentioned in his New York Times article in 2007, human brain has a natural affinity for narrative construction: people tend to remember things more accurately when they receive information by story than when they receive it from a list. According to Rick Busselle's 2009 research, an engaging narrative can result in enjoyment and story-consistent beliefs and attitudes. This means that more engaging narrative experiences are effective at persuading people to take the messages to heart.

In this research, we designed a multi narrative framework based on experiential learning model for "The Guardians 2.0" to refine the shortcomings of the previous work. We set the four guardian characters as pedagogical agents assisting the players and built a multi-narrative structure reflecting the four learning styles of Kolb's experiential learning model (Kolb 1984) to enhance players' narrative engagement. Players learn about the heritage via observation, active discovery, finding of information, and solving puzzles from four different perspectives. Comprehensive learning through all four stages of experiential learning will promote players' awareness of the importance of cultural heritage and their willingness to participate in preservation activities.

The following part of the paper explores reference materials we referred to in our design of "The Guardians 2.0" and in building the frames (section 2); the next section provides a detailed explanation of the game concept and frames for game design (sections 3). And, section 4 draws the conclusions and implications for future works.

Reference Framework for a Multi-Narrative Serious Game Design

Designing Serious Games for Learning Cultural Heritage

Serious games have been developed in the cultural heritage field for the purpose of supporting the players' learning via fun experiences. As Mortara et al. (2014) point out, serious game propositions in the cultural sector can be divided into three categories: cultural awareness, historical reconstruction, and heritage awareness.

Along with considerations of features of the cultural area, it is required to include learning and pedagogy theory in combination with gaming requirements (Yusoff, 2009) when designing serious games for the teaching of cultural heritage. In this sense, how to achieve both the fun aspect and the learning aspect of serious games becomes the central issue. From this point of view, we suggest serious games to effectively integrate the learning of content into narrative by adopting a certain learning style.

Narrative in Serious Games

One function of narrative in serious games has been thought to be the way of achieving an entertainment aspect. The potential use of narrative in serious games is to provoke the interest and curiosity of the players, which in turn can contribute to learning through fun experiences. The player constructs a meaningful narrative, which is the game experience as we subjectively experience it (Egenfeldt-Nielsen, 2003). That is, the interpretation of the game elements is represented as a narrative, which can be defined as a string of events made meaningful by the player through the combination of pre-existing knowledge and the game experience. In spite of this potential, however, there have not been many successful cases of narrative-based serious games for education. This lack stems from the difficulties of integrating learning content effectively into narrative.

Experiential Learning Theory and Learning Styles

From a learning point of view, the recognition and application of different learning styles needs to be explored in serious game design. Kolb (1984) defines four possible learning styles: Divergent, Assimilative, Convergent, and Accommodative. These learning styles can be seen as residing on a continuum running from Concrete Experience (CE), to Reflective Observation (RO), to Abstract Conceptualization (AC), and to Active Experimentation (AE).

Kolb's experiential learning theory has been introduced in the field of museum management in order to allow museums to reach diverse audiences via exhibition development. Schaller et al. (2007) proposed a four-quadrant typology of learning preferences. They created their own preferred labels in place of Kolb's labels, namely, Social (Accommodating), Creative (Diverging), Intellectual (Assimilating), and Practical (Converging). Details about each type of learner will be further explained.

Designing Frameworks for Multi-narrative Serious Games: The Guardians 2.0

Integrated Learning Style Model for Educational Serious Games

We constructed an integrated learning style model for our serious game by analyzing three learning style models based on Kolb's experiential learning theory: Kolb's original model (Kolb 1984), the research of Honey and Mumford (1989), and Schaller's learning style model for museum visitors (2007). The second model is slightly different from the two other models; Honey and Mumford set four poles, rather than the quadrants that are used in Kolb's model, as the learning styles. Thus, their learning style inventory questionnaire is provided about the characteristics of the learning stages themselves, so this questionnaire was helpful for us to figure out activities for each stage. Meanwhile, Schaller and his colleagues matched Kolb's model with their previous work of typology of educational web activities and used their own labels for learning styles, as follows: Creative (Diverging), Intellectual (Assimilating), Practical (Converging), and Social (Accommodating). We referred to this research due to the researchers' considerations of the museum experience, which has a cultural context in common with heritage visiting experiences; their classifications of preferred web activities for each style were also helpful.

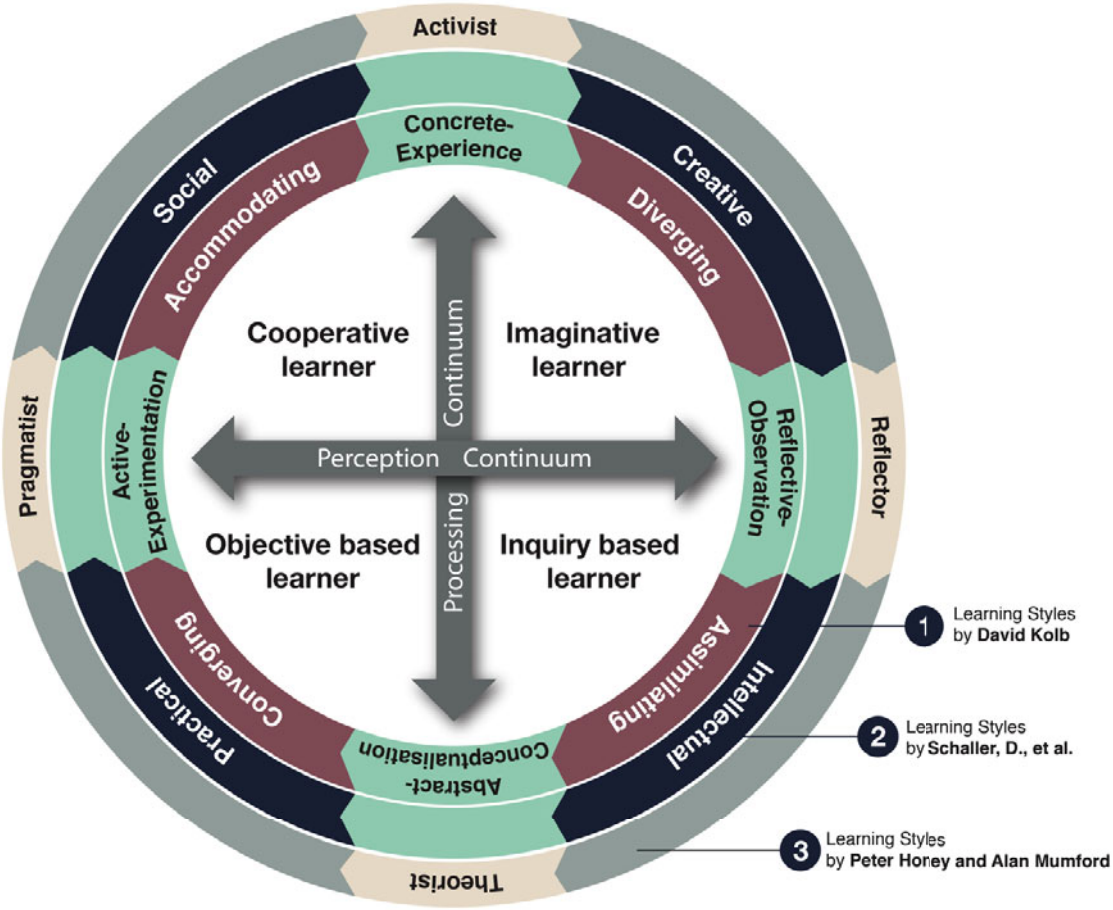


Figure 1. Integrated Learning style Model for Educational Serious Games
Source: Kolb (1984), Honey & Mumford (1989), and Schaller et al (2007).

We arranged the learning styles for serious games as quadrants of this cycle and renamed them to emphasize the features that we refer to for our game frame: Inquiry based learners, Imaginative learners, objective based learners, and cooperative learners.

- Imaginative learners (CE + RO): Prefer to learn by seeking out multiple points of view. Tend to rely on their own intuition.
- Inquiry based learners (AC+RO): Like to learn from authentic references and like to find facts, ideas, and information in a logical way.
- Objective based learners (AC+AE): Can focus intently on a subject that has a goal and they make decisions easily.
- Cooperative learners (CE + AE): Prefer to learn from other people rather than from books and lectures. Also, don't hesitate to try new experiences that might have risks.

Multi-narrative Structure Frame for Adventure Genre Serious Games

Based on the framework of narrative and learning styles discussed in the previous section, we explored a serious game that can integrate learning content effectively into a narrative by adopting learning style. The whole narrative is based on the traditional five-act structure and we grafted one well-proven story model, the Hero's Journey structure (Campbell 2008) in order to suggest more specific story components in each part.

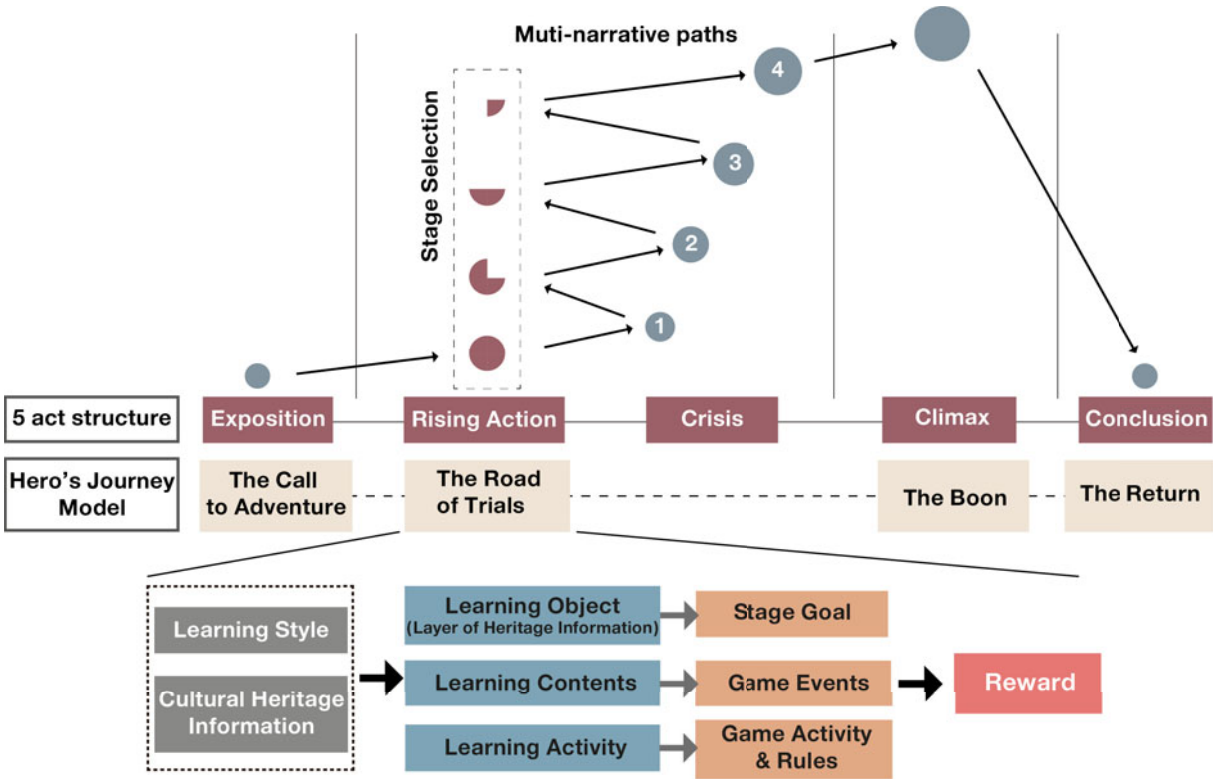


Figure 2. Multi-narrative structure frame for adventure genre education serious games based on five-action model and the Hero's journey model
Source: Campbell (2008).

And we made a practical framework for 'rising action' part of our multi-narrative structure by matching learning elements with game elements. We set four learning object, namely the layer of cultural heritage information, for each heritage: aesthetic view, historical background, traditional ideology, and rituals in present.

A Concept Work of a Prototype: The Guardians 2.0

Genre

"The guardians 2.0" is a 2D first person view adventure game. According to Rollings and Adams (2006), adventure games are best known for their storytelling and also offer deeply challenging puzzles. Especially, in first person view adventure games, the player takes the role of a main character with the same viewpoint as that of the game character; players can easily immerse themselves in their roles. "The guardians 2.0" also emphasizes storytelling that is driven by the finding of hints through conversations and the solving of simple puzzles.

Main Story

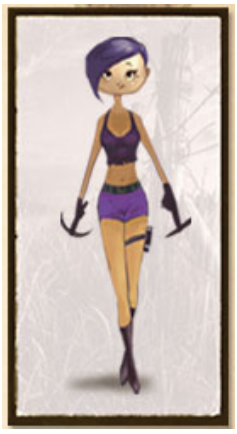
The story of "The guardians 2.0" is that the Muinseok, a statue that protects the Royal Tombs of the Joseon Dynasty, informs players that the royal tombs have been threatened by unknown dangers and asks for help. To save the royal tombs, players visit The Guardians office and get missions to repair the damaged tombs with four guardians. In the recovery process of the spiritual energy of the royal tombs, the players are faced with a villain who damages the tombs. Finally, the guardians and players defeat the villain and succeed in protecting the royal tombs.

Characters

Players engage in missions to recover the spiritual energy of the royal tombs with four guardian characters: a photographer, a traveler, a historian, and a treasure hunter. Each of these characters represents four learning styles of Kolb's experiential learning theory and explores distinctive part of the target heritage. We designed game activities in each narrative path reflecting properties of four learning stages of Kolb's theory and induce players to experience all four stages of learning.

In "The Guardians 2.0", we apply the four learning styles to each character that are the professions in cultural heritage domain.

Table 1. Matching the Learning Styles with 4 Characters

Learning Style	Imaginative Learner	Inquiry based Learner	Objective based Learner	Cooperative Learner
Character in game	Photographer	Historian	Treasure Hunter	Traveller
				

Game Play

"The Guardians 2.0" has four stages corresponds with four learning styles. Each stage consists of simple quests and the players must solve them to proceed with the game story. When the players complete every mission in one stage, they can see a cut scene that implies the existence of a villain who damages the royal tombs. Then, they can select next mission among the rest of the stages. There is no priority as to the selecting of missions; the player can choose any mission first.

If every stage is completed, the last stage appears. The last stage is one in which the final fight with the villain takes place and the player attempts to defeat him; the players need to use knowledge learned during the game play. This stage is for reviewing of the learning perspective and provides the catharsis in the narrative structure. After the last stage, the ending video is shown and the game ends.

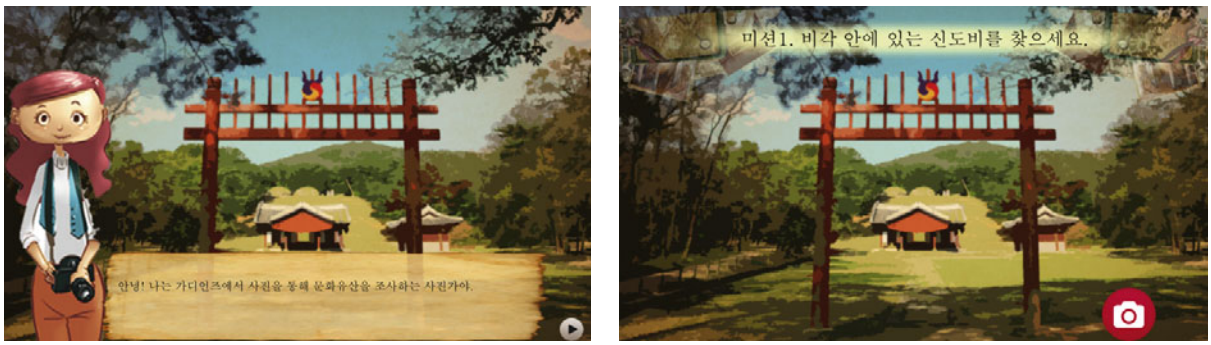


Figure 3. Gameplay Screen Shots (Imaginative Learner; Photographer's narrative path)

Conclusion

In this research, we designed a multi-narrative frame reflecting the learning styles in the experiential learning theory for a serious game aims at enhancing awareness of cultural heritage preservation. Interactive media including game adopt non-linear story structures that are affected by users' choices and give them more immersive virtual experiences. While dynamic characters and the chain of events are important in linear storytelling, detailed setting is most important in interactive media because the story of those media is developed by users' activities and choices. Many commercial games (especially role-playing games) follow multi-linear story structures that the story is made up of the players' chosen quests; the basic plot is shared by whole players, but details of events and relationships between other players are different for each player. In the process of making such personalized story, players are immersed in events in the game and take the information and experiences delivered by game narrative. However, current educational serious games that aim at information delivery mostly take traditional linear teaching style with some fun factors. The multi narrative structure will be helpful for such games because of giving players wide range of choices, which make people feel efficacy, sympathy and immersion and arouse their interest.

First, we analyzed three learning style theories to make integrated learning style model for a cultural heritage education serious game. Second, we grafted the 'hero's journey' model onto the rising action stage in traditional five-act structure to construct a narrative structure for adventure genre serious game. Third, we matched learning elements with game elements to produce a practical framework for a cultural heritage education serious game. Applying those three frames, we designed a prototype of cultural heritage preservation game, 'The Guardians 2.0'. The target heritage is one of royal tombs of Joseon dynasty, and there are four narrative paths reflecting learning styles that can be selected as a player's please in each stage. Experiencing all four narrative paths, that is to say four learning stages, players can achieve comprehensive understanding about the target heritage.

Although we couldn't get to implementation of actual game using these frameworks, grafting the learning style model on game design itself is an attempt of significance in educational serious game research field. The frameworks we constructed in this research can be applied to other cultural heritage sites. Furthermore, multi-narrative and game mechanics frame reflecting experiential learning theory can possibly be expanded to diverse fields of education, even including formal curricula.

"The Guardians" is an interesting platform for a cultural heritage education serious game. Started with the first version, which connected threatening elements of endangered heritage onto game activity, we have made progress of building multi-narrative and game mechanics frame based on experiential learning theory. In future, we will design the reward system reflecting learning style model to motivate players to continue to play the game and explore all perspectives of heritage learning. Also, we will conduct user studies to verify that the frameworks are working effectively. The ultimate aim of "The Guardians" series is to make a game can induce the players participating in cultural heritage preservation activities in real world.

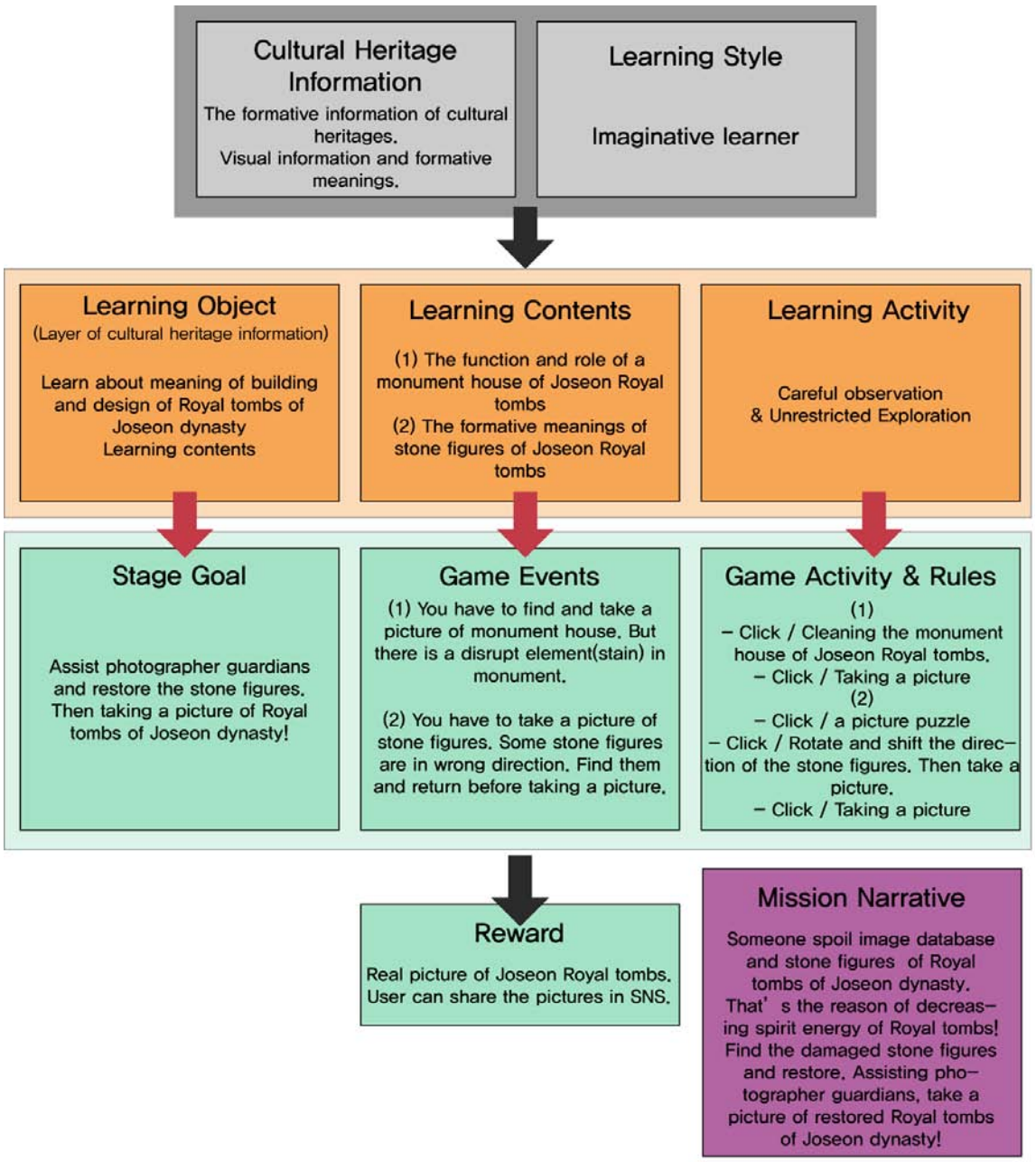


Figure 4. Conceptual Framework of Photographer's Narrative Path in "The Guardians 2.0"

References

Abt, C. C. (1970). Serious games: The art and science of games that simulate life. New Yorks Viking.

Busselle, R., & Bilandzic, H. (2009).Measuring narrative engagement. Media Psychology, 12(4), 321-347.

Campbell, J. (2008). The hero with a thousand faces (Vol. 17). New World Library.

Carey, B. (2007). This is your life (and how you tell it). New York Times, 28.

Egenfeldt-Nielsen, S. (2003). Exploration in computer games-a new starting point. In DIGRA Conf..

Honey, P., & Mumford, A. (1989). Learning styles questionnaire. Organization Design and Development, Incorporated.

Kolb, D. A. (1984). Experiential learning: Experience as the source of learning and development. New Jersey: Prentice-Hall.

Magennis, S., & Farrell, A. (2005). Teaching and learning activities: Expanding the repertoire to support student learning. Emerging issues in the practice of university learning and teaching, 1.

Mortara, M., Catalano, C. E., Bellotti, F., Fiucci, G., Houry-Panchetti, M., & Petridis, P. (2014). Learning cultural heritage by serious games. Journal of Cultural Heritage, 15(3), 318-325.

Rhim, et al. (2013) The Guardians: Serious Game Design for Enhancing Awareness of Cultural Heritage Preservation. NODEM 2013, 171-178.

Rollings, A., & Adams, E. (2006). Fundamentals of game design. New Challenges for Character-Based AI for Games. Chapter 20: Artificial Life and Puzzle Games. Prentice Hall, 573-590.

Schaller, D. T., Borun, M., Allison-Bunnell, S., & Chambers, M. (2007). One size does not fit all: Learning style, play, and on-line interactives. In Proceedings of Museums and the Web.

Silverman, H., & Ruggles, D. F. (2007). Cultural heritage and human rights (pp. 3-29). Springer New York.

Yusoff, A., Crowder, R., Gilbert, L., & Wills, G. (2009, July). A conceptual framework for serious games. In Advanced Learning Technologies, 2009. ICALT 2009. Ninth IEEE International Conference on (pp. 21-23). IEEE.

Ulicsak, M. (2010). Games in Education: Serious Games: A Futurelab Literature Review. FutureLab.

UNESCO – http://whc.unesco.org/en/conventiontext/

Developing Awareness in Contemporary Fashion and Design Culture with Digital Design Archive

F. Dilek Himam Er, Assist. Prof.; Ender Yazgan Bulgun, Prof. Dr.; Elvan Özkavruk Adanır, Prof.
İzmir University of Economics, Department of Fashion and Textile Design,Turkey

Abstract: *After 1923 with the establishment of Turkish republic, the citizens were encouraged to use national products. Sümerbank was one of the state-centered institutions founded in 1933 which was producing affordable printed cotton textile products. These fabrics led to the development of a national textile design style creating a Sümerbank material culture in Turkey. Along with the privatization process started in 1987, Sümerbank settlements had been demolished and it left behind a very important textile archive. One of these archives classified and restorated at the İzmir University of Economics, Department of Fashion and Textile Design in 2006 in order to use as education material. In this study it is intended to develop a digital archive of Sümerbank textiles donated to the university. This archive includes 7000 textile albums and each album consists of 30 different designs printed on cotton fabrics. After giving information on classification methods and conservation conditions of these textile albums, the attempts on digital archive preparation projects will be discussed. In that part of the study, the parameters considered for the classification including production years, typology of textile patterns and technical properties which will be substantial base for the digital database will also be mentioned. The textile albums obtained and recovered from the field studies in the Sümerbank settlements were conducted in 2006 will be the visual guide of this study. Above all, it has been thought that, the digital textile archive of Sümerbank fabric designs will be an important and valuable source for researchers, related industries and students not only to create an awareness of cultural heritage for contemporary fashion and design culture but also for the enlightenment of the history of Turkish Printing.*

Keywords: digital design archive, Sümerbank textiles, cultural heritage, archiving

Brief History on Sümerbank and Sümerbank Culture

After 1923 with the establishment of Turkish republic, it was clearly stated that industrialization was to be accomplished with a strong nationalist and corporatist industrial discourse emerged under the ideological rule of the Kemalist reforms. With the establishment of the National Economy and Savings Society (1929), the citizens were encouraged to use national products to live economically in order to provide credit to facilitate the economical recruitment policies. Within these establishments, Sümerbank textile factories supported by *Sanayii Maadin Bankası* were one of these state-centered institutions.

Sümerbank factories initially contributed to the nation-state building project by means of producing affordable textile products made of local cotton fabrics like *basma (calico), pazen(flannel)* and wool as well as shoes, carpets, threads and various accessories. Sümerbank also aimed to look after the financing, construction and operation of such diverse products as steel, paper, rayon, ceramics, caustic soda, chlorine and cement. In time, they developed into schools where textile designers were trained not only to adapt world fashion into Turkish style but also to produce numerous fabric patterns. In spite of their limited colour range due to the economic conditions, these fabrics led to the development of a national textile design style creating "a Sümerbank material culture in Turkey by introducing its own fabrics and distinctive designs". Their functionality, durability, comfort, modularity, locality and accessibility had also been embedded in this unique design character (Pasin, Himam, 2011).

Figure 1. Sümerbank patterns designed by Zekavet Bayer Taş (one of the first designers of Sümerbank), 1940s
Source: İzmir Life, April, 2003

Sümerbank as one of the leading institutions through the development period of 1930's Turkey, became a symbol for the history of Turkish economy and textile for seventy years. Sümerbank as a material culture and its institutions had played significant economic, cultural and social roles in the modernization process of the Turkish Republic. Sümerbank Industrial Settlements, conceived as small factory towns, comprised not only production facilities (factories) and support facilities (warehouses, workshops, boiler house, water tower, garage and fire station) but also residential (family houses, single houses and dormitories), social/cultural (cafeterias, social clubs, cinemas, guest houses and day-care centers), recreational (parks, swimming pools and sports fields) and educational (kindergartens and primary schools) facilities. In this way, these settlements could be considered as 'cultural education centers' for the workers to teach, especially to the workers, how to behave, inhabit and get dressed as a modern Turkish citizen.

Figure 2. Posters by the graphic designer İhap Hulusi for the promotion of 'Domestic Products Week' (Yerli Malı Haftası)
Source: Ömer Durmaz Archive.

Figure 3. A Group of Turkish Citizen with Sümerbank dresses in 1930s
Source: Çağla Ormanlar Ok photography archive.

Sümerbank's aim was to develop industry, to educate working people mostly living in rural areas, to encourage the use of local products and to maintain the integration of urban and rural areas starting from 1930's. Along with the privatization process started in 1987, some of the settlements like İzmir Halkapınar Basma Sanayii Müessesesi had been demolished, some had been handed over to private sectors, municipalities and universi-

ties, and most of the products like fabrics, and machinery had been destroyed. After the rapid change in economic and social conditions of the institution for the last thirty years, Sümerbank left behind a very important textile archive after ceased its production from 2000's.

Figure 4. Nazilli Sümerbank Factory building
Source: Barbaros Şansal photography archive.

Figure 5. A photograph of İzmir Basma Sanayii Müessesesi, 31 July 1961
Source: Sümerbank Aylık Endüstri ve Kültür Dergisi, Temmuz 1961, Cilt: 1, Sayı:1, Devlet Nüshası, İsmail Öztürk Arşivi, 31 Temmuz 1961, p. 29.

Necessity of An Digital Archive and Turkish Textile Archives

In order to create an awareness of cultural heritage based on historical textiles and to build up and distribute the knowledge of Turkish historical textiles and material culture, archives play an important role. Textile history in Turkey starts from Paleolithic Ages and it has rich historical textile background. However, there is only few museums related to textiles (except from Sadberk Hanım Museum, AVEM, Topkapı Palace etc.).[1] The understanding of museology and archiving in Turkey had not been progressed that caused the deterioration of some archives and lack of collections. In that respect, supporting archiving and new museology attempts would prevent the deterioration of the textiles like other artifacts. Hence, the establishment of a textile and fashion museum is an inevitable necessity in Turkey.

Insufficient value given to the cultural heritage in the institutional and social level, disconnection of the younger generation and contemporary culture from cultural heritage, lack of expertise in preservation, documentation of the cultural material, and lack of financial support created a necessity of an digital archive. In that sense, proposal of developing a digital archive will provide solutions to the problems stated above, while meeting with the needs addressing these problems.

The relevance of the proposal addressing the needs of Turkish culture and academic research and design culture has been evaluated in this study within the context of Sümerbank Textile archive belongs to Sümerbank İzmir Halkapınar Settlement. Under that respect, the archive of Sümerbank produced during the last 50 years (from 1959 to 2001), will be digitally recorded and preserved under the Sümerbank Digital Archive Project. This

[1] In Turkish printing history, the 15th century printed textiles had a great importance in the Ottoman Empire. Apart from that, in the 15th century, the popularity of Indian prints which are also important goods in the Ottoman Empire, the establishment of Eastern Indian companies by the Europeans had been created popularity on Eastern prints. Hence, the Anatolia had become a transition place between India and Europe. Özlenen Erdem İşmal, Leyla Yıldırım, Tekstil Baskıcılığının Tarihçesi, Dokuz Eylül Güzel Sanatlar Fakültesi, Yayın no: 1, İzmir, 2012, p. 43.

archive concludes just one factory named İzmir Halkapınar Basma Sanayii Müessesesi, locating at the western Anatolia, among several factories opened all over the country (See Figure 6)

The sharing and possessing this cultural heritage will provide integration between professionals and public within a culture. Apart from that, the project will also enable to exchange the sufficient resource, literature and historical data to learn from the experience of Sümerbank or to carry on research to produce and expand the knowledge of historical textiles.

The main aim of this project is to create a network between researchers, designers, governmental and private institutions, and to construct visibility of the cultural heritage through the use of historical textiles in contemporary design culture. Difficulty in building and expanding the knowledge of cultural heritage due to limited literature and funding given to research and to incorporate the historical knowledge and social experience of the materials of cultural heritage into contemporary life and design culture was the another objective of the project.

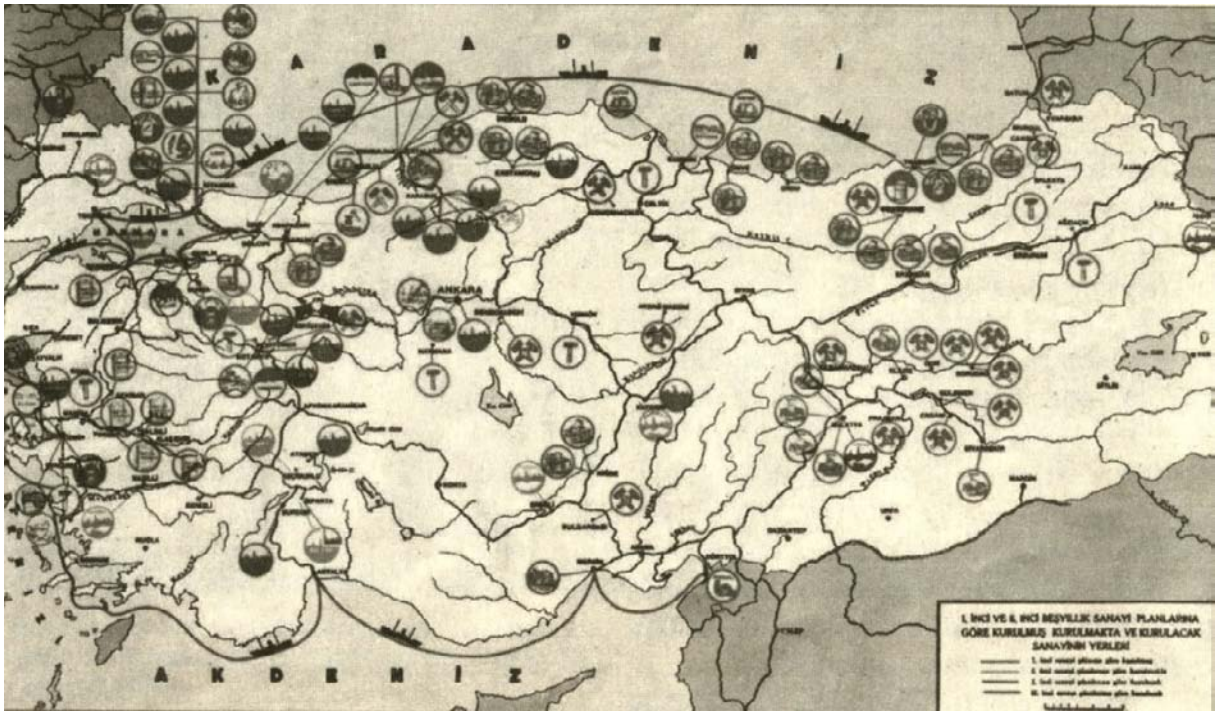


Figure 6. A map showing the Sümerbank factories
Source: Author's archive.

Developing Digital Archive and Turkish Textile Archive

The study is acquainted with the textile albums which were once belong to the *Sümerbank Halkapınar Basma Sanayii Settlement* that are archived, restorated and stored in Izmir University of Economics, Faculty of Fine Arts and Design. In 2006 and 2007, field researches in Halkapınar and Nazilli facilities of Sümerbank were conducted by academic staff of the Faculty of Fine Arts and Design of Izmir University of Economics. The primary goal of these studies was to collect and preserve printed textiles and accessories, as well as textile albums, books and chemicals, most of which had largely deteriorated after the privatization process of Sümerbank.

From *Sümerbank Halkapınar Basma Sanayii*, there had been founded 7456 textile albums, accessories, and printing equipments. These albums were collected and cleaned. Each of albums has 30 different patterns having different color variations.

Conservation and Classification of Sümerbank Fabrics

Textile materials are sensitive to light, insects, physical stress, temperature, humidity and air pollution. In order to protect cotton textiles from the deterioration it is obligatory to store those in proper ways. Conservation and classification of the Sümerbank printed fabrics had been done by the university staff according to production years of the textiles. After collecting and conservation process of the albums, the materials were stored in the archive space in appropriate physical and ergonomic conditions. In the archive, functional storage spaces and documentation had been developed. Addition to that, passive conservation methods had been applied to textiles in order to prevent deterioration (See Figure 7, 8).

Figure 7. Photographs showing the Sümerbank textile albums before the conservation and classification
Source: Photograph by Dilek Himam.

Figure 8. Photographs showing the Sümerbank textile albums after the conservation and classification
Source: Photograph by Dilek Himam.

Digital Archiving Methods for the Sümerbank Textile Archive

The intention of the project to transform them into a "virtual textile sample archive" is one of the stimulators to create the visual archive. Activities based on creating and organizing the authentic archive, as well as developing ways of producing and distribution of the knowledge and experience of cultural materials to enrich textile and fashion history in Turkey and Europe.

Documentation of the archive, developing an appropriate system and physical conditions for the historical and cultural material was the first step of the archiving. During the documentation process certain information forms had been used in order to record compositional and technical characteristics of the material (See Table 1).

At this step of the project, in order to digitize and build the database, a software program will be developed. This program will also support to expand the database for further applications by collecting historical data and literature to build up a sustainable knowledge on historical textiles. After the documentation, designs will be scanned and will be defined for the software program. After definition of the parameters, designs will be uploaded to the database. It is also planned to re-produce the designs by using a digital printing machine. These activities will be followed by developing an international digital archive which will foster and enhance communication among researchers, academics, students, industry, designers, private and governmental institutions and media in the field of textile and fashion design.

Table 1. An Example for the Sümerbank Textile Album Information Table

Date of the Album		PHOTOGRAPH
IEU Inventory no, documenting date	Sümerbank Tekstil Arşivi, 2008-2009	
Technical properties of the fabrics in the album	Warp yarns: Weft yarns: Weight: Material: Weaving type:	
Fabric type		
Printing technique		
Enduse of the fabrics		
Dimensions of the album (cm)		
Explanation		

The textile collections which are left almost untouched in different branches of Sümerbank considered as industrial garbage are the first and unique examples of Turkish historical textiles. Most people consider Sümerbank textile archive as garbage, but the collection consist of unique examples of Turkish printed textiles.

Creating database and virtual museum; visualizing the archive in order to create an access to target groups through a virtual library will minimize the possible damage of the fabrics. Building a digital network covering the images of the textile archive which provides an access to worldwide researchers, academics and students and the website can function as an informative database. In addition to this, along with creating an interactive environment of textile network through a website, the platform will create visibility and financial support of the project. Thus, establishment and improvement of this website will help to ensure the sustainability of the

project for a long term action. Digital Archive, Website and Database will not only provide the information and visual presentation of textile samples, but also ensure the visibility and sustainability of the project as the main promotional platform for the project.

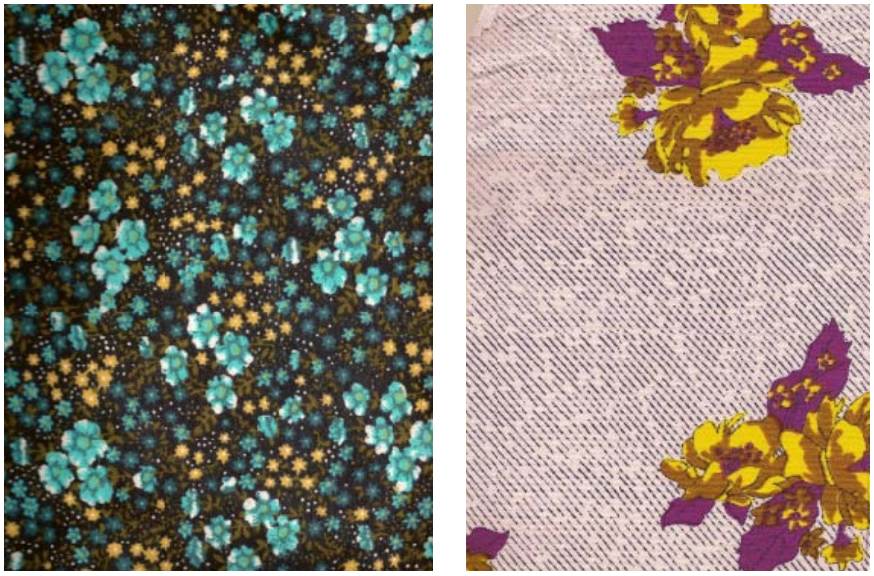


Figure 9. Photographs showing the Sümerbank textile albums before the conservation and classification
Source: Photograph by Dilek Himam.

Conclusion: Creating Awareness by Using Digital Archive

The overall objective of the digital design archive project is to create an awareness of cultural heritage through contemporary life and design culture by incorporating with the Turkish textile industry. Through a digital archive project, Sümerbank designs as a cultural heritage is an extremely important value for the Turkish printing and textile history. This will be achieved through an archive of historical textiles which belongs to one of the pioneering enterprises of Turkish industrial history and economy, Sümerbank. This will be followed by developing a digital pattern archive standing which will foster and enhance communication among researchers, academics, students, industry, designers, private and governmental institutions and media in the field of textile and fashion design through a contribution for contemporary design culture. Thus, the importance of the Sümerbank cultural heritage will be transferred through the next generation.

In conclusion, it will raise a consciousness among Turkish entrepreneurs and designers of textile and fashion industry towards historical textiles as potential design sources to interpret into contemporary textiles and fashion and to create an excitement to this collective memory for re-construction of design identity for being competitive in the international market. Respect to development of fashion and textile design culture in Turkey, the action will be assumed as a part of larger program of construction of Turkish contemporary design knowledge, culture and identity in an international level. This can be observed through a series of design activities implemented by civil society groups related to textiles and fashion. The project aims to transform cultural heritage in to cultural capital, not only in terms of providing a sustainable knowledge and experience of cultural heritage, but also through its created economic value mainly by design activities by preserving the unique Sümerbank prints.

References

Anmaç, E. (1999). Tekstil Ürünlerinde Konservasyon ve Restorasyon Işlemlerinde Karar Verme Ölçütleri, *2000'li Yıllarda Türkiye'de Geleneksel Türk El Sanatlarının Sanatsal, Tasarımsal ve Ekonomik Boyutlu Sempozyumu Bildirileri*, Ankara 1999, Kültür Bakanlığı Yayınları, 9-13.

Pasin, B.; Himam, D. Designing a National Uniform(ity): The Culture of Sümerbank within the Context of the Turkish Nation-State Project, *Journal of Design History Special Issue: Uniforms in Design History*, Vol. 24, (May 2011):157-170.

Dölen, E. Tekstil Tarihi, Marmara Üniversitesi Teknik Eğitim Fakültesi Yayınları No: 92/1 Matbaa Eğitimi Bölümü Yayın No: 6, İstanbul, 1992, XVI+608 S.

The Illustrated History of Textiles, ed. By Madeleine Ginsburg, Portlandhouse NY, 1991, Studio Editions Ltd., London.

İşmal, Ö.E., Yıldırım, L. Tekstil Baskıcılığının Tarihçesi, Dokuz Eylül Güzel Sanatlar Fakültesi, Yayın no:1, İzmir, 2012.

UTİB Tekstil ve Konfeksiyon Sektöründe VI. Uluslararası Ar-Ge Proje Pazarı, Ender Yazgan Bulgun, Elvan Özkavruk Adanır, Arzu Vuruşkan, Şölen Kipöz, Dilek Himam, Dijital Desen Arşivi ile Çağdaş Moda ve Tasarım Kültüründe Farkındalık Yaratmak,2014.

Öztürk, İ. Koruma Kültürü ve Geleneksel Tekstillerin Korunması- Onarımı, Mor Fil Yayınları, Akademik Dizi:2, 1. Baskı, Dumat Ofset Ltd Şti.-Ankara, 2007.

Toprak, Z. Sümerbank, Creative Yayıncılık,1988.

Novel Interface Design for Augmented and Virtual Reality Binoculars for Outdoor Exhibitions

Jacob Michelsen, Carl Heath, Carolina Poelk, Niels Swinkels, Erik Einebrant, Peter Ljungstrand
Interactive Institute Swedish ICT, Sweden
https://www.tii.se/projects/bronze-age-binoculars

Abstract: *Two emerging technologies for visualization in museum exhibitions are augmented reality and virtual reality, using position and orientation sensors to map and overlay information using immersive visual aids. In this paper we develop a novel layer-based interface design enabling a user to shift between augmented and virtual reality through limited panning movements and focusing actions. This is developed using real time visualization technology with the use context of an unsupervised outdoor installation. A participatory development and design process is carried out in iterative steps, in which users explore means of interaction through an uninformed meeting with the technology driven by the users' own curiosity. We show that users are able to navigate easily through multiple visualized layers through the limited interaction possibilities afforded by the hardware robustness requirements. Additionally the implemented interface is designed to be compatible with standard smartphone hardware with a minimum of specialized parts.*

Keywords: augmented reality, virtual reality, outdoor exhibitions, participatory design, experience design

Introduction

Augmented reality is the technique of overlaying digital information over a view of reality, while virtual reality involves altogether replacing reality with an artificial digital experience. These experiences have become more widespread with the continual improvement of real-time 3D-rendering performance and the increasing ubiquity of smartphone devices with embedded sensors and apps such as Wikitude and VR platforms such as OpenDive (http://www.durovis.com/opendive.html). In particular, these technologies are not only finding increasing use in museums and exhibitions, but also in outdoor cultural heritage sites (Huang et al. 2009, Fritz, 2005, Kang, 2013). However the use of this type of technology in these contexts presents a number of challenges relating to technology, content design and interaction design. This paper presents the findings of the development process of one such solution with a focus on the work carried out to reduce both technological and usage complexity. Additionally the iterative and participatory design approach used to enable a museum to extend its existing storytelling in the new medium is documented.

Background

The new E6 motorway leg in Tanum municipality on the west coast of Sweden passes through the outskirts of a UNESCO World Heritage site. In response to this a new rest and information area is being constructed at Skräddö, a hill and former island of the Bronze Age peninsula on the west coast of Sweden. From Skräddö one

can overlook the area of the World Heritage site, and with the construction of the information site new possibilities emerge for disseminating knowledge about the World Heritage in Tanum. With the new possibilities new challenges also emerge, as any such information disseminating solutions need to be captivating and provide a very low barrier of entry while also remaining robust.

The goal of the project presented in this paper is to make the Bronze Age heritage easily accessible for spontaneous visitors using new technology in the context of an unsupervised outdoor exhibition. At the time of writing, the project is still underway and is conducted in cooperation with Vitlycke Museum and Västarvet in the Västra Götaland region. The finished installation will be opened to the public in June 2015.

Methodology

The design of the technical solution presented herein stems from an iterative process, which first identified the wishes and prior experiences of Västarvet, Vitlycke Museum, and the Swedish Transport Administration Trafikverket. It would not be practically possible to explore all possible permutations matching the design constraints, rather a design research methodology was adopted where data was gathered through user testing to support a specific example of a design approach rather than attempt to falsify theories about a more general application of the proposed design (Gaver, 2012).

Design Parameters

Many of the parameters that build the context of the experience of using the binoculars were mainly identified through interviews with the above-mentioned stakeholders. These were grouped as temporal, spatial and contextual parameters.

Temporal parameters
- Short time frame of usage
- Several simultaneous visitors wishing to engage
- 24/7 availability
- Adaptive content (day, night, winter, summer, midsummer, equinoxes, rain, snow...)

Spatial parameters
- Outdoors
- Unguarded
- Weather conditions (hot, cold, damp, dry)

Contextual parameters
- Diverse target group
- Varied prior knowledge
- Multi-lingual context
- A wish to present many different kinds of media (Bronze Age visuals, the raising of the landmass, practical and tourist info...)

Having structured and organized the various design parameters, they were converted into design constraints and prioritized based on the perceived severity and nature of the specific constraint. The main constraints were identified to be:
- Climate (temperature variation, moisture)
- Physical violence to the binoculars
- Physical environment directly surrounding the binoculars

- Cost
- Easy of repair and servicing
- Human factors such as the height of users
- Amount of individual visualizations
- Number of layers of information

Ideation

An early ideation workshop was arranged in order to harmonize the perception of the project among the stakeholders, to gain a better understanding of perspectives and wishes of each party, and to understand the potential of the new rest stop. Museum personnel, representatives from the local municipality, as well as researchers and developers from the Interactive Institute attended the workshop. A stakeholder analysis and an ideation session were carried out.

An important outcome from the workshop was the design goal that the installation at Skräddö should inform about the area, but not at the expense of the museum experience. Rather, the installation should be designed in such a way as so generate an interest in revisiting the area.

Initial Design

After the initial design constraints were mapped and ideation workshops were carried out, the idea of an augmented reality tourist binocular station was selected for hardware prototyping and development. The binocular, when pointed in different directions, will visualize the cultural heritage using augmented and virtual reality. The design was deemed useful for presenting information, had a design that would already be familiar to many visitors while having a low barrier of entry, and appeared technically feasible.

In order to quickly get a prototype up and running an Oculus Rift virtual reality headset (http://www.oculus.com/) was used. This headset displays a stereoscopic image from a computer with a wide field of view. However the headset itself does not contain any software and needs to be connected to a computer. The initial software platform was built on Unity 3D. This is a commonly used development environment for the Oculus Rift, as well as for 3D games and visualizations in general. In Unity, a digital "scene" is created with the digital material that is to be presented, and a virtual stereo camera within the digital scene captures an image, which is then seen in the Oculus Rift headset. This virtual camera follows the orientation of the Oculus precisely, giving the illusion that the user is inside the virtual scene and can look around freely, in essence creating a virtual reality experience. By mounting two webcams to the Oculus at roughly the position of the viewer's eyes and providing live video as a backdrop to the digital scene, the real world can be viewed through the Oculus. The design is in principle similar to the previous PRISMA and AR-View systems (Fritz, 2005, Huang et al. 2009), especially the stereo vision camera aspect of the latter.

Objects in the digital scene are seen as overlaid on the view of reality, creating an augmented reality experience complete with a sense of depth in both the view of reality and the digital material. Unity supports a wide range of different media, including images, video, animated 3D models, particle effects and sounds. These can be presented as small objects in front of a live view, or be large enough to be layered over the whole view.

To better present material a design goal was to be able to digitally zoom in on distant material as well as start and stop animations and video. AR-View presents a non-interactive scene but PRISMA uses a touchscreen interaction for multimedia content. It was decided to develop and evaluate a simpler method of interaction. Anything in the center of the view would be triggered (i.e. zoomed in on or having its animation activated) after a short delay. Once the binocular was pointed away from the point of interest again, the layered content would be deactivated.

It was acknowledged that using specialized hardware, such as the Oculus Rift, and a standalone computer in the device increases complexity and makes it more difficult to meet the robustness and cost design constraints. Other IT systems for outdoor use were investigated to gather solutions to these robustness requirements. The Be Green display (Zarin et al., 2013) uses built-in climate control systems to keep the computer systems in a good operating environment, while parking ticket machines use more specialized IT hardware with more generous operating conditions (http://www.calesystems.com/en-us/products/cwt-2120/). This reduces their need for active climate control. The ability to monitor the installation remotely, e.g. over the web, was another important factor for high uptime and reliability.

Initial Testing

Feedback on the first prototype was gathered during Vetenskapsfestivalen in Gothenburg in order to determine the viability of the button less interaction of finding, triggering, and focusing at points of interest by looking at them.

Observing users interacting with a prototype and then following up with an interview is an effective way of gathering qualitative user data (Cooper, Reimann, & Cronin, 2011). However at the busy science festival there was little time to ask questions and most data was gathered through observation. The testing facilitator could easily observe what the user was seeing through the Oculus Rift, as the image was being mirrored to the screen of the computer running the software. Users were presented with the Oculus Rift-based prototype with the only introduction being that it was a viewing device, in order to create similar expectations as when users would spontaneously approach the finished binocular station.

The ability for the users to locate POIs displaying video material, and then stay focused on them was observed. Through these observations, the delay for zooming in and out was adjusted to minimize inadvertent triggering.

Figure 1. The first prototype of the binocular system, during a public evaluation at Vetenskapsfestivalen

In general, users had little problem finding out on their own how to trigger the video and then keep them in the center of the view. However glasses created a lower field of view and made it more difficult to judge what was the center of the view.

In general, feedback on the prototype was very positive with many expressing awe at the virtual 3D video screens hovering around them. It was decided to continue development of the binocular design.

Content

Following the creation of the initial prototype, a larger workshop was held with museum personnel and exhibition content creators. This workshop aimed to align the vision of the content presented in the binoculars with that of the physical installation at the rest stop information site, as well as existing exhibitions at the museum. A brief body storming session was held around the prototype to help convey the use case. To meet the contextual design parameter of a multi-lingual context and varied previous knowledge, it was decided to focus on an animated visual storytelling rather than a text-based approach.

A typical example of content is a Bronze Age village. The visitor using the binocular sees a small pillar of smoke in the landscape. Pointing the binocular in this direction triggers a transformation of the landscape into a digital painting of the very same landscape, but with a Bronze Age water level and flora. The view then zooms in, with the visitor seeing the village in greater detail and being able to make out individuals going about their daily lives. The digital content is created in the same painterly style as the existing museum exhibition, reusing many of the same characters, to create a coherent experience.

Second Hardware Revision

In a meeting with Trafikverket after the first prototype had been constructed it came to attention that metal items such as toilets were sometimes forcefully detached and stolen from rest stops for their metal value alone. It became clear that there would be no way to completely protect the binocular station from theft. The next hardware prototype focused on a drastic reduction in cost and complexity beyond that of previous fixed-position systems to meet the design constraints relating to physical violence to the binoculars, climate, cost, ease of repair and serviceability. However there was also a wish to re-use as much as possible of the design from the first prototype and the lessons learned from user testing.

A waterproof smartphone was selected as the basis for the new design. With a high quality screen and camera, powerful rendering capabilities and extensive connectivity features (for e.g. remote monitoring), many of the essential components would be collected within one package which would already have undergone extensive durability testing by the manufacturer. To create a 3D view from the smartphone's regular display, a technique similar to the one used in the Oculus Rift was employed. Two loupe-type lenses were placed over each half of the phone screen. The OpenDive Unity plugin was then used to split the image displayed on the screen in half, showing a separate image for each eye on each corresponding half.

By considering conditions at the rest stop, which included a visit to the physical location where construction work was carried out, two other simplifications were made;

It was realized that all the points of interest in the landscape would be relatively far away when viewed from Skräddö, which meant that stereo vision would add very little to the experience. The design could be simplified to use only the single built in smartphone camera.

The distance also meant that most points of interest would be near the horizontal plane. The decision was made to simplify the mechanical construction by locking the tilt axis of the binoculars in place. This allowed for the use of fewer tracking components while also making the enclosure more robust.

Though the smartphone would contain sensors similar to that of the Oculus Rift (and the Intersense Inertiacube2 orientation sensor in the previous PRISMA system), making orientation readings possible, a more robust solution was sought to match the digital content to the view of the real world with a high degree of precision. A 10-bit absolute encoder mounted on a vertical rotation axis provides precise mechanical orientation readings with no risk of drift, barring any physical violence to the mounting system. In this case it would need to be readjusted in software. Similar tracking hardware was successfully used in the AR-View system (Huang, Liu, & Wang, 2009) to provide a high precision digital reconstruction of ruins.

A principal overview of the components is shown in figure 2. The prototype was realized using a 3D-printed shell inspired by the OpenDive and Altergaze (http://www.altergaze.com/) projects. Two loupe-style lenses were affixed in front of the phone display, and the phone camera focus was lengthened with the use of an aftermarket telephoto lens for smartphones. More specialized optics will be used in the final solution, with long eye relief to make them more suitable for viewers wearing glasses.

The 3D printed shell containing the smartphone and optics is referred to as the inner module, and will fit within an outer, locked, metal casing that provides the support and outside aesthetic of the binocular station. By providing a simple shape to construct the outer casing around, it is hoped that production costs can be kept low. The unit with the encoder will be housed just below the inner module near a twist joint.

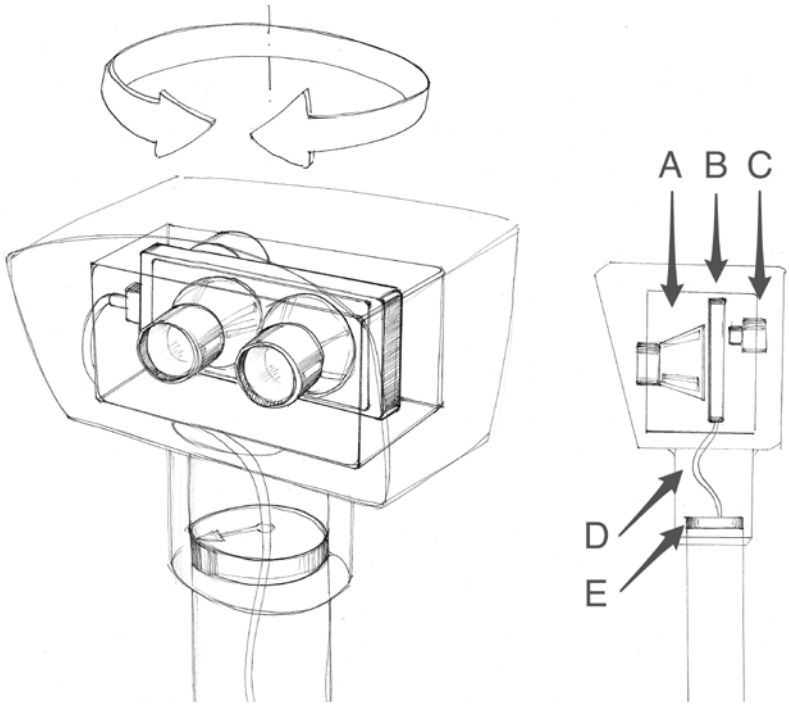


Figure 2. Overview of the components of the smartphone-based hardware revision. The arrows show the direction of motion for panning. A: Viewfinder optics against smartphone screen B: Smartphone C: Telephoto optics against smartphone camera D: Data and power connection E: Panning joint with rotation sensor

Software and User Interface

Much of the existing Unity implementation could be kept, as it was compatible with the new Android smartphone-based hardware solution through the use of plugins such as the Metaio AR SDK and OpenDive Unity plugin.

With only one axis of motion, panning, hitting and activating POIs was simpler. The virtual zoom was enhanced to be able to tilt the view slightly in order to zoom in on POIs above or below the horizontal plane.

A crosshair-like animation was added in the center of the view to simplify aiming and provide feedback to POI triggering. To make it easier to discover small or obscure POIs, support was added for having icons and labels floating over POIs. These are shown in figure 3, but the final design is left to the designers and illustrators from the museum.

POIs showing material that will be layered over a large view of the panning area (such as visualizing a Bronze Age water level in the landscape, or a panorama over a Bronze Age village) carry additional design challenges as they will need to be deactivated in some other way than the standard mechanic of panning outside of the material shown. They also cover up existing POIs. Two approaches were evaluated, one in which the POI is deactivated after a set amount of time and one in which an "exit" icon is present in the large material shown. When this is triggered in the standard way the material is deactivated and the normal view reappears.

To assist in setting up and observing user tests, an initial remote administration interface was added, building on the capabilities of Unity for creating networked multiplayer games. This makes it possible for a separate computer to connect to the smartphone in the prototype and observe what is currently being viewed. Additionally, other actions such as loading in new content can be triggered remotely in order to meet the design parameter of seasonal content. It will also be possible to have a separate computer showing the view from the binocular on a separate screen, one potential solution to the temporal design parameter of having many visitors wishing the use the binocular simultaneously.

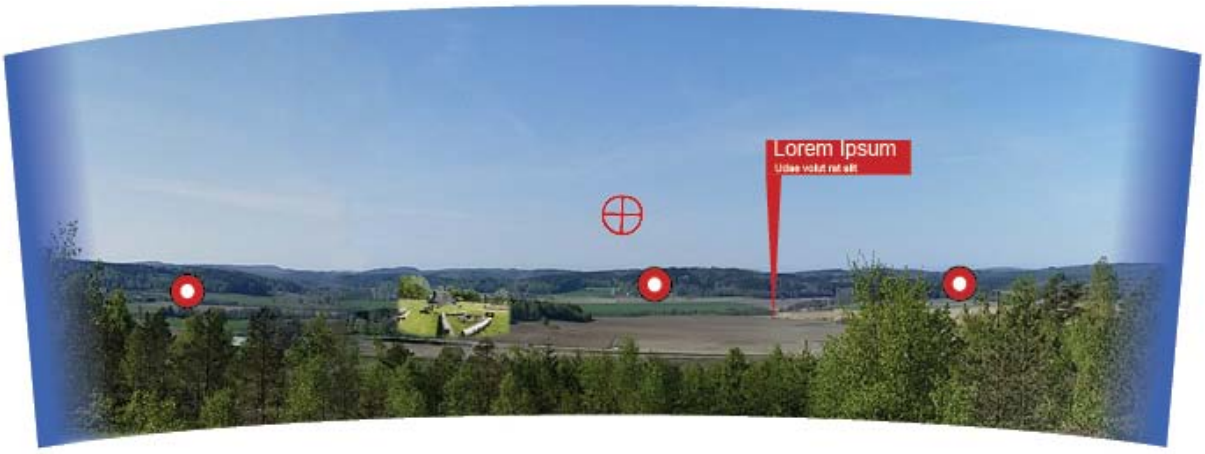


Figure 3. A mockup of the landscape as viewed through the binoculars. Points of interest can be represented through icons, labels, images or animation, which then react accordingly when panned to. The symbol in the middle, a Bronze Age sun symbol, acts as a visual guide for aiming the binoculars

Additional Testing

The smartphone-based hardware with the additions to the user interface was subjected to a round of testing similar to the first. This was done to evaluate the experience provided by the new hardware, in particular when having only one axis of motion.

The testing opportunity for the second hardware revision, four days at a large indoor fair, was selected as it would provide many passersby as well as be an opportunity to show off the device itself. It was however difficult to provide an interesting view and suitable context for the virtual scene content. The location at Skräddö,

with a more dramatic view, could not be used due to it being inaccessible before the road is officially opened in 2015. Much like the first test, the prototype was to be tested at a busy public location and it was known that there would be little time to ask questions regarding the experience. As much as possible would need to be gained from observations. Development of the administration interface was prioritized, and it was then used to observe users' proficiency directly. Questions were asked if any irregular behavior was observed.

Testing Outcome

Use time varied from between a couple of seconds to several minutes. Sometimes there would be queues, highlighting the need for e.g. a secondary display to meet the design parameter of multiple users wishing to experience the binoculars simultaneously.

The chosen interaction limitation of one having panning motion possible did not appear to affect the user experience negatively. Like the final position at Skräddö, most views at the fair were along the horizontal plane, which limited the amount of tilting motion the user may have wished to carry out.

In order to maximize the value of the testing opportunity, some parameters were adjusted on the fly according to feedback. The appearance of the crosshair in the middle was changed to be less prominent, as some users said it helped them focus (both physiologically with their eyes as well as in aiming the binoculars) while others thought it was somewhat distracting. Both the distance between the images for each eye and the height of the tripod supporting the binoculars were changed until a middle ground suitable for both adults and children was found with the addition of a footstep. The way to trigger and deactivate large media, covering most of the panning area, was switched between a timeout and an exit icon. The exit icon noticeably increased the difficulty for users to get back to discovering other POIs, and offered few advantages over having them wait for the timeout.

The unfinished look of the prototype appeared to make users hesitant to engage, and labels had to be added to make it more welcoming and clarify which handle on the tripod would be used for panning. This made visitors more inclined to engage with the prototype. A more robust exterior with clear affordances would likely make the binocular station more approachable, however once engaged the overall response from users was very positive. It was especially popular with kids, however even elderly did not appear to have any problems taking part of the digital content (though their initial trepidation may have been greater).

Results

Testing shows that the current prototype is a suitable base for the final platform. It has been shown that it meets most of the design parameters, though the system as a whole is still due for outdoor climate testing. Through an iterative, collaborative design process resulting in clear design constraints an easily accessible interactive visualization solution was created. It was then possible to simplify the hardware greatly while still verifying that an acceptable user experience was maintained. A visual style of storytelling for the in-binocular content has been developed with the museum in a collaborative process, to create a coherent experience.

Discussion

The design process so far has been successful in mapping out design constraints from many different sources and creating a solution to meet them. Without the knowledge gained from engaging with the stakeholders and considering the context of use as well as the users, there would likely have been less focus to simplify from

the initial prototype. While the visual style of storytelling has yet to be exposed to end users to the same degree as the technological platform, it shows great promise and high feasibility.

Future work

Work continues on both the content and outer design of the binocular station. The 3D-printed housing holding the smartphone and lenses will be parameterized so that it can easily be modified to fit future hardware, while maintaining the same outer dimensions and therefore still being compatible with the outer casing. This way, it is hoped that the installation can be more "future-proof" than many other IT installations and stay in active service to the museum for many years to come. This is also helped by using a standardized platform, Android, with many hardware suppliers.

The standardized platform also opens up other possibilities for museum use, such as the possibility of providing snap on optics for visitors' own smartphones to deliver AR and VR experiences in other parts of the indoor and outdoor exhibition. In e.g. city planning, it may possibly provide a more immersive version of the AR Teleport experience (Kang, 2013) by extending the experience out from the screen and enveloping the user's field of vision.

Acknowledgements

The authors wish to thank the personnel at Vitlycke Museum, crew at Trafikverket and people at Västarvet for their time and effort supporting the development of the Bronze Age Binoculars.

References

Cooper, A., Reimann, R., & Cronin, D. (2011). *About Face 3*. New York: John Wiley Sons Inc. ISBN: 9781118079157

Fritz, F., Susperregui, a., & Linaza, M. (2005). Enhancing cultural tourism experiences with augmented reality technologies. *The 6th International Symposium on Virtual Reality Archaeology and Cultural Heritage VAST*, 20-21

Gaver, W. (2012). What Should We Expect from Research Through Design? *CHI 2012: Session: Critical Perspectives on Design*, 937-946

Huang, Y., Liu, Y., & Wang, Y. (2009). AR-view: An augmented reality device for digital reconstruction of Yuangmingyuan. In *Arts, media and humanities proceedings – IEEE 2009 International Symposium on Mixed and Augmented Reality,* 3-7

Kang, J. (2013). AR teleport: Digital reconstruction of historical and cultural-heritage sites for mobile phones via movement-based interactions. *Wireless Personal Communications*, *70*, 1443-1462

Zarin, R., True, N., Papworth, N., Lindbergh, K., & Fallman, D. (2013). Be Green: Implementing an Interactive, Cylindrical Display in the Real World. In *Proceedings of Perdis '13, Proceedings of the 2nd ACM International Symposium on Pervasive Displays*

Evaluation of an Interactive Multimedia Exhibit in the National Museum of Korean Contemporary History, South Korea

Juhee Suh, Jaeyeon Ahn, Hayun Kim, Jungwha Kim
Graduate School of Culture Technology, KAIST, Republic of Korea

Abstract: *A history museum as a memory institution is a repository of memories, artifacts, and documents, keeping the past alive in contemporary society. Advancements in technology have allowed museums to use digital media to encourage and improve visitors' participation while exploring history. Furthermore, the usage of digital multimedia in the context of history museums is expected to facilitate the process of raising new questions, reflecting historical facts, and constructing personal meaning, rather than remaining a simply hands-on interaction level. It is therefore necessary to delve deeply into the relationship between historical objects, meaning, and visitors' personal engagement when designing multimedia exhibits in history museums. The National Museum of Korean Contemporary History, which opened in 2012 in South Korea, uses digital technology actively in its exhibitions to enhance communication with visitors. The present study was conducted as an evaluation study to examine how interactive multimedia exhibits influence and contribute to visitors' experiences at the museum. For this purpose, this study analyzed the overall usage of multimedia exhibits in the museum and implemented an in-depth analysis of the March 1st Independence Movement section. The March 1st Declaration of Independence is a symbolic artifact whose primary value is its inherent spirit. As a medium for experiencing this artifact, an interactive multimedia exhibit was designed using an interactive moving text display and it enabled visitors to interact with five words taken from the March 1st Declaration of Independence. A sample of 200 visitors was analyzed and, derived from the analysis, suggestion for interactive multimedia exhibit design in history museums are presented.*

Keywords: evaluation, interactive multimedia exhibit design, history museum, visitor study

Introduction

A history museum as a memory institution is a repository of memories, artifacts, and documents, keeping the past alive in contemporary society. Advancements in technology have allowed museums to use digital media to encourage and improve visitor participation as they explore history. In this respect, the increasing use of new technologies has also led to greater interest in evaluating how effective these tools actually are in supporting the aims of these cultural institutions and in studying precisely how they function in a museum environment (Economou, 2007). Evaluation in museums has been conducted upon different perspective. A first phrase in museum evaluation focused on measurable learning outcome (Economou, 2008). Then there has been a shift of focus more on how visitors construct meaning out of exhibits (Hein, 1995). In this context, we conducted an evaluation on an interactive multimedia exhibit concentrating on whether it contributes to meaning making in museum experiences. The interactive multimedia exhibit is expected to play a role in enriching entire experience of the exhibition by bringing its original context and integrating with other exhibits. It is therefore necessary to delve deeply into the relationship between historical objects, meaning, and visitors' personal engagement.

A new history museum, the National Museum of Korean Contemporary History, which opened in 2012 in South Korea, uses digital technology actively in its exhibitions in order to enhance communication with visitors. The study was conducted as an evaluation focusing on interactive multimedia exhibits in the aforementioned museum. It seeks to provide new empirical data about the following issues:

- the perception and use of exhibits by visitors depending on different behavioral groups
- the potential of exhibits mediated by technology to contribute to the making of meaning
- the possibility of interactive multimedia exhibits with respect to contextualizing related historical objects

The evaluation was done during an exhibition, and it involved video observations and interviews of visitors. We divided visitors into three groups according to their behaviors. The groups were a group of visitors who interacted with the exhibit, a group who only looked at the exhibit, and a group who did not view the interactive multimedia exhibit but viewed other exhibits in this section of the exhibition. A sample of 200 visitors was analyzed, and the findings of this study reveal how the interactive multimedia exhibit was perceived by visitors and functioned to its section.

The National Museum of Korean Contemporary History: the March 1st Independence Movement section with interactive multimedia exhibit

The exhibition strategy and status of multimedia usage of the museum

The National Museum of Korean Contemporary History is located in the center of Gwanghawmun Square, a site of historic and symbolic importance. Placed in a meaningful place for all Koreans, the museum seeks to play an important role in conveying the modern and contemporary history of Korea. As a 'newborn' museum, it claims to be a hybrid museum where the role of digital technology has been expanded from a mere subsidiary of artifacts to a level where it can contribute to enriching visitor's experience. To fulfil this claim, the museum has implemented a 'digilog strategy', where digilog is a compound word of digital and analogue, utilizing cutting-edge information and cultural technologies throughout its exhibition spaces.

However, its status of implementation leaves room for questions on the expanded role of digital technology. The museum's usage of digital technology is highly concentrated on audio visual application, multi-touch kiosks, and multi-touch tables. According to the level of interaction, that is, the exploration, manipulation, and contribution levels, as delineated by Parés & Parés (2001), multi-touch kiosks and multi-touch tables remain at the first level of interaction, exploration. Although these devices provide users freedom of exploring the digital contents, and thus fulfil the first level of interaction, they fail to go further: they do not allow users to manipulate digital objects, and nor do they allow users to contribute to digital contents. In the case of audio visual application, it does not require any interaction or input from the users and provides identical content repeatedly.

The March 1st Independence Movement section with interactive multimedia exhibit

Considering that most of the museum's digital technology fall into the lowest level of interaction, it is important to closely examine whether these ICT applications enrich visitors' experience. For this purpose, we launched an in-depth analysis of the March 1st Independence Movement section.

Following the period of Japanese colonialism section, the March 1st Independence Movement section consists of three parts: the interactive multimedia exhibit, the original copy of the March 1st Declaration of Independence, and a showcase with 11 pieces of related historical objects.

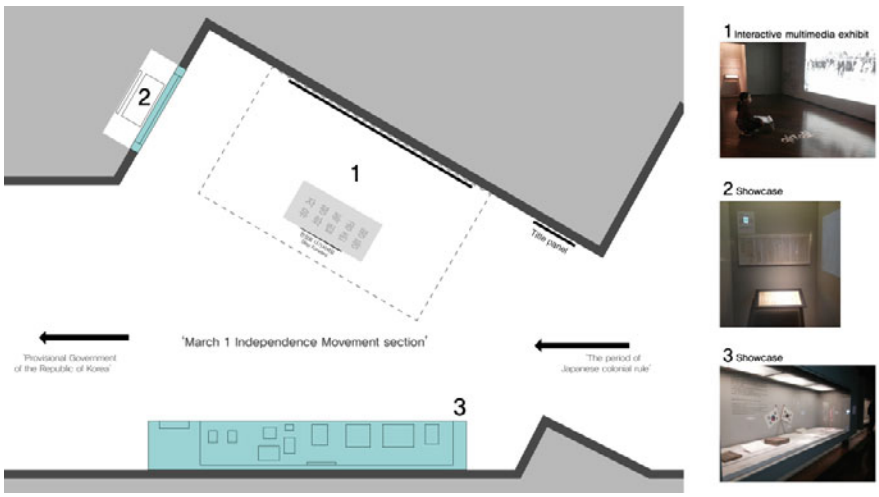


Figure 1. Exhibition Arrangement of the March 1st Independence Movement Section

As the totality of these exhibits is meant to represent the March 1st Independence Movement, how they reveal their relationships is an important issue. In this case, the exhibition arrangement provides an interesting environment for evaluation research. The multimedia exhibit is located in the center of the section, taking up a considerable amount of space compared to other exhibits. In addition, the original copy of the March 1st Declaration of Independence is located to its left. This led us to raise questions such as what the intention of this arrangement was and how the interactive multimedia exhibit would influence visitors' experience of the section. Our expectation regarding its function was to contextualize related historical objects connecting other exhibits in the area. Based on these questions, we implemented an in-depth analysis of the section.

The March 1st Declaration of Independence is a symbolic artifact whose primary value is its inherent spirit. To highlight the meaning of this artifact, an interactive multimedia exhibit was designed to experience the important contents of the artifact. Five keywords were taken from the March 1st Declaration of Independence and were applied with an interactive moving text display, enabling visitor interaction.

Figure 2. The Interactive Multimedia Exhibit of the March 1st Declaration of Independence

The detailed design of the interaction process is provided in the following image.

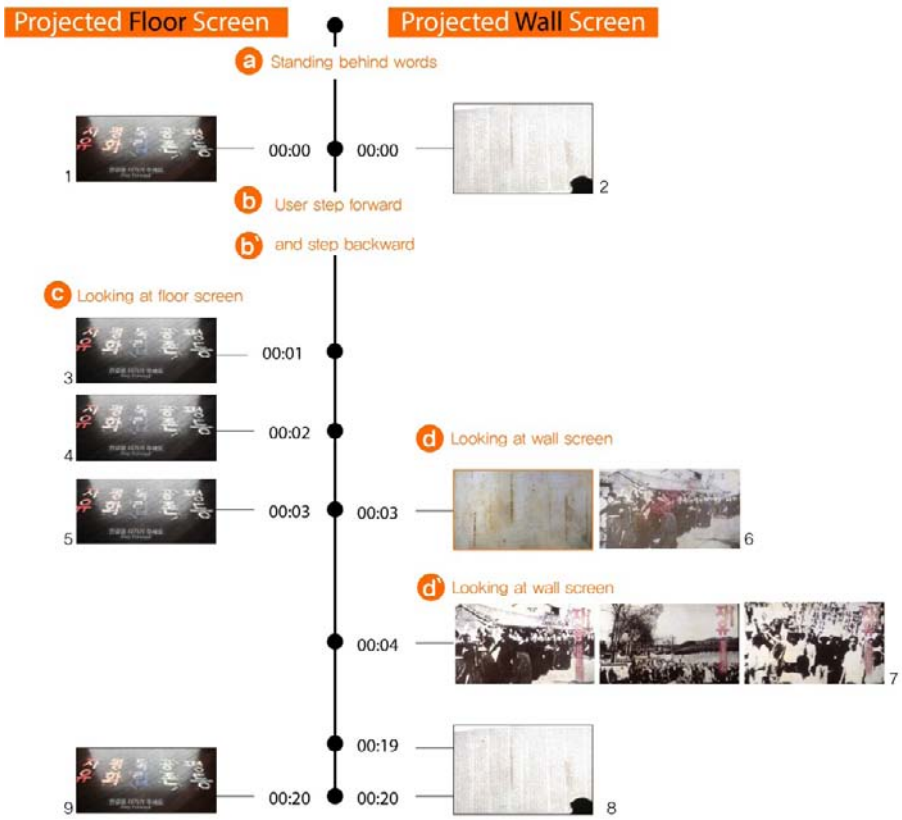


Figure 3. Interaction Process of the Exhibit

Initially, an image of the March 1st Declaration of Independence is displayed on the wall and the five keywords are illuminated on the floor. There is a sign stating "step forward" written directly in front of the five words. As the visitor steps on one of the five words, by the interactive moving text display, the word that has been stepped on moves up to the wall where the March 1st Declaration of Independence has been displayed. A 17-second video related to that keyword is then played. The video is designed to first locate the sentence of the chosen keyword, enlarge the keyword, and display three related photos by stages within 17 seconds. While the video is played, other inputs, that is, stepping on other keywords, are ignored.

Taking into account the words of Economou (1998) that the design of cultural multimedia is inherently an act of interpretation and communication, we can understand that this multimedia exhibit has been designed to convey five important values extracted from the March 1st Declaration of Independence. In other words, this multimedia exhibit aims at facilitating understanding of the core ideas of the March 1st Declaration of Independence: equality, coexistence, independence, freedom, and peace. By examining how and to what degree these ideas have been conveyed to those who experienced the multimedia exhibit, we were able to obtain insight into the usefulness of such interactive multimedia exhibits.

Method

To address the abovementioned issues, we conducted a three-step study on exhibition viewers. The first was a preliminary study through simple observation conducted by observing how viewers viewed this section of the exhibition. This was followed by close observation of videos (sample 200) and then interviews (sample 60) to delve deeper into the issues identified during the preliminary observation.

Preliminary observation

This stage of observation that took place before the actual research enabled us to categorize viewers into three categories. There were (A) visitors who interacted with the interactive multimedia exhibit, (B) visitors who did not interact but watched others interacting, and (C) visitors who did not view the interactive multimedia exhibit but viewed other exhibits in this section of the exhibition. We excluded those who had not viewed any part of this section and only the former three types of viewers were included in our study. The main issues derived from the observation at this stage were as follows.

- What was the process by which viewers perceived and experienced the exhibition?
- Did learning of the material take place through the interactive multimedia exhibit?
- Did the interactive multimedia exhibit bring about greater understanding and interest in the other exhibits in the March 1st st movement section?

We tried to find answers to these questions through video observation and interviews.

Video observation

Video observation was conducted in order to obtain accurate observation results for each category. A sample of 200 visitors from the crowded hours of 2pm-5pm on Saturday and Sunday were analyzed. Information regarding the basic particulars, viewing category, average time spent at this section of the exhibit, and the order in which the exhibits were viewed was collected from all of the viewers from categories (A),(B), and (C). We took special note of how many people viewed the actual artifact that this exhibit was based on after seeing the exhibit. We also coded their methods of interaction with the interactive multimedia exhibit based on the intended interaction stages of the exhibit.

Interviews

We conducted interviews with 20 visitors from each viewing category. We observed the visitors' line of movement through the exhibition section to find out which category they fell under and interviewed them after they walked out of the section. For visitors in category (A), we asked how they discovered the interactive multimedia exhibit, why they decided to interact with it, how much they understood from the exhibit, and whether it inspired interest in the other exhibits of the section. Visitors in category (B) were asked the same questions as those in (A) with an additional question- why they chose to only watch and not interact with the exhibit themselves. For (C) category visitors, we asked why they chose not to view this exhibit.

Results and discussion

Function of interactive multimedia exhibit as attention drawer

The sample group consisted of 200 people, including 73 men (36.5%) and 127 women (63.5%). The following figure shows the rate of visitors falling under the three respective categories described above, with the three categories being: (A) visitors who interacted with the interactive multimedia exhibit; (B) visitors who did not interact but watched others interacting; and (C) visitors who did not view the interactive multimedia exhibit but viewed other exhibits in this section of the exhibition.

A total of 54 people (27%) came under category (A), 37 people (18%) category (B), and 38 people (19%) category (C). The number of those who simply passed by the section was 71 (36%). The sum of those falling under (A) and (B) gives the number of people who stayed at the interactive multimedia exhibit, which stood at 91 people (45%). The average time during which they stayed at the exhibit was 41.98 seconds. This shows that the interactive multimedia exhibit was successful in drawing the attention of viewers.

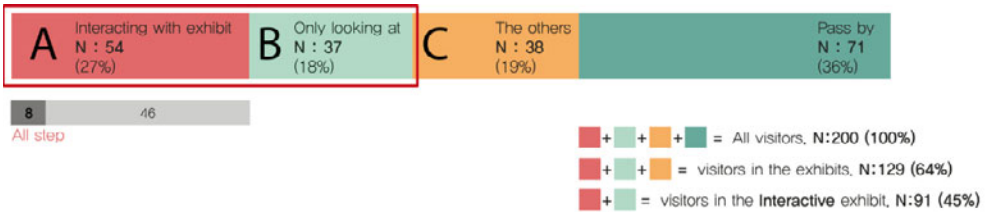


Figure 4. Rate of Visitors Falling under Each Category

When visitors were asked about the reasons they viewed the exhibit, the replies included: because other people were watching the interactive multimedia exhibit (8 people); because their children showed interest (6 people), etc. In the meantime, those who did not view the exhibit and went to other exhibits in the section explained this as follows: because they did not know there was an interactive multimedia exhibit (7 people); because they did not feel interested in the exhibit (4 people), etc.

This suggests the potential of the interactive multimedia exhibit as an attention drawer, leading to further exploration. In order to assess this, it is necessary to consider responses from the interviews. In numerous cases visitors noticed the interactive multimedia exhibit by watching other people interact with it. When there is no one interacting with the exhibit, visitors can easily miss it. It is therefore necessary to design an interactive multimedia exhibit that is easily and intuitively learned and used in order to fulfill the function of serving as an attention drawer. In addition, the function of an interactive multimedia exhibit should not remain at the level of an attention drawer, but should reach for further possibilities such as promoting engagement, understanding, and recall of the exhibit, as Allen (2004) mentioned.

Interactive multimedia exhibit and visitor learning

The interactive multimedia exhibit can be evaluated as successful in drawing visitors' attention. The question that must be then answered was whether the interaction experience resulted in meaningful learning. From the results of analyzing the behaviors and interviews of the viewers it was found that the learning effect was slight.

First, while the interactive multimedia exhibit consisted of six steps [Figure 3] with each step offering deeper contents moving towards the end of the exhibit, the number of people who completed all six steps was just 8 (14.8%) [Figure 4] out of the 54 people who fell under category (A). Also, in terms of the frequency of watching the respective steps, the three steps that drew the most attention of those falling under category (A) were steps a, b, and c which were phases for starting the operation of the display. While steps d and d' offered detailed content, these steps recorded the poorest interaction rate of viewers, raising the question of whether the visitors actually understood the contents of the exhibit.

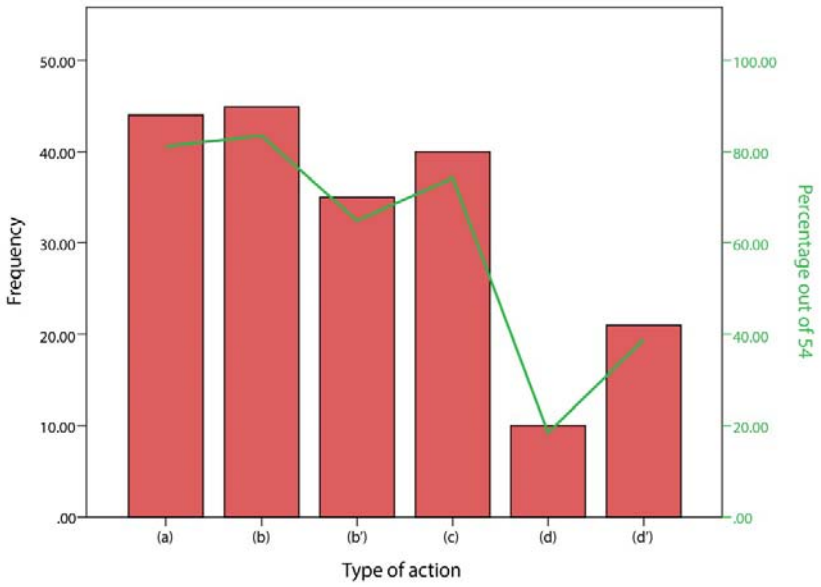


Figure 5. Frequency of Watching the Respective Steps

As for the number of people leaving the exhibit, the largest number of people left while the video was playing during step d. This problem can be attributed to the design of the exhibit program, which resulted in passive interactions of viewers during the steps in which in-depth learning could take place.

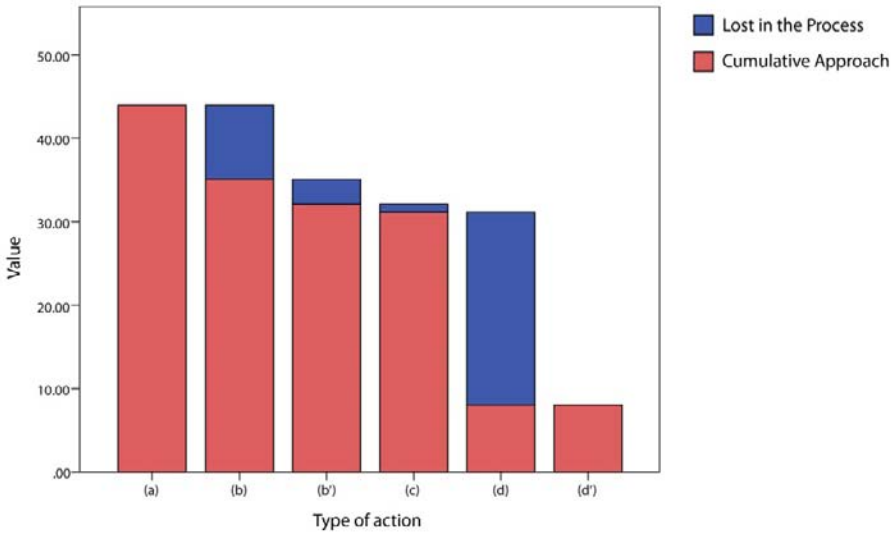


Figure 6. Number of People Leaving the Exhibit by Each Step

As the results of the interview intended to evaluate the understanding on the exhibit based on three levels, out of the 20 people who were asked, no one was categorized as level 3 (complete understanding of the contents of the exhibit), and only 4 people were categorized as level 2. Most people belonged to level 1, meaning that they only recognized the theme (Declaration of Independence) of the exhibit.

We can gain important insight on designing interactive multimedia exhibits by analyzing the reason why this exhibit was not successful in terms of visitor learning. This is related to interface design issues. First, input and

output of the interactive multimedia exhibit of the case discussed were separately placed, and this confused visitors. Most visitors remained at this input stage of the exhibit, keeping their attention on the floor, not the wall. Second, the way of interacting with the content is very active, but not related with the content. This could cause visitors to concentrate only on the effect of the exhibit. The irrelevant effect appeared to overshadow the content. This resulted in 'stepping forward' only to play the push button. Derived from the analysis, suggestions for designing a multimedia exhibit are as follows: (i) visitor input is of crucial importance in designing interactive multimedia exhibits; (ii) the method of interaction should be relevant with the content; and (iii) the function of interaction should not be limited to simply pushing a button.

Relationship of interactive multimedia exhibit with other exhibits of this section

An interesting result was found when the average time period during which the visitors of the categories of (A), (B), and (C) watched other exhibits of the section was compared. Referring to the table below, the average time period for category (A) was much shorter than the other categories, and therefore it cannot be said that the interactive multimedia exhibit served as an attention drawer for the other exhibits as well. When the analysis was done using a One-way Anova, the value of F was 7.207 and the P-value was 0.001 (the reliability rate was 99%). Therefore, we could reject that there is no mean difference between groups categorized by interaction involvement. In particular, the rate of watching the real displays related to the interactive multimedia exhibit was a mere 3.7%.

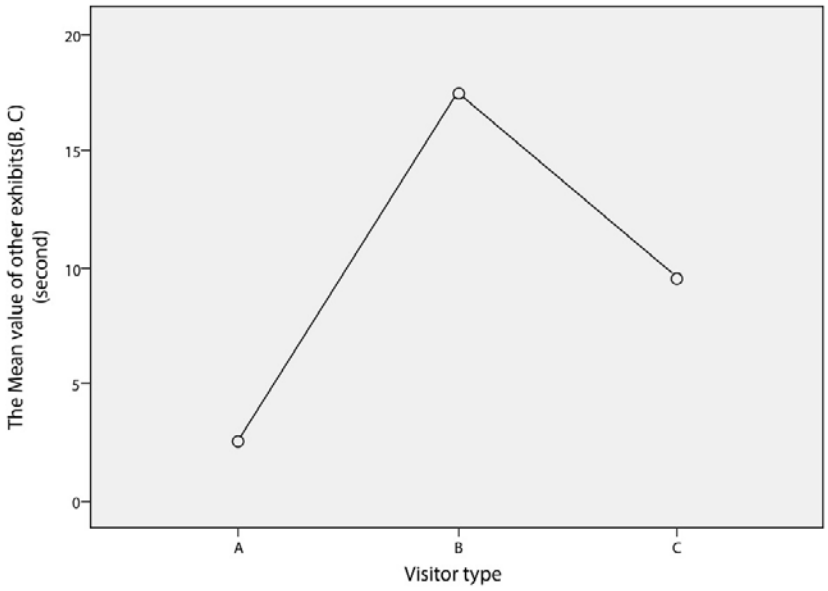


Figure 7. The Average Time Period Watching Other Exhibits of the Section by Each Category

An interesting observation was that the people of category (B), those who watched the video without interaction, reported the longest period of time during which they stayed at other sections. With respect to this result, a review needs to be done in the future to understand whether or not a sense of accomplishment that the interaction aroused among the viewers of category (A) led to reduced interest in other exhibits.

In response to the question of whether the interactive multimedia exhibit increased their interest in and understanding of other exhibits, six out of the 20 people who were asked replied 'yes' while four people said 'no' and 10 people state there was 'no impact.' In other words, only 30% of those asked replied positively to this question.

According to Economou (2008), well-designed applications bring the objects to life and show aspects of their original context in interesting and engaging ways. To fulfill the potential of the interactive multimedia exhibit, it is crucial to establish a complementary relationship between the interactive multimedia exhibit and the objects displayed. In this case, the relationship with the real artefact is especially important, but the results show that it failed to make a meaningful connection between them. Therefore, we suggest that consideration of this issue needs to be preceded.

Social Interaction

Missing in this study is the information about the age range of visitors and visitor groups. As we observed visitors through video, we could not decidedly guess the ages and groups of visitors and accordingly decided not to consider these variables. However, we assume that interaction behavior could be affected by social group, such as family. In many cases, children responded directly to the interactive multimedia exhibit and subsequently wanted to experience it with their family. In this regard, we should carry out further work on dealing with family interactions.

Conclusion

In this paper, an evaluation of an interactive multimedia exhibit in the National Museum of Korean Contemporary History in South Korea was carried out in order to ascertain how it had been experienced by its visitors. From the results it appears to be still valid to take into account Bitgood (1991)'s argument that interactive exhibits are too often used in a meaningless way. Even though the interactive multimedia exhibit functioned successfully as an attention drawer, it failed to fulfill its potential to contribute to a meaningful experience for visitors. Therefore, it is important to thoroughly consider how to use the interactive multimedia exhibit as a connecting point between both visitor-exhibit and exhibit-exhibit when designing interactive multimedia exhibits.

Given that this was an in-depth analysis of a specific case, the results may not be generalizable beyond this specific case, as Hauser et al.(2009) pointed out. Despite this limitation, we believe that the evaluation study helps to understand the gap between the intended aims of an exhibit and what is in reality achieved, which in turn will contribute to designing better digitally-mediated museum experiences. There is still much that we need to know about the complex relationships between visitors, historical objects, and the technological exhibits. Further studies on these issues would lead to better integration of the existing knowledge about visitor experiences and insights from empirical research.

References

Allen,S. (2004). Designs for learning: Studying science museum exhibits that do more than entertain. *Science Education*, 88, 17-33.

Bitgood,S. (1991). Suggested guidelines for designing interactive exhibits. *Visitor Behavior*, VI(4), 4-11.

Economou,M. (1998). The evaluation of museum multimedia applications: lessons from research. *Museum Management and Curatorship*, 17(2), 173-187.

Economou,M.,& Pujol,L. (2007). Evaluating the impact of new technologies on cultural heritage visitors. In J. McLoughlin, J. Kaminski, & B. Sodagar (Eds.), *Technology strategy, management and socio-economic impact* (Heritage Management Series, vol. 2; pp. 109-121). Budapest, Hungary: Archaeolingua.

Economou, M. (2008). A world of interactive exhibits. In Marty, P., & Jones, K. (Eds.), *Museum Informatics* (Routledge Studies in Library and Information Science (pp.137-156), New York: Taylor & Francis.

Economou, M. & Pujol, L. (2008). Educational tool or expensive toy? Evaluating VR evaluation and its relevance for virtual heritage. In Kalay, Y., Kvan, T. & Affleck, J. (Eds*.), New Heritage: New Media and Cultural Heritage* (pp.242-260), London: Routledge.

Hauser,W., Roos,A.N., Reussner,E.,& Zahn,C. (2009). Design-based research on digital media in a museum environment. *Visitor Studies,* 12(2), 182-198.

Hein,G.E. (1995). Evaluating teaching and learning in museums. In Hooper-Greenhill, E.(Eds.), *Museum, Media, Message* (pp.189-203), London: Routledge.

Parés,N.,& Parés,R. (2001). Interaction-driven virtual reality application design (a particular case: El Ball Del Fanalet or Lightpools). *Presence:Teleoperators & VirtualEnvironments*, 10(2), 236-245.

Literary Museums as Part of Tradition Mediation

Niels D Lund
University of Copenhagen, Denmark

Abstract: *This paper will discuss the role, conditions and possibilities of museums concerning the maintenance of the literary tradition, the literary cultural heritage, the classics etc. The latest decades seem to have shown an increase in varied museum installations regarding books, literature and authors. As for the landscape of memory institutions the situation is interesting partly because the museum in general – and especially it's mediating activity – has gone through a dynamic renewing development, partly because they have invaded the field of literary tradition which as a rule has been the prerogative of libraries and archives.*

Keywords: literary museums, tradition mediation, materialize intangible heritage

Challenge – reasoning

Besides the general growth and development of institutions several specific circumstances and reasons behind the literary museums' trends may call for explanations and generate fruitful questions. The development in the Nordic countries does not seem to be the stronger, their scholarly literature not very voluminous neither; the discussion of this field of growth must take in from other countries.

Especially it is of interest to investigate how literature, partly as an aesthetic, spiritual and immaterial phenomenon, partly as mass-produced printed media, can interfere with the raison d'être of museums – i.e. place, space, presence, materiality and physical visualization of unique artefacts. Furthermore how literature, understood as language and in this respect second to none confined by and defining groups and nations, can be linked with museums which as institutions have roles and functions concerning identity, especial national identity. A national literary tradition via language bound to national identity may interfere with a time of globalization, trans-nationalization, and migration according to an overall increasing attention towards politics of identity, memory, and cultural heritage.

Historically seen, museums within the field of literature have been connected with a culture of writing, printing and the classic literary system. The increase of this type of museums may be seen in the light of the comprehensive change of this system: the digital production, distribution, mediation and reading. So, as literary museums are being more frequent and visible, it may be seen as a reaction to the upcoming digital culture – as often seen in history: when something disappears, it will be musealized.

Literary museums today reflect and retain a situation of shrinking, change, and new constellations in the keeping up of literary culture and history.

In a modern mediation context

The literary museums are one of the ways of maintaining literary traditions. Through care and management, making visible and mediating there are many tradition activities and functionalities – partly interacting and

overlapping: 1. Intrinsic language cultivating via ongoing re-publishing/re-editing/new translations; 2. Remediating via screen versions, cartoons, computer games etc.; 3. Space-defined/-oriented performing via theatre, readings, new orality etc.; 4. Critic and scholar accounts/treatises, printed and digital; 5. Relic cultivating via museums, archives, memorials etc.

All these five forms are to be seen as typical and established elements of a knowledge-based and professionalized infrastructure of the field of literature – in almost all countries. Many of them are building on a long tradition, some are interacting with new media, and most of them are today supported by new ICT/websites. Other humanistic art fields, music and painting e.g., do not contain tradition mediation with the same broad spectrum, it is notably characteristic of literature.

The forms or practice fields mentioned above currently have scholarly and theoretical attention too, according to sociology-generated concepts and theories concerning the weakening, maintaining or reinventing of traditions in late-modern international society. So, in a world with globalization, mobility, migration, time-space separation, medialization, decreasing traditions, increasing velocity, risks, the radically reflexive state of mind, and increasing personal and institutional unsteadiness (Giddens, Bauman, Hobsbawn, Beck etc. sociologists), the need for rooting by identity and tradition is raising.

Language, as a strong individual and collective marker for identity and community, has played an important role in nation building during the last 200-250 years, and therefore literature, as the most easily manageable medium, has borne culture and traditions. When/if the authority of this pattern is disappearing, counter-measures will come up, e.g. re-promotions of literary canons (cf. Harold Bloom). Furthermore the overall concept of cultural heritage has been constructed during the latest 20-25 years -not the least for museums – following amongst others focuses on memory studies, imagined communities, shared references, symbols and realms of memory, reinvented traditions, transmissions between generations etc. What threatens to disappear is to be secured! (Cf. Lund 2008).

Definitions – pinning down

Literary museums are not clear-cut to define (Wehnert). Great encyclopedias are sparse of both general and specific definitions, and the term can cover different types of institutions and organizations. ICOM's separate section for literary museums ICLM has no authoritative definition and states an application broadly referring to "… literary historical/biographical museums and composers' museums", so, thoroughly dealing with person/originator/author. If ICOM's general criteria of museums are to be used, not many museums within the literary field are able to or have the resources to meet them. (www.ICOM.org).

Some larger web-lists show a motley and difficultly defined field – e.g. a uniting term Literaturmuseum in German, and a somewhat more vague term in English – altogether maybe a mess? (http://de.wikipedia.org/wiki/Liste_von_Literaturmuseen; http://en.wikipedia.org/wiki/Category:Literary_museums_by_country).

Typically, it is difficult to identify content and function by only the name or term of a museum; it can be an author's museum, a book museum or a literary museum as well as varied shades of library or archive institutions. Book museums weight the printed books/incunabula, artefacts and the craft frequently connected to national libraries' book history obligations and functions. E.g. The Estonian Literary Museum (Eesti Kirjandusmuuseum) is a national scientific and research institution administered by the Estonian Ministry of Education and Research with tasks to collect, preserve, study, and display the national cultural heritage of Estonia, established 1909 as an ordinary national library with sections for records, bibliography etc. (http://www.kirmus.ee/). In 1991 Ireland got a nationally covering Dublin Writers Museum built on the originators and "… established to promote interest, through its collection, displays and activities, in Irish literature as a whole and in the lives

and works of individual Irish writers." (http://www.writersmuseum.com/museum.asp). The Swedish author Selma Lagerlöf's famous house Mårbacka in Värmland does not mark itself explicitly as a museum, but as Selma Lagerlöfs Hem (home) and as a Minnegård (memorial estate), which following a will of the 1940es is to be preserved and open to the public (http://www.marbacka.com/). Buddenbrookhaus – Thomas und Heinrich Mann Centrum in Lübeck, established 2000, marks itself as literary museum, but of a very unique sort (http://buddenbrookhaus.de/). US's American Poetry Museum in Washington DC, established 2004 especially for one genre, is now followed by an foundation American Writers Museum to open in 2015 in Chicago with extensive goals: "… to establish the first national museum in the United States dedicated to engaging the public in celebrating American writers and exploring their influence on our history, our identity, our culture and our daily lives." (http://americanwritersmuseum.org/about/). Brüder Grimm-Museum in Kassel, established 1959/72, is for both persons and a genre (http://www.grimms.de/museum?lang=de). Literaturmuseum der Moderne in Marbach, Germany, established 2006, is thoroughgoing for the literary – spirit, idea, fantasy, sheet of paper, script, forms – and the challenges of exhibiting it as such (Gfreris; Lund 2014).

A greater part of these institutions have name and function linked to individual authors and are typically connected to a house, residence or birthplace, but various sorts of links are to be found. A French umbrella organization Fédération des maisons d'écrivains et des patrimoines littéraires appeared with birth pangs during the 1990es: "Large discussions dealt with the question of identity of a literary place, the links between the writer and his territory, the specificity of museographic, cultural or educational activities in such a place." (http://www.litterature-lieux.com//en/page-history.htm). Many German places are to be overviewed at a portal: http://www.literaturport.de/index.php?id=20. Obviously, museum and memorial often coincide.

Besides the terminology and the uniting marks, there are many nationally specific distinctions and appreciations within the field; there are different conditions as for background, structure, economy, ownership, network relations etc., the most rest on wills and diverse foundations. Many are visiting places, not real museum institutions, and not all have a scholarly, let alone educated staff. In Denmark only one literary museum is in public ownership (H.C. Andersen House, Odense) – municipally driven without state subsidy. Many are run by societies/circles of friends and depending on volunteers, with few things left behind, scattered space and scanty information – though often now a scanty website. From a view of professional knowledge mediation it seems as a meager situation, and compared e.g. with art museums there seems to be a remarkable difference. One explanation is that the public support of the field of literature is run by the extensive library system fixed by law.

Museum and literature – a formerly connection

The word museum comes via Latin from Greek: museion/mouseion as a word for a sacred place for the muses, and thereby in the antiquity also used about a place/building/institution where these things were to be studied, a sort of school/university, but the concept of library is known too. According to dictionaries the earliest English use in the 1610es of the concept referring to institutions was that of a library – such as British Museum, while the meaning of building/institution for collecting, storing and exhibiting objects of cultural interest and/or historical importance is not recorded until late in this century. The word library has in addition been used as a word for a collection of (popular) works of science or for a title of a periodical, collection or set of books, all produced in the same style or about the same subject. The term museum has surely and widely been used in this meaning both in Danish and German since the 17-1800es, but it is rare today (www.etymonline.com/; www.dictionary.cambridge.org/dictionary/british/library?q=library ; www.dwds.de/?qu=museum; ordnet.dk/ods/ordbog?query=museum). So, etymology reveals a meaning connection within history of scholarly and of books between literature and museum otherwise than that of the physical building/institution. Though rarely used nowadays, the term museum as a title/collection term can lead to a focus on text/language in connection with contents of museums.

A rather recent – and originally challenging – use is to be found in a German collection edited by Hans Magnus Enzensberger in 1960 Museum der modernen Poesie, a large book with lyrics from between 1910-45, from different countries and languages to present modernism poetry as witness to civilization breakdown during these years. The editor deliberately did not name this often republished European milestone: anthology, panorama, documentation, atlas, chrestomathy, but museum – of which he pondered:

> So verhält sich das literarische Museum zum Schreibtisch der gegenwärtigen produktiven Arbeit wie das Mittel zum Zweck. Daraus folgt, daß es keine endgültige Einrichtung zuläßt. Es ist kein Mausoleum, sondern ein Ort unaufhörlicher Verwandlung. (…) Das Wesen des Museums als eines Ortes der Tradition ist nicht Konsekration, sondern Herausforderung. (Museum, p. 9).

So, Enzensberger with his intensive work in the field of literature presented a notion of museum as process, involvement and transformation – in 1960 obviously thought-provoking, but today more mainstream, e.g. especially at Literaturmuseum der Moderne in Marbach. (Denkbilder, p. 23f).

The vigorous author

The author, or writer, is the most controlling factor concerning the understanding of literature. There have been long and lengthy discussions about the role and figure of the author (cf. R. Barthes's Death of the Author, 1967) including critique of individual subject, biography, increasing weight to the reader etc. Is there a real figure behind, or is the context the real author of a text? (Asdal, p. 221-60). Such quarrels mostly have to give up against the museums' claims for concrete space and materiality.

The authentic individual person is a strong category (- all individual artist museums know that) and obviously easy to handle according to classic humanities and writing of history. With the person and life at the center, a notion of personality is confirmed, perhaps combined with a romantic idea of artists too? Works and life's works are the important clues, close up to the relation text-originator, to genesis, intentionality, and inspiration and to crafts and production aura. The manuscript, the letter, the note, the diary – all hand-written – are significant artefacts of the literary museums (Wehnert, p. 88ff). In an age of digital text production and with hand-writing – both as knowledge and skills – deteriorating, such pieces of papers do fascinate as treasures – and function as loss securing in an epoch shift. The observant museum guest goes behind the anonymous mass-print of literature and as a reader becomes less random in the modern, text-overloaded society.

Normally only dead authors are musealized, but Günter Grass in Lübeck is an example of a living; sometimes the author him-/herself has planned a museum – e.g. Karen Blixen. As a tendency, it seems that an extraordinary, eventful and spectacular life course and/or a stirring biography weights more than works themselves, or if there has been multiple activities, typically with pictorial arts, so there is something visual to exhibit e.g. William Blake, H.C. Andersen. Many authors are far from generating a museum, and some would/will not like it themselves.

It seems that the signature and entity of persons take a steadily tenacious position, and that life stories via attraction, fascination and identification lead to the core of the experience economy. Though, it seems somewhat narrowing if author museum is to bear the notion of literary museums. Important parts of the literary history, such as anonymity/pseudonymity, collective texts, hegemony of genre, religion, national language, literacy, shifting processes of spreading and reception, the literary market, historical effects etc. have little with specific authors to do.

The powerful places

As mentioned the decentered origin places of authors play a strong and increasing role within the types of musealizations of the literary field: memorials, birth places, graves, commemoration realms/places, and also statues seem to call interest. The literature has 'moved out of the books', and its mediating is connected to and supported by places' identity. During decades there have been guides and scholarly handbooks about these places – both the real and the fictional, e.g. Novel Destinations: Literary Landmarks. From Jane Austen's Bath to Ernest Hemingway's Key West (2008), and more and more supplemented by organizations and informative sites as e.g. an English Norfolk's literary landmarks (www.literarynorfolk.co.uk/index.html), or a German as Literaturland Baden-Württemberg – literarische Spuren, which collects and guides more than 90 museological houses and places as both knowledge arrangements and tourist targets (www.literaturland-bw.de/), as well as the literary visiting sights all over France (http://www.litterature-lieux.com/voyages-litteraires.php; Herbert). One could speak of literary geography – a relatively new academic discipline of literature in the landscape together with interdisciplinary theories of place (cf. Casey), which inspire new ways of maintaining the literary tradition and history, literary pilgrimage inclusive.

Astrid Lindgren World in Vimmerby, Sweden, is a successful theme park for children from 1981, built on a (real) fictional universe, whereas The Museum of Innocence (2008-12) in Istanbul is a physical exhibition of the universe of a single (memoire)novel by the same name; this materialization of a city house described and forecasted in the novel represents an eccentric and outstanding new formation, a total project of book and museum. (www.alv.se/dk; www.masumiyetmuzesi.org/?Language=ENG). Both cases are typical for a material turn in mediation of literature.

The theme of ICLM's conference in 2013 in Oslo was spirit of the place concerning both individual literary museums and literary dimensions of urban life affecting museums in general (Museums). Such emphasis on the physical visibility and on places and spaces also lies behind the concept of the UNESCO-program of culture City of Literature (since 2004, www.cityofliterature.com/cities-of-literature/), where a city is to house influential cultural institutions in a broader sense and demonstrate events and a lively local literary tradition. More new literary houses are emerging as places for literature, aesthetics, performance and social gathering – being alternative to traditional libraries (Lund 2012).

These landmarks, commemoration places, memorials etc. are decentered institutions and installations, which parallel to traditional museum exhibitions, require preservation, curating, knowledge supply etc. – and so pinpoint the experience economy's popular traces of and to the past.

New book history, presence, performance, paratext – some pillars

Some further approaches within the literary scholarship seem to be productive for the understanding of literary museums. The new book history is a triad of bibliography (artifact), literary studies (text) and history (context) with focus on a broad and flexible sociological definition of the total culture and circulation of books and texts of all sorts, all media and all social targets. Each item/book lies as means and physical-material design and as a symbol and an aesthetic immaterial expression of cultural history, each author is never solitarily, but a part of a whole; so, transmission is the overall term for production, distribution and reception – particularly diachronic – interplaying processes between all institutions and actors during which texts are spread and socialized in a context of publication, reading use and handing down.

The new book history reflects a historical turn, characterized by being material, empirical, interdisciplinary and international oriented. (McKenzie; Bjerring-Hansen; cf. the organization SHARP, since 1990es). A literary

museum may be conceived as a museum of book history in the modern sense of this field; this meaning may cover all sorts of them and so rendering superfluous a refined typology(!).

The concept of presence is not unfamiliar in the museum field, on the contrary; within literary studies the interest of this notion is increasing, e.g. that we receive and experience literary texts not only as signs, abstract symbols and discourses, but multifariously with the body and all senses and with the awareness of the surrounding physical space, place and specific moment. (Gumbrecht). Accordingly, theories of performance view use and effect of literature in the light of concrete types, places, visual behavior and personal interaction with voice and body (Jalving). So, literature is not entirely immaterial, it is also material in acting processes and, so, matches a museum artefact world much better.

The concept of paratext has an increasing use according to the interest in extra- and inter-textual relations and the different actors in the circulation and sociality of literature; so, it is also profitable for literary museums. The media, the context, the communication (digital inclusive) and the extensive receptions of texts – all point to views essential for museums' settings. (Bjerring-Hansen, p. 7ff; Asdal, p. 7ff). The literary museum itself is a paratext.

Institutions' vitalized activities and scenes

Besides the mentioned development of literary places and tourist sights, managed by city-branding strategies and didactics of exhibitions, the literary museums themselves also offer many activities: on the one hand performance, staging, events, recitations, releases etc., and on the other hand more academic lectures and talks, which can be connected to a museum's own specific contents or to literature in general. The current trend of literary performance supplies activity and liveliness to the museums, and on the other side these supply dignity to the events – a win-win situation.

In Hampshire, South England, there are (at least) three museological organisations for the author Jane Austen, a birth place house, a home and a centre and thereto diverse memorabilia round about. They can be visited in an ordinary way, but are each year filled with tours, a ten days-festival with waxwork, costumed events, reenactments, hikes, talk lectures by literature scholars and translators, lacemaking demonstrations, harp music concerts, celebrations and mappings of adaptations' real locations etc. (www.janeausten.co.uk/; www.jane-austens-house-museum.org.uk; www3.hants.gov.uk/austen/deane-parsonage/steventon-village.htm; http://austenonly.com/jane-austens-film-and-tv-adaptation-locations/). Austen does make up a spectacular example, but therefore informative about the multifarious possibilities of the experience oriented cultural heritage industry.

In Brecht-Weigel-Haus Buchow, established 1977 as a museum/memorial place in the summer residence east of Berlin of the author and his actress wife, there is an annual Literatursommer with many exhibitions, concerts, interpretation workshops, readings, portrait films etc. E.g. Le musée Jules Verne de Nantes in France offers something similar. (www.brechtweigelhaus.de/; www.nantes.fr/julesverne/actu_agenda.htm).

Furthermore diverse cultural institutions have residences for contemporary authors and scholars, and they arrange annual festivals of literature (e.g. Louisiana. Museum of Modern Art, Denmark, www.louisiana.dk), theatres increasingly give place for readings of e.g. classics, research libraries arrange spoken word, author talks, jazz'n'poetry, museums show author biopics and novel adaptations etc. These sorts of typical hybridization of institutions and of the media form a new wide literary scene, and literature is now mediated not only by the public libraries or via printed books (Lund 2012). All these examples illustrate institutions' mediating, but also todays celebration practice, stage production, cultural experience and active tourism as well. Literature is an utmost efficient participant on these hybrid scenes.

Some conclusions

As all museums the literary museums must balance between scholarly accountability and popular presentation (cf. Wehnert, p. 181), between knowledge and experience tourism, between aesthetics and identity thinking, between the material and the digital. All with their specific circumstances.

The above mentioned developments in recent decades can be seen as reactions to how print culture and literary tradition have lost much of its former self-evidence, authority and prerogative, and its long-lived communication patterns have been challenged by visual media, new orality, digital forms, other literacies etc.

The raison d'être for literary museums – especially the numerous author museums – is on one hand to counterbalance the anonymity of the mass-printed literature via unique specimens and typically handwritten things left behind, and on the other hand to get the sublime, immaterial and aesthetic literary texts down to earth by attaching them to a concrete place, an ordinary home, bed, typewriter etc. And to bring out an aura of both these sides.

Literature is as language not very material, nor the literature tradition as a past; what the dedicated museum guests bear, is mostly a large invisible ballast of reading and a beloved mental imagination universe – not very material neither. This starting point/essence the museum of literature and authors have to cope with, and to install and visualize; every simple component: letters, imaginations, silence, feelings, voices etc. must be given a sort of material form to fascinate in a museum.

Facing today's digital conditions with multimedia, interactivity, hyperlinking, web-exhibitions etc., the discussion raises the question whether the most interesting and fascinating of the literary museums' content may be the non-digital, and how non-material digital mediations/representations/texts can and must operate.

Furthermore, important parts of literary studies and aesthetics move in the direction of a museum universe, and this may help not only literary museums themselves to focus the importance of language/text use, but also other museums in their practice.

As methodology guidelines for vitalizing museums of this field one may propose: Securing scholarly and aesthetic literary qualifications/professionals within the institutions; distinguishing between author and text, focusing the impact and context of the latter; accepting author name as popular and unavoidable and thereafter deconstruct it; focusing the non-author related components of literature and demystifying the genesis of literature; accepting the wealth of available records but not let them raise the issues; acknowledging national identity attached to language and thereafter deconstruct it; bringing out the modern book history paradigm with amongst others an important concept of transmission; looking after that literature is easily movable as an object; focusing the performance potentialities of literary texts.

The ongoing growth of literary museums holds the cultural heritage' field's most ready concretization of literature, the literary history field's most user-friendly strategy and the museum field's most clear answer to a changing situation of language. Whereas not much research, theory or methodology, so much is in progress that these museums will attend to a greater part of the tradition mediation.

References

Asdal, K. et al. (2008.) *Tekst og historie. Å lese tekster historisk*, Oslo: Universitetsforlaget.
Bjerring-Hansen, J. & Jelsmark, T. (red.) (2010). *Boghistorie*. AUF: Gylling.
Casey, E.S. (1997).*The Fate of Place. A Philosophical History*. Berkeley, UCP.
Gfreris, H. (2008). Didaktik des Schweigens. *Der Deutschunterricht*, No. 6, p.2-17.

Gumbrecht, H. U. (2004). *Production of presence, what meaning cannot convey*. Stanford: SUP.

Herbert, D. (2001). Literary Places, Tourism and the Heritage Experience. *Annals of Tourism Research*, Vol. 28, No. 2, p. 312-33.

Jalving, C. (2011) *Værk som handling, performativitet, kunst og metode*. København: Museum Tusculanum.

Lund, N**.** D**.** (2008). Thomas Mann und kein Ende**.** Bogkulturens institutionalisering, efterlivet**s** vidensorganisering og forfatterskab som kulturarvssymbol**.** *Dansk Biblioteksforskning,* No. 3, p. 17-27.

Lund, N. D. (2012). New scenes and houses for literature – A challenge for cultural and public library policy? http://www.iccpr2012.org/proceedings/images/pdf/Niels_DLund.pdf

Lund, N. D. (2014). En stor litteraturinstitution. Deutsche Literaturarchiv Marbach. *Magasin fra det Kongelige Bibliotek*, 27. Årg., No 1, p. 33-46.

McKenzie, D. F. (1999). *Bibliography and the Sociology of Texts*. Cambridge: CUP.

Museum der modernen Poesie (1960). Enzensberger, H M (Hrsg), Frankfurt am Main: Suhrkamp.

Museums and Spirit of the Place. Proceedings of the ICLM Annual Conference 2012. (2013). ICOM, Paris: Yasnaya Polyana Publishing House.

Wehnert, S. (2002). *Literaturmuseen im Zeitalter der neuen Medien. Leseumfeld – Aufgaben – didaktische Konzepte*. Ludwig: Kiel.

NODEM 2014 Conference & Expo
Engaging Spaces. Interpretation, Design and Digital Strategies
December 1-3, 2014
Warsaw, Poland

Editors: Halina Gottlieb, Marcin Szeląg
Editorial assistant: Tomasz Niziołek

nodem

DESIGN
& DIGITAL
HERITAGE
CONFERENCE

WWW.NODEM.ORG

nodem@nodem.org

Twitter: @NODEMNetwork
Flickr: NODEM NETWORK
YouTube: NodemNetwork