Collecting Memories of the Museum Experience

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Abstract

When we go to the museum, we see many interesting objects that have fascinating stories related to them. However, visitors do not often share these experiences with people that have not visited the exhibition. Sharing is beneficial both because it can create interest and attract people to the museum, and because it can help people who cannot attend the visit (for example, is physically unable to do so) to still enjoy it. We were interested to understand the extent and motivation behind sharing (or not sharing) and test how to encourage visitors to do so. We conducted and are conducting various surveys and trials, for which we report the preliminary results in this paper. Initial findings show that i) people today rarely share their visits for lack of content to complement their storytelling, and ii) by providing visitors with a simple and easy-to-create virtual photobook with their dearest memories from the visit we can significantly enhance this sharing.

Author Keywords

Museum Experience; Sharing; User Studies

ACM Classification Keywords

H.5.m [Information interfaces and presentation]: Experimentation.

Introduction

Today, most museums are trying to offer visitors more than just a simple visit where they perceive artifacts and their meanings. They try to make the museum visit an unforgettable experience to be lived even outside of the museum environment and that can be shared with family and friends. The main reason to support this sharing is two-fold: first, by creating interest and a buzz about an exhibition, museums can get more people to come visit; second, museums have a commitment to reach out to those that, for various cognitive or physical limitations, find it impossible or impractical to visit an exhibition.

The goal of this study[1] is to understand *if* and *what* people share about their museum visits with their friends and family members, and to identify which technologies can increase the effectiveness of the sharing (the shared material to be attractive for non-visitors) and yet not to disturb the visitors in their visit, that is, avoid reducing the quality of the experience during the visit. More specifically, we study how sharing occurs before, during, and after a visit. Under *sharing* habits we include declaring an *intention* to go to an exhibition at a given time and date, sharing the *impressions and emotions* during the visit, and *storytelling* about the exhibition after the visit, possibly supported by content (text and images) that can make the story more easily consumed and enjoyed by non-visitors.

The research has been conducted in collaboration with the Trento's Museum of Sciences[2], during the Homo Sapiens exhibition[3], and has been divided in four phases. First, we studied sharing habits with face-to-face interviews to

museum's visitors. Second, we did a follow-up study where we sent an email questionnaire to the participants in the first study in order to find out what they actually did share after their visit. The third phase included a potential solution, where we designed and tested several user interaction techniques through which sharing can be facilitated. Forth, we sent an email questionnaire to the participants in the the third phase to find out whether the developed solution was attractive and interesting for the visitors, as well as to ask for possible improvements.

After a short discussion of related work, we discuss how we run the studies and did the design, and what we found.

Related work

Over the years, we have seen several museums experimenting with different ways of prolonging the museum experience and facilitating its sharing after the visit. Bookmarking has been the primary tool used to capture the experience, and it has been ported to different platforms [2]. These platforms range from online websites, where people can bookmark the virtual representation of exhibits, to computer or interactive kiosks and personal mobile devices used inside the museum, where people can bookmark the objects directly when watching them.

Prominent examples are the *Multimedia Tour*[8], an application developed for the permanent collection at Tate Modern, and the *GettyGuide*[1], multimedia kiosks in the J. Paul Getty Museum; tools that provide visitors the option to email home links with detailed information on the bookmarked artefacts. *Rememberer*[4], a tool deployed at the Exploratorium for capturing museum visits, enables visitors to capture information about exhibits while they are visiting the museum and later, after the visit, allows them to access the exhibit

information on personalized web pages. It uses RFID card (Radio Frequency IDentification) to implement the bookmarking and a PDA in order to allow the users to immediately visualize the links they bookmarked (to enhance the actual experience as well). The *eXspot system*, an evolution of the Remember tool, removes the PDA device and replaces it with a registration kiosk physically present in the museum[5].

Interesting studies have been conducted on these platforms. Some studies address the participation and effectiveness (e.g., [2] [6]) raising some questions about the actual value of the deployed solutions. These studies point to some factors affecting participation as i) lack of interest and time from visitors, ii) visibility of the deployed systems and iii) transparency and simplicity [2]. Other studies point to the type of exhibit being an important factor for deciding on the bookmarking platform[3]. Therefore, any successful system should consider the exhibits settings, the visitors and their intentions and the technical solutions.

What the above suggests is that a clear understanding of the nature of sharing to identify if, what, why, and in which context people share is key to the development of technologies to capture and share the museum experience. However, this issue has received little attention in the literature. While existing studies are very interesting in their own right, a complete study from sharing intention, design and prototyping to participation and sharing behavior is still missing.

Preliminary Experiments

We started our experiments by trying to understand if and how people share today.

Sharing the visit

Figure 1: What people share, results from interviews.

Phase I: Method and sample
We began the study by conducting face-to-face interviews at the museum from the 1st to the 4th of November 2012. Overall, 1997 people visited the museum, counting also children, from which we collected 307 interviews to adults. About 166 were families, while the others were adults that visited the museum both individually and in small groups. Overall, we therefore interviewed approximately 40% of the visitors, excluding children. This distribution of visitors is due to the specific type of museum and temporary exhibition at the time of the interviews. In each interview, we went through a questionnaire[4] explaining the questions and marking the answers. The main purpose of this initial survey was to get feedback from people on how they typically share.

Phase I: Results
From the collected answers, we found that only 19% of visitors take some notes during the visit, mainly in form of photos both as memory of interesting exhibits and as notes of interesting content (i.e., the information exposed in panels). Most people share emotions (just telling what they found interesting and how they felt while experiencing them) but many also stated that they share content as well, like notes, pictures (both personally took or bought in the shop) and books, as shown in Figure 1. We initially found this result surprising given the small number of catalogs purchased (55, after nearly 2000 visitors) and the occasional nature in which people took note. Even if in this study we asked what people typically share and not how they behave in this specific exhibition, this raised the suspicion that the question was improperly worded and specifically that the question might be understood as sharing content by talking about it rather than telling and showing, based on some pictorial
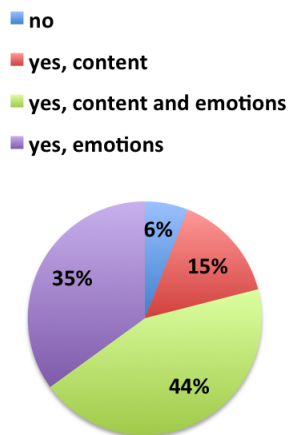
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[4]http://alturl.com/j3u7c

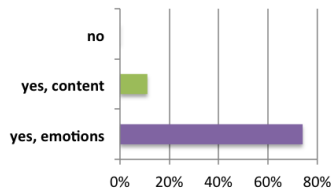**What did people actually share after this visit?**

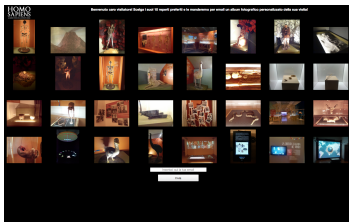**Figure 2:** Answers about sharing after the Homo Sapiens visit.

Figure 3: Big monitor interface.

Figure 4: Web interface for consuming the virtual visit, example of one exhibit.

representation of an object. Finding this out was indeed the purpose of phase II, discussed next.

From these information we understand that i) people don't take notes even if photos are allowed, and ii) since the collected memories are few, people share mostly emotions.

Phase II: Method and sample
One week after the interviews at the museum, we prepared a follow-up questionnaire[5] asking people if, what and how they shared their experience at the Homo Sapiens exhibition. We sent it by email to the 307 visitors interviewed in the first study and we received 87 answers.

Phase II: Results
We essentially found out that 90% of the people only share through verbal narration. So, even if they talk about objects, they describe them rather than showing them. Narration with the help of books and material was at 10%. Indeed, based on the actual recollection of what people did in the week after the visit, only 15% stated that they shared content (see Figure 2). From this we concluded that visitors share emotions (and sometimes content) verbally but they do not use any material as a support for storytelling. The study further revealed that visitors do not share the emotions "virtually" on the social networks (e.g. Facebook and Twitter), and that museum web resources are used mainly for logistic information.

From these results we concluded that there's a lack of interaction design that makes it easy and fun for people to share content and emotions during the visits, and a lack of simple ways to easily consume shared information, especially by older adults and people who find it more difficult to visit in person.

[5]http://alturl.com/bor2n

Experiment on Non-intrusive Bookmarking and Sharing

We decided to address what seemed to be a major limitation of today, that of being able to have content easy to access and consume that we can use as the basis of storytelling. We studied several ways of doing so, with the goal of allowing in any case at least one option that is non-intrusive during the visit and one that can be low-tech and low-cost, which can be leveraged by persons without smartphones and do not require museums to give devices to visitors. The basic idea is simple: devise a solution through which visitors can bookmark or "save" what they like, and can then easily access it and share with family and friends. We argue that simplicity and non-intrusiveness are the key design criteria, as we worked on the assumption that if *bookmarking*, *accessing*, or *experiencing* gets any complex we run the risk of reducing usability and usage. This is particularly important as one of our target non-visitor groups are older adults.

We developed three ways for bookmarking and sharing artifacts during the visit, adapted for different types of visitors: i) a low tech method for non-tech people: visitors mark on a printed form all the preferred artifacts; ii) a big screen application: visitors can select the preferred artifacts from a big screen positioned inside the museum (http://comealong.me/sapiens/touchscreen/#/, Figure 3); iii) a smartphone application: visitors could use their Android smartphone to read QR codes and NFC tags associated to exhibits to get right there extra information and select the favorites. By using all these interfaces in the museum, the visitor receives by email the link to a webpage where he/she can consume and share the bookmarked content (e.g., http://comealong.me/sapiens/playback/#/visit/47281fsdh1, Figure 4).

Bookmarks per visit
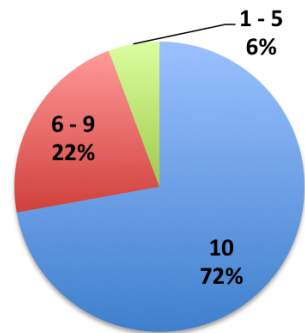
Figure 5: Percentage of visits per bookmarks range.

Number of accesses to the photobook
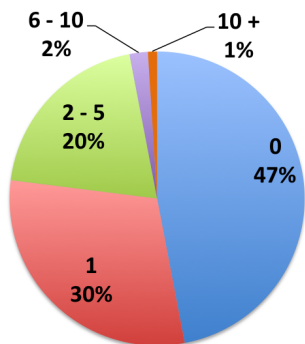
Figure 6: Percentage of virtual visits that have been accessed by range of accesses.

Phase III: Method and sample
We tested these new bookmarking feature at the Museum of Sciences during the Christmas holiday, from the 4th to the 6th of January 2013. In these days, the museum had more than 1100 visitors. We collected bookmarks of more than 300 visits, most of them corresponding to a family or a couple, and very few people refused to use this service.

Visitors were approached at the entry by a collaborator that introduced the possibility to select at maximum 10 favorite exhibits and to receive by email a personalized photobook with the selected objects. The different ways were explained starting from the most technological one.

Phase III: Results
The interest in the bookmarking feature was high and many visitors were really happy of this opportunity, mainly for sharing the information with who was not coming at the museum. Many of the visitors tried to collect as much memories as possible, selecting carefully all top 10 displayed objects. In fact, only 6% of small groups selected between 1 and 5 favorites, while 22% of visits have from 6 to 9 favorite artifacts and 72% of collected visits contains 10 bookmarks, the maximum (see Figure 5). Although possible, only approximately 1% of the visitors marked their choices on paper. What we are more interested in is understanding whether people really come back to relive their visit and whether they show it to their family and friends. As can be seen in Figure 6, in the few days next to the museum visit only 53% of people read the museum email and accessed their virtual visit. On the other side, it is promising the fact that 23% of people accessed their photobook more than once.

The mobile application was used only by very few people due to the problems with wi-fi and 3G connection: the network power inside the museum was reduced due to the

museum's old building. Because of this, the application was used only by less than 10 people and it will need to be tested more before getting meaningful results.

Phase IV: Method and sample
One week after we tested the bookmarking feature in the museum, we prepared an email questionnaire[6], asking the visitors if and with whom they shared the photobook. We sent it to 308 visitors that had bookmarked at least one artifact, regardless of whether they had accessed their virtual visit or not. We received 79 responses.

Phase IV: Results
From the collected answers we found out that more than 50% of the participants in Phase III shared the personalised photobook with friends and relatives, 7% using social networks, 19% sending the link of the photobook to others, 27% showing the photobook to others directly on their computers. (see Figure 7).

The most common motives for not sharing the photobook were lack of time (37% of the sample) and technical problems with the photobook (29%). The questionnaire also revealed that the photobook could be improved in several ways: more detailed information in the photobook, additional photos, links where visitors can find additional information, and more interactive games.

Preliminary Findings
In order to estimate the effect of our approach on the sharing habits of the visitors, we did a comparison between the results obtained from Phase II (before our approach was introduced), and Phase IV (after the visitors had to opportunity to relive the experience) by calculations of the odds ratios [7]. For the analysis we

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[6]http://tinyurl.com/bdopu4w
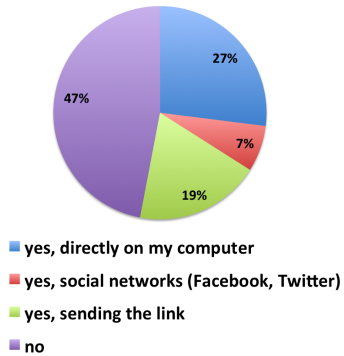
Sharing the photobook

Figure 7: Percentage of visitors sharing the personalised photobook.

used a confidence coefficient of 1.96, which resulted in a 95% confidence interval.

Our goal was to determine if due to our approach there is an augmentation of i) the total number of visitors sharing the experience after the visit, ii) the total number of visitors sharing the experience using the social networks.

Table 1: Number of participants sharing their experience in Phase II and IV [7]

	did share	didn't share	total number
Phase IV	37	42	79
Phase II	14	79	93

Compared with visitors in the Phase II, visitors in Phase IV had an odds ratio of sharing of 4.97 and confidence interval (CI) of (4.62, 5.32). Because this CI is much narrow, we conclude that estimate is precise and with 95% confidence we conclude that we have an increase of 397% in the general sharing. Similarly, the sharing on social networks increased by 19% given an odds ratio of 1.19 and confidence interval (1.17,1.21).

Table 2: Number of participants sharing their experience on the social networks(Facebook, Twitter) in Phase II and IV.

	did share	didn't share	total number
Phase IV	5	74	79
Phase II	5	88	93

Preliminary Conclusions and Current Work

The study has told us that visitors find it easy to collect content and go home with a virtual booklet. However, this is only a preliminary study with several bias that must

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[7] For the purpose of this analysis, only visitors that shared content.

be removed, among which the presence of personnel guiding the visitors and the specific type of museum.

From the experience with visitors, we can say that people like the idea of bringing home information about the exhibits, but we don't have enough information about visitors different than families with kids and in museums different than natural science museum. For this reason, we will run a similar studies in museums of different kinds.

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