Gifting as a Novel Mechanism for Personalized Museum and Gallery Interpretation

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Abstract. The designers of mobile guides for museums and galleries are increasingly concerned with delivering rich interpretation that can be personalized to meet the diverse needs of individual visitors. However, increased personalization can mean that the sociality of museum visits is overlooked. We present a new approach to resolving the tension between the personal and the social that invites visitors themselves to personalize and gift interpretations to others in their social groups. We tested the approach in two different museum settings and with different types of small group, to investigate how visitors personalized experiences for one another, how the personalized experiences were received by visitors, and how they worked as part of a social visit. We reveal how visitors designed highly personal interpretations for one another by drawing inspiration from both the exhibits themselves and their interpersonal knowledge of one another. Our findings suggest that the deep level of personalization generated by our approach can create rich, engaging and socially coherent visits that allow visitors to achieve a balance of goals. We conclude by discussing the broader implications of our findings for personalization.

Keywords: Museums · Galleries · Personalization · Interpretation · Collaboration

1   Introduction

Each and every visitor to a museum or art gallery brings their own unique set of characteristics, motivations, preferences and understandings. The growing use of modern technology to support the visit gives visitors access to large volumes of online content and the ability to look up diverse information about exhibits. This runs the risk, however, of overwhelming visitors with more information than they can process while visiting, which is why it is increasingly common to turn to automated personalization, where the vast amounts of content available are filtered or adapted to meet the needs of individual visitors.

A wider trend in museums and galleries has seen curators and exhibition designers move away from providing a single interpretation of exhibits, intended to support as wide a range of visitors as possible, towards helping visitors to engage with multiple,

and possibly contrasting, interpretations and narratives, and even providing material that supports visitors in making their own interpretations.

Personalizing the museum experience can be a uniquely challenging task that can work on two levels: first, a system might provide personalized exhibit recommendations, filtering large collections to support the visitor in engaging only with exhibits that are of interest or relevance. A second opportunity for personalization is the interpretation of exhibits: information or resources that help visitors make meaning. There are many ways of tailoring interpretation to the visitor, from a simple change of language to a focus on the visitor's goals, which might be to learn about a particular topic or to have a good day out with friends.

A further complicating factor is that most people visit museums not alone, but with small groups of friends or family [10] and the social context of a visit can shape how artifacts are experienced. Audio guides can inhibit group interaction even when shared [1], and studies of groups visiting museums has revealed the challenges arising from splitting attention between the museum content and the needs of fellow visitors, which can see visitors being 'dragged away' from their interactions with exhibits in order to maintain group coherence [21]. Attempts to personalize content to individual visitors need to respect the complex social nature of visiting. For example, might tailoring information to individuals heighten existing tensions around group cohesion? Alternatively, might we find ways of using personalization to actually enhance the social nature of the experience?

Motivated by these observations, we explore a new approach to personalization that aims to support rich individual interpretations while at the same time enhancing the social experience of visiting. In this paper, we propose an approach that harnesses the interpersonal knowledge contained within groups of visitors to generate experiences that are at once personal and social. We realized this by inviting visitors who knew each other well to design personalized experiences as gifts for each other, drawing upon their knowledge of one another's interests and backgrounds to tailor interpretations. We draw upon two studies in which we tested this approach with different types of small group, before discussing what our findings mean for personalization in group visiting.

2   Related Work

There is already an extensive body of literature related to personalization in museums spanning the building of user models, matching content to users, and supporting groups.

Visits to individual museums are often one-off and relatively short-term activities, which makes it difficult for systems to build up knowledge about a visitor. Methods of obtaining information on visitors' interests and behaviors include asking the visitor to fill in a questionnaire [6] and assign themselves an avatar [20] or category [11]. Context-aware systems typically gather information without the visitor's input, by monitoring the user's behavior [16] or location [17].

Once the system has gathered information about the user, its next task is to deliver content that best matches this model. Collaborative filtering techniques have been used to recommend exhibits based on comparing paths and visit times to those of other visitors [4], while content-based approaches have been used to match user-generated tags to official curatorial descriptions, to deliver personalized content [9]. Semantic web technologies have also been used to advance these methods, for example by increasing the range of recommendation to include semantically linked artifacts and objects [22].

The relationships between visitors have been exploited in social recommender systems by employing user tags as a basis for recommending content [5], however personalized systems have yet to sufficiently address the challenges arising from group visiting. One visiting guide for tourists combined preferences from multiple group members to recommend city attractions for the whole group to visit [3]. The recommendations were based on the group members' general interests and practical requirements, but did not need to address the additional complexity involved in delivering tailored interpretations for groups or advancing social coherence during the visit. Support for groups visiting museums has included allowing visitors to make connections with others around exhibits [7], sending messages to one another [13] and sharing expressive responses [14].

We sought to build upon previous research to address the combined problem of delivering personalized interpretations in a way that accommodates group visiting. In this paper, we present a novel mechanism for personalizing interpretations that invites visitors to design and gift personalized experiences to other members of their small groups. We report on two studies testing this approach, detailing how visitors personalize museum experiences to one another, before discussing the implications of our results for personalization in museums and galleries.

3   Our Approach

3.1   Motivation

Our approach is motivated by the age-old practice of gift-giving. Gifts are exchanged between people for reasons of obligation and reciprocity, but the practice is also important in building relationships and human solidarity [15]. To buy or make a gift for somebody involves reflecting upon the person's interests, personal characteristics and the relationship between gift-giver and recipient. Choosing a gift in this way imbues the gift with emotional and instrumental meaning for the giver and recipient [19] which may be explained or alluded to in the exchange. The gift exchange is a strongly social occasion that involves a gift-giver, a gift-recipient and possibly onlookers, and involves the recipient carefully managing assessments to decode the gifter's intent and give an appropriate response [18].

It's not uncommon for people to visit attractions such as museums as part of a gift experience, treat or holiday, and the literature tells us that gifting is a powerful mechanism that involves deep personalization and is embedded into a social occasion. We therefore hoped that by bringing the two together as a novel mechanism for

personalizing museum experiences within groups, we could create deeply personal experiences that are also inherently social.

Our approach involved inviting visitors to choose exhibits for another and then design interpretations of those exhibits that were specifically tailored for others they were visiting with, to be delivered as part of a mobile guide. We anticipated that visitors could use this method of personalizing gift experiences from one person to another to communicate interpretations that were tailored to visitors by drawing upon interpersonal knowledge of one another, facilitating experiences that are at once personal and social.

3.2   Design of the Experience Template

Instead of asking visitors to design an interpretation from scratch, we provided a template to use as a basis for their gifts. Our template was based on a previously designed experience for pairs of visitors at a sculpture garden [12]. The experience consists of a tour of a set of sculptures with, for each sculpture, a curated music track, an instruction for how to engage with the sculpture, and a portion of text to read after engaging. The delivery of the different components of the experience was structured to support social interaction between pairs of visitors using mobile audio guides. This provided a template that required visitors to choose a set of objects to visit, and for each object, a piece of music, an instruction for how to engage and a portion of text. It was then our job to take the visitors' designs and produce a mobile guide that delivers the content.

3.3   Study Design

We explored the opportunities and challenges associated with this approach through two formative studies, following an 'in the wild' approach [8]. The first study investigated pairs of visitors, while the second looked at scaling the approach to larger groups of friends and family. Our studies involved two stages of participation: an initial design workshop and a second visit where participants were able to use the experiences that we produced from their designs.

Participants and Design Configurations
Study one: Pairs of visitors at Nottingham Contemporary art gallery
   Our first study looked at pairs of visitors. We recruited eight pairs to take part, six of whom were romantic partners and two of which were close friends. Of the 16 participants, ten were aged 20-29, four were aged 30-39 and two were over 50. One member of each pair was invited to design a personal tour for their partner, who came along to use the experience once it was designed.

Study two: Groups of three or more visitors at Nottingham Castle Museum
   Our second study was designed to extend the approach to larger groups of friends and family. We recruited twelve groups of 3-4 people: six groups of 3-4 friends who knew each other from University, art appreciation groups or were old friends, and six

families that included one or two adults and one or two children. Of the 20 participants that made up the adult groups, 13 were aged 20-29, three were aged 30-39 and four were aged over 50. In the family groups, all of the parents were aged 30-49 and the children were aged between three and ten. This time, we invited all group members to design part of a tour. Each member chose one object for each other member of their group, designing the interpretation resources with that person in mind. The designs were collected together and delivered together in a mobile tour for the whole group to use. Four of the six family groups decided to pair up so that children and adults could help each other with the design task.

Design Workshops

Both of our studies began with an initial design workshop held at the museum or gallery, where a workshop facilitator guided the visitors through the design process. The workshops were audio-recorded and we also collected participants' written responses to a set of worksheets used to help generate and structure ideas. The participants were first asked to identify one or more broad aims for the experience they were designing, thinking about the person they were designing for, before browsing the exhibition to select objects they thought would meet these aims.

The participants were then able to design the resources that would make up the personalized interpretation to support the objects: a piece of music, an instruction for how to engage and a portion of text. For each of these, the design work was structured by first asking the participant to think broadly about the type or style of that resource, before considering different possibilities and settling on a final selection. So, for music, participants were encouraged to think about what style or genre might be most effective in suggesting the theme or overall idea they wanted to communicate, then narrowing down to a specific track by listening to tracks online. To choose an instruction, participants were encouraged to think about what style of interaction would be appropriate for their design, for example a physical action or a thought exercise, before deciding on a specific interaction and phrasing for the voice instruction. Finally, they were prompted to consider what style of text to include at each object. This might be a portion of factual information or a more personal message. They then found or wrote the portion of text that would be used in the experience.

Implementation

The participants' designs were implemented into individual smartphone applications using the AppFurnace prototyping tool [2]. We recruited a voice artist to record the instructions that were designed, and mixed these into the introduction of each music track. Given that visitors were finding their way around a constrained gallery space, we chose to present them with a list of exhibits to visit, with a suggestion of where they were, and assumed they would be able to find them for themselves rather than requiring the support of an automated navigation service.

Visits

The participants were invited back to the museum or gallery to use their experiences together in their pairs or groups. We briefly showed them how to use the guide before leaving them to explore the exhibition at their own pace while we video-recorded them from a distance. Once they had completed their visit they were invited to take part in an interview in their groups, asking each of them to reflect on the episodes of their visit.

Analysis

We captured a rich set of data for each group of participants, beginning with audio recordings of the design workshops and the worksheets that participants used to plan their designs. These provided a record of how participants designed interpretations for each other, tracking their motivations, ideas and final designs. We captured video recordings of the participants using their experiences, which were analyzed ethnographically to review how each group interacted with each other and the objects they visited. Over a number of data sessions we were able to summarize what happened over each visit, based on our analysis of participants' interactions, gaze, gesture and utterances. The interview data was used in conjunction to expand on what we saw, collecting visitors' own accounts of their experience at each stage of the visit, and their reflections on the personalized content.

4   Findings

Over the two studies, 49 participants took part in the design of 122 interpretations. Of these, 111 were tried out by the intended recipient (one group of participants in each study was unable to return to use the designed experience), and 110 were completed to the point where the music track faded out and the text was read (in one case the recipient prematurely disengaged with the experience by removing his headphones). In all but one case, the groups reported enjoying using the experience - one pair in our first study found the experience too restrictive. We now present our findings to explore three key areas of interest: how visitors personalized to one another, what it was like to receive a personalized gift, and what it was like to use the experience in a group visit.

4.1   How did Visitors Personalize Experiences for Each Other?

Visitors were able to personalize experiences for one another on a number of levels. Participants in study one, who designed a tour of five objects for their partner, first identified an overarching type of experience they wanted their partner to have. Three main types of experience were cited: *personal* experiences that delivered a personal message; *educational* experiences that were crafted to give information; and *emotional* experiences, designed to suggest an emotion such as enjoyment. Most participants, in describing the type of experience they wanted to design, used a combination of these types, for example a "personal emotional journey" or "a fun experience that might teach him something new".

Participants in both studies then chose objects from the exhibition to form an experience for their friend, family member or partner. Their reasons for choosing particular objects were varied. For participants in study one, the objects were often related to the overall theme or type of experience they had chosen, but in both studies the choice was also guided by the participants' knowledge of the person they were choosing for. This knowledge could relate to the person's interests, their personality, their background, or their beliefs and values. It was often also necessary to draw on their own knowledge and the way they interpreted the objects themselves, choosing something that they found interesting or knew something about, and so were able to offer a useful insight. The selection process therefore involved browsing the exhibition, engaging with objects to draw inspiration, until the participant found a suitable match between their knowledge of the person they were choosing for, their own ideas for a particular theme, the properties of the object itself and how they interpreted the object. Figure 1 shows how the choice of object, and resources, was influenced.
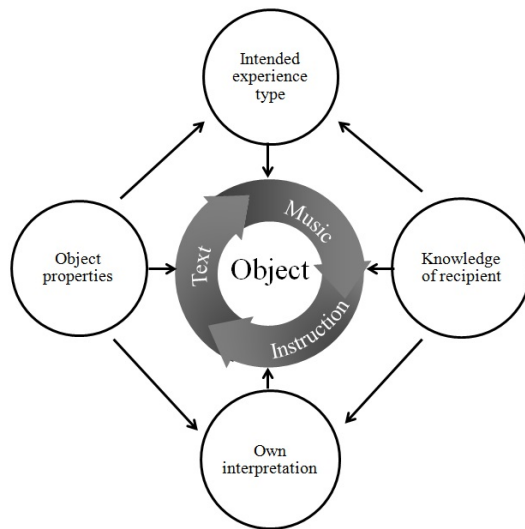
Fig. 1. Factors influencing a participant's design of a personalized experience including choosing an object and a piece of music, an instruction and a portion of text

Next, the participants chose the resources that would accompany the object in the experience to provide an interpretation: a piece of music, an instruction for how to engage and a portion of text. The key influences on the participants' choices for these resources were the objects themselves and their knowledge of the person they were designing for, but the resources were also chosen to support one another, for example a participant might choose a piece of music and an instruction to complement each other to suggest a particular theme or idea, and then a portion of text that expanded on the theme suggested in the music and instruction. The particular reasons for choosing resources were not straightforward, and we now consider each resource separately to understand more about participants' choices.

Music was often used to reflect themes brought up by the object or to set a particular mood or emotional tone. These themes or moods were set by the participants' own interpretations of the object, which in turn were influenced by the participant's knowledge of the recipient – since they were interpreting the objects in relation to the person they were designing for – and their overarching ideas for the theme or type of experience. The music choice tended to be a piece that was known and liked by both the designer and recipient, and matched the interpretation the designer wanted to get across. For example, in study two, participant C chose *Homeward Bound* by Simon and Garfunkel to accompany a decorative tea pot chosen for her friend D, stating that she thought it was about "home and comfort". Other times participants drew inspiration directly from the object itself, choosing, for example, a traditional piece of music from the era or culture the object belonged to, which was the case for participant E who chose to set a Japanese arrow quiver to a piece of traditional Japanese music.

The choice of instruction was also used to set an emotional tone for how the object would be experienced. Participants were given a free choice, but were told that their instruction might involve doing something physical or something thoughtful, or a combination of the two. Generally the participants considered the person they were designing for and how they would respond to the instruction type – some thought the person they were designing for would respond well to a physical engagement while others thought the person would prefer to do something less conspicuous. Again, the inspiration for the specific instruction came from the object's properties, the intended theme or type of experience and the participant's interpretation of the object. Instructions included to "Strike a pose, like one of the chess pieces" (for a Chinese chess set chosen for a mother for her son), and to "Pretend you are at a grand tea party, and think about all the rich and pretentious people you'd meet" (for a tea caddy chosen by a female participant for her friend).

Finally, the text, to be displayed after the music and instruction, was used by participants to wrap up the experience, delivering factual information they had found about the object or explaining their interpretation or reason for choosing it. It tended to follow on from the other resource choices – for example, one participant, after instructing his father to think about what an object was used for, chose to explain "This curved spike was twisted into the elephant's hide to make it behave in a certain way. I thought that you would put a piece of fruit on the spike to tempt the elephant to go in different directions as the elephant would respect you more." Text was also used to deliver personal messages, for example, "I feel this sums up a part of your character and is a nice object to link our friendship…"

Design Example

We now turn to an example from our first study to illustrate the process of designing an experience for somebody. Here, participant A designed an experience for her boyfriend, B. She wanted it to be "a fun experience that lets him see himself through my eyes", and also that would teach him something new. She chose a working version of a Wurlitzer SideMan drum machine, because she thought that being an engineer, B would "like seeing all the inner workings of the machine" and might find its movement "therapeutic". Her interpretation of the object was that it was "calming" and

made her aware of the passing of time because of its rhythmic drum beat. Although A perceived the drum machine as slow and steady, she chose a more briskly upbeat song that she felt could convey the potential of the drum machine, and was also a direct reference to the object: *Wurlitzer Jukebox* by Young Marble Giants. When designing the instruction, A said, "I'm thinking about the person I'm doing this for and I know he will not want to do anything that draws attention to himself." She therefore instructed him to "look closely at all the wires and watch the movements. Take off your headphones and listen to the drum machine," which she thought would engage him with the object and set a therapeutic tone. She chose to then give information about the drum machine which she thought B would find interesting: "This is the first drum machine ever made. A knob selects one of 10 preset combinations of sound to create patterns such as Tango, Fox Trot, Waltz, and so on. One setting just produces a metronome click. Shall we dance?" The references to dancing, A said, related to their recent commencement of a series of ballroom dancing classes.

4.2   What was the Effect of Receiving a Personalized Experience?

Our findings show that visitors were generally able to design experiences for one another by drawing inspiration from the exhibits themselves and their knowledge and feelings towards the person they designed for. One of the goals of personalization is to match content onto a model of the user, so we were interested in how well the designs that visitors came up with met the tastes and requirements of the visitors they were designed for. In the interviews that followed the visits, we asked the recipient of each exhibit experience to comment generally on how they found it, and particularly whether they felt the personalization towards them was successful.

On some occasions, visitors noted how the object chosen for them was particularly in line with their tastes or interests, for example because "the colors were right, the patterns were right and everything fitted with things that I do like". Our approach also generated objects that were not to the recipients' tastes, and this came about for a number of reasons. First, it was often the designer's own knowledge and tastes that guided their choice of object, rather than just the recipient's (e.g. one participant had recently read about the history of an artwork and wanted to share the story with her partner). Recipients were generally able to pick up on when this had happened, and find value in these objects for that reason, for example one commented: "It was nice to sort of have an insight into how somebody else has viewed a thing, what they've thought about." Other times, the choice of object was intended to raise a personal issue rather than simply satisfy the recipient's tastes, and recipients were often surprised to find out the reasons they were chosen. For example, a seven year old boy chose a sword in response to a memory he had of his father's time in the military. The father commented that upon finding out the reason: "I felt special that it was chosen for me, and that it wasn't just chosen at random. It was a thought through choice and it had a link to his understanding about my interests". These objects tended to provoke recipients to reflect on the deep interpretations gifted to them in light of their relationships with those who had designed them.

4.3   How did It Work as a Group Experience?

In both studies, all of the group members were given a mobile guide with the same set of gifts, regardless of who designed for whom. The interface presented the set of objects in a list, however the order in which they were chosen was not enforced, so each participant could choose to follow the order presented or choose their own order.

Our studies saw the groups of participants organize themselves in various different ways. Six of the seven pairs who used their experience in our first study negotiated the experience together – visiting the same objects at the same time - while one split up as was their usual visiting pattern. In our second study, the groups of 3-4 people organized themselves much more fluidly. Some groups, including two of the groups of friends and all but one of the families, stayed together for the entire duration, but we also saw groups splitting up for the whole visit or separating and coming together more flexibly, or splitting into subgroups.

Unsurprisingly, we saw the highest levels of social interaction between the groups that stayed together for the visit, who worked together to navigate between objects, coordinate starting each experience, share reactions and reflect on the interpretation. We also observed social contact between the visitors who visited separately, either when coming into contact by chance or expressly seeking one another out to share reactions to each others' designs, ask questions and offer additional explanations.

Our analysis of the video observations suggests that by giving visitors a semi-flexible framework in the form of the mobile guide, they were able to generally organize their own structure for the group visit, thus accommodating a range of changeable visiting styles. Giving each group member control over their own experience – rather than enforcing a coordinated visit – reflects previous findings that highlight the tensions that arise when managing group coherence [21], not by getting people to stick together, but by allowing them to flexibly order when and how things are done and by whom for themselves. The unveiling of personalized gifts throughout the experience added richness to social interactions across the different visiting styles.

5   Discussion

Our research aims to address how museum and gallery interpretation can be personalized in a way that supports group visiting. In this paper, we have explored the novel mechanism of gifting between those who visit together, and our two studies have provided evidence that this is a powerful approach for generating personalized experiences within groups. By drawing on not just the visitor's general interests, but their personal characteristics, shared memories, relationships and issues, we saw many examples of a 'deep' personalization that connected the museum experience with these aspects of visitors' lives.

Our approach generated a uniquely different kind of personalized experience than has been seen in previous research. We saw instances where the personalized gifts markedly did not match with the recipient's interests or tastes, but, through provoking interest or revealing the careful thought that had gone into choosing it, were valued nonetheless. We also found the approach generated gifts that were matched to the

person giving, or, in particular, the relationship between the giver and recipient. This allowed visitors to find personal meaning in their interpretations of exhibits, and also to use the museum experience to comment on wider issues in their lives. This is not to say that the focus was shifted entirely from learning about the exhibition content; our studies provide evidence that visitors were able to embed educational content within engaging experiences.

Our observations of how groups used their experiences suggest that personalization systems need to respect the complex and fluid dynamics of group visiting. We suggest that flexibility was key to the success of our approach. By avoiding trying to impose a linear order on visitors' experiences, visitors were able to configure themselves as desired. Future work wishing to automate the selection and ordering of the visit may need a deeper understanding of the social organization of a group visit, as previous work on individual visiting styles may not extend to groups [16].

Finally, our current approach relies entirely on visitors who are willing to design their own content, and it is both the effort involved and the 'human touch' that gives our experiences their unusually deep personalization and shared value. That said, it is interesting to consider ways in which the approach could be streamlined by integrating with recommender systems. Could, perhaps, an online tool show other groups' designs as inspiration for those designing experiences? Could visitors' designs be collected together and tagged by the intended experience type, emotional tone, genre of music, and so on, in order for future users to seek out ideas? It's also important to consider the types of collections our approach would work with, and the level of input that might be required from curators in providing resources for exhibits that are less easy to visitors to design interpretations around. Future research might consider how designs could be re-used, and whether the same levels of deep personalization can be achieved with a partially automated system.

6   Conclusions

Our findings suggest that a human-centered, gifting approach to personalization has the potential to generate deeply personal experiences that add value to shared visiting experiences. Visitors are able to draw on interpersonal knowledge of one another to design engaging experiences that can be enjoyed together in a shared visit. Rather than seeing this as an alternative to automated personalization, what is needed are tools and methods that on the one hand make designing content easier for visitors to do, and on the other, integrate deep personalization into experiences generated by conventional recommender systems.

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