Re-connecting visual content to place in a mobile guide for the Shrine of Remembrance

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This paper describes a project carried out by the authors to design and evaluate a mobile guide with visual content for a large and significant war memorial in Melbourne called ‘The Shrine of Remembrance’. A practical intention was to display items from extensive, but currently unseen, archives of historic materials, including architectural drawings, iconic postcards, film of past ceremonies of remembrance, and oral accounts of war experience. A parallel intention was to address the problem, identified in previous research into audio-tours, of individual visitors becoming isolated in an electronic ‘information bubble’ that inhibits the social dimension of visiting and learning about places. In contrast to the immersive style of many audio-tours, we set out to investigate the use of relatively lean and fragmentary visual and audio content intended to provoke new readings of the material site and to exist alongside the social activity of visiting.

1. MOBILE GUIDES FOR HISTORIC SITES

The use of new digital technologies to engage and inform the public is less evident in historic sites and places of interest than in museums. Heritage interpretation must always proceed cautiously in this regard because a central aim is to balance didactic concerns with the need to conserve built fabric, as reflected in heritage guidelines such as the Australian Burra Charter (Marquis-Kyle, 2004). There is also a widespread preference to preserve significant sites as authentic unmediated places. The popularity of audio-tours reflects this desire to inform without intruding on physical space.

The recent surge in hand-held devices with image and video capabilities, like Apple’s iPhone, offers new opportunities for heritage interpretation. At the same time, their use raises important questions. While the audio-tour can be consumed alongside visual exploration of a site, a visual guide might compete with this activity. But equally, a silent visual display might be less disruptive of social interaction among co-visitors. And if accepting their potential, many questions follow about the kinds of experience that are created by various kinds of visual content and their curatorial selection and arrangement.

We set out to explore this broad challenge through the design, development and evaluation of a prototype visual mobile guide for The Shrine of Remembrance, the largest war memorial in the state of Victoria, Australia (Figure 1). Built in 1934 to commemorate loss in WWI, and with later extensions to mark subsequent conflicts, the Shrine is a place of reverence and historic interest. In designing a prototype guide, our interest lay in the intersection of mobile technology, historiography and heritage interpretation. One aspect of this design challenge was how to connect the large archives of unseen visual historic documents - including historic photographs, films, and architectural drawings - with the place of the Shrine. Or rather, given that such documents are already connected to place, through what they depict, the aim here is to re-connect them meaningfully back into places of the present.

Previous efforts to build technical innovations into mobile guides for historic sites, usually audio-tours, provided a valuable source of ideas and contrasts for our design. Early work in this area worked towards creating extensive 'mobile encyclopaedias' (e.g., Vlahakis et al, 2001). Later projects have moved towards creating particular kinds of experience for visitors. A favoured technique has been the creation of narrativised modules of content, often personal stories that employ disparate elements of sites into a coherent account. Using simulated location-aware delivery, Dow et al (2005) reported the positive effects of such narrativisation in their audio-tour for Oakland Cemetery in Atlanta which presented acted voices of deceased people including confederate soldiers.
and black civil rights campaigners. A different kind of evidence for the importance of narrativisation is reported by Blythe et al. (2006) who studied an enhanced audio-tour set in an urban square in Bristol in the UK which had been the scene of a riot that was brutally suppressed in 1831. Visitors expressed some frustration at the non-linear narratives made up of audio segments of a dramatic reconstruction triggered by GPS as they wandered freely through different regions of the square. A study by Epstein & Vergani (2006) further confirmed the importance of narrative threads by presenting the real voices of local characters in a guide to the historic and lesser known parts of Venice. Interestingly, this study also included some limited use of video footage to show such things as the interior of a closed building and a card-playing club. The 'lining up' of video content with a user's present viewpoint in real space was reported as a strong technique, and is one that we borrow here.

An important general issue raised in this field is the problem of audio-tours trapping individuals in an information 'bubble' (Martin, 2000). Observations of people in art galleries and museums have revealed how their experience is formed not only through viewing exhibits, but also through associated interactions with other visitors including strangers (Vom Lehn, Heath & Hindmarsh, 2001; Heath & Vom Lehn, 2008). Szymanski et al. (2008) attempted to incorporate social interaction into an audio-tour. In a mobile guide for a 'Georgian Revival historic house' called Filoli in California, they gave pairs of visitors wirelessly connected headphones and allowed them to eavesdrop on each others current audio stream. This technique was found to support a more natural conversational form of interaction between the pair in relation to viewed objects, and through this greater engagement with the site.

In designing our visual mobile guide, we set out to address some complementary questions to those raised by these earlier studies. The shift of emphasis is away from the technological novelty of such things as GPS, gaze-direction detectors, or interactive applications, and their implications for narrative structures. Partly motivated by previous insights into the sociality of co-visiting, our interest is in the design of lean servings of historical content that leave visitors more free to consume and compare them with their surroundings. This implies a delivery that does not attempt to immerse visitors in a strong narrative experience, but rather one that provides a resource with which to make sense of the site. This notion of 'resource' and the emphasis on user-created meaning is also influenced by Lucy Suchman's (2007) classic analysis of the profound problems of trying to inscribe near-complete prescriptions of user action in interactive technologies.

The next section describes our prototype and explains how it was designed as an experimental investigation of the limits and opportunities around selected techniques of re-connecting visual content with place. After this, we report a preliminary analysis of an evaluation of the prototype's use in a semi-naturalistic tour of the Shrine site.

2. THE PROTOTYPE GUIDE

Our approach began by identifying four zones within the Shrine site and then designing four associated 'experiments' of mobile interpretation. Each experiment explored a different way to re-connect content to the site. In doing this, each zone was interpreted through a different kind of history-telling and a different style of interaction with the content. We drew on original material held by the Shrine, the National Film & Sound Archive, the State Library of Victoria, the National Library of Australia and the Australian War Memorial.

We attempted to balance two sometimes conflicting aims. The first was to create a near naturalistic visiting experience, so the prototype was intended to be highly usable, complete within its own terms, and containing extensive and rich content of interest to a wide audience of visitors. But secondly, as a research tool, we intentionally pushed the prototype towards and beyond comfortable limits, experimenting with different volumes of content, different kinds of user control, and different strengths in the link between content and site. The four experiments will now be described in turn.

Experiment 1: The Balcony. The first zone is an exterior viewing platform, known as the Balcony, that runs around the outside lower edge of The Shrine's large pyramid roof. It affords views to the surrounding city, including the St Kilda Road axis that runs north to the central business district of Melbourne.

The form of history-telling chosen for this zone was an image-based chronological history of the design and construction of the site. It presents visitors with a timeline of four episodes in the Shrine's
development (Figure 2). Each episode is described in a simple text paragraph with the option to view an associated gallery of captioned images (Figure 3), including design sketches, images of construction work, and postcards that show the Shrine as a city landmark.

The linking of content to the site in the Balcony was intentionally oblique. By this we mean that although many of the 31 historic images could be mapped to elements in the present view, they were not organised to make these connections explicit and visitors were left to search for them. This mode of presentation is perhaps closest to traditional heritage interpretation boards which provide simple chronologies with historic images and text. The approach has the potential advantage of inviting greater exploration of the site, rather than 'spoon-feeding' connections to content. Our aim was to examine whether this oblique linking would frustrate visitors and diminish experience; or whether it might create a more authentic experience by allowing more open unguided exploration. Additional elements in the design of this first experiment were the inclusion of different lengths of image galleries – 4, 7, 9 and 13 images – to investigate preferences for different volumes of material. With no audio, interaction between co-visitors was not blocked in this zone.

**Experiment 2: The Crypt.** The second zone, known as the Crypt, is a room deep inside the Shrine where significant artefacts are displayed. The form of history-telling chosen here was a kind of material history that supplements physically present artefacts by inviting closer examination of details, or by presenting related but absent objects. The linking of content to the site was initially direct in this zone. We used the image-map technique used by Szymanski et al. (2008) in which the user views a photographic image of the space and can touch objects to learn more about them (Figure 4). There were three parts to this experiment.

The first exhibit was a large array of 45 Colours (regimental flags) hanging from the high ceiling (and partly visible in Figure 4). Here we showed images of the flags, that were actually present, to draw attention to details and to allow closer inspection. This reinforced the direct linking of content to site. The sequence of images was designed to be long at 17 (Figure 5). The associated captions provided a cumulative narrative that gradually explained the significance of the exhibit. This was a silent display to allow for the possibility of group interaction.

The second exhibit was the Father & Son, a statue of back-to-back figures of a WWI soldier (father) and a WWII soldier (son). Here we presented images of absent objects that expanded on the materiality of elements in the present exhibit. For example, the statue's generic battle dress is elaborated through images of actual headwear,
jackets and footwear from the two world wars. In another series, the wider war-time relevance of uniforms is expanded through images of related objects like nurses’ uniforms. The linking of content to site for the statue was therefore initially direct but became more oblique in the form of images of absent objects. Visitors could choose among various galleries to view using a more detailed image-map of the statue (Figures 6). Sequences were short at 2 or 4 images each (Figure 7).

The third exhibit was the *Changi Flag*, a union jack brought home by surviving prisoners of war of the Japanese held in Changi prison. Here we presented a four-minute automated slide-show with a voice-over narration. This removed control from the visitor to browse materials, although they could exit from the slide-show. The main part of the content was a sequence of absent objects: artefacts made by prisoners including a cribbage board, a cricket ball, and decorated quilts. This display required headphones and so did not allow easy social interaction.

**Experiment 3. The Forecourt.** Our third zone was a large exterior space, called the *WWII Forecourt*, containing many large and significant memorials, including the Eternal Flame and the Cenotaph. The Forecourt lies immediately in front of the main steps of the Shrine building and provides a central gathering point for ceremonies such as the annual ANZAC day march. Here we presented a facet of social history in the form of six one-minute videos of events and gatherings. These were chosen to project different times and different kinds of social experience all within the Forecourt area: the dedication ceremony to open the Shrine in 1934; the ANZAC Day March of 1946; the opening of the WWII Cenotaph in 1955; an anti-war demonstration in 1983; the crowd at the Dawn Service of ANZAC Day in 2009; and an automated slide-show containing various images of visitors in different times. Each video began with a four-second overlaid caption to indicate the time and the event depicted.

The linking of content to place in the Forecourt was highly direct. Users were first presented with a grid of six still images of viewpoints, each with an overlaid arrow to indicate a suggested position and direction for viewing (Figure 8). The suggested
viewpoints matched a key point of construction adopted in part of the relevant footage (Figures 9 and 10); this technique being borrowed from Epstein & Vergani (2006). The six videos presented a variety of strengths of connection with the physical space, from clear links with iconic objects like the Cenotaph, to more obscure connections to distant or less distinct features. In the case of the slide-show, 3 of the 11 images matched the viewpoint directly. The intention in this zone was to offer some experiential connection between the current visitor and the social gatherings depicted. To this end, film content was carefully selected and edited to contain immersive crowd footage as far as possible. Our exploratory questions were whether visitors would readily make these connections and what would be the effects of doing so. All the videos all had sound except for one, so the technique did not encourage social interaction.

**Experiment 4. Voices.** The fourth zone chosen was not a particular place but was an invitation for the visitor to listen to audio-only material while roaming the site including its extensive Reserve which contains numerous memorial gardens and monuments. This zone was included as a contrast to the visual content of the others. The form of history-telling was a series of oral histories of war time experience. These were selected through a high indirect because the events described made no reference to the Shrine. Rather, they provided an ambient backdrop for free exploration. The six oral histories were selected to represent various key conflicts with Australian involvement: WWI, WWII, Korea, Vietnam, and Peace-Keeping in East Timor. Two female and four male voices were included. Sequences were edited to create a flow of consciousness that contained clear markers about the particular conflict and events depicted. A range of durations were offered to the participants from 3 to 13 minutes.

3. **THE EVALUATION STUDY**

Thirty-two participants were recruited through contacts with the University of Melbourne. One was excluded from the analysis because of difficulty using the device caused by the sun's glare. The remainder were 55% female, varied in age from 18 to 65, and were from various nations: Australia (17 participants), New Zealand, China, Malaysia, Brazil, Russia and Singapore. Many of Australians strongly identified with another national culture including Greece, Japan, Croatia and Britain. This population profile is significant because our design attempted to extend what was taken to be familiar public history about Australian involvement in 20th-century wars. While some in the sample shared this history and a few also had family connections to the loss depicted at the Shrine, others had little or none of this background knowledge.

The study was carried out as four trials, each with 8 participants who toured the site together. This allowed scope for social interaction among the touring party. Each trial ran as follows. Participants arrived at the Shrine where they were briefed on the study and shown how to use the mobile guide. Each participant used a single guide. We explained that it was intended more as a kind of 'exhibition' rather than a surrogate human tour guide. We also invited participants to interact with each other. The group was then taken on a one-hour tour. They were led by researchers to each of the zones covered by the guide in turn and allowed to explore freely. Once they had settled into each zone, two or three researchers made discreet video-recordings, and questions were asked at breaks in activity. Most participants succeeded in seeing nearly all of the content in the Balcony, Crypt and Forecourt. In the Voices zone, participants listened to at least part of between 1 to 3 oral history recordings. On completing the tour, the group completed a questionnaire and took part in a focus group discussion led by a researcher. Participants used the questionnaire to rate the mobile guide for each of the four zones on the following dimensions (from 1=‘not at all’ to 5=‘very’): ‘easy to use’, ‘informative’, ‘interesting’, ‘evoked feelings’, and ‘encouraged me to look at the site more closely or differently’. For each zone, participants made written comments and were asked to indicate which areas of content they remembered seeing during the tour.

One of the challenges of running a naturalistic evaluation is that we encountered a broad range of responses that went beyond the design intention of the four experiments constructed. First was the glare of the sun which was particularly strong on all three days of the trials and made the device unusable outside for one person and hard to use for others. Second, was the view of some participants that the guide should use more advanced technologies, like location-aware GPS, user-generated content, and tagging of materials. iPhone-users expressed some frustration at not being able to ‘pinch’ zoom or ‘swipe’ to advance
slides. On the content, a view was expressed by two people that it should have taken the form of personal stories that linked the different spaces of the site. Also, some participants reported that they felt 'disconnected' from the significance of the site and the content displayed. Despite these normal difficulties, there was sufficient engagement with the guide to investigate our research questions.

The mean rating for 'easy to use' across all participants and zones was 4.2 out of 5. This confirmed our intention that the device should provide a readily usable interface that would not obscure issues of content reception. One view of the overall reception is given in Table 1 which shows the frequency of each zone being rated as a highly positive experience, defined as achieving a mean rating of 4 or more out of 5 across the scales of being informative, interesting and evoking feelings. Although somewhat arbitrary, this criterion accords loosely with highly favourable comments from participants and provides a means to compare the zones. Table 1 also shows the influence of one factor: being an Australian or New Zealander as opposed to holding another nationality; the former being both native English-speakers and more familiar with the history depicted. Fisher's exact probability test shows that there were significant associations between this binary classification of nationality and the arbitrary 'hit' classification for two of the zones (Crypt; p<0.05; Voices p<0.05), but not for the other two zones (Balcony and Forecourt). This suggests that Australians and New Zealanders were more likely to rate the Crypt and Forecourt highly than participants of other nationalities.

### Table 1: Percentage (and frequency) of participants for who the zone was a 'hit' (defined as a mean rating of greater than or equal to 4.0 out of 5 on scales of informative, interesting and evoking feelings)

<table>
<thead>
<tr>
<th>Nationality</th>
<th>Zone of Shrine Tour</th>
<th>Balcony</th>
<th>Crypt</th>
<th>Forecourt</th>
<th>Voices</th>
</tr>
</thead>
<tbody>
<tr>
<td>Australian / NZ (N=18)</td>
<td>17% (3)</td>
<td>61% (11)</td>
<td>67% (12)</td>
<td>60% (9 of 15)</td>
<td></td>
</tr>
<tr>
<td>OTHER (N=13)</td>
<td>31% (4)</td>
<td>23% (3)</td>
<td>46% (6)</td>
<td>15% (2)</td>
<td></td>
</tr>
</tbody>
</table>

Although this kind of statistical analysis is indicative, our main interest was in the qualitative nature of the kinds of experience created within this group of participants.

### Lack of social interaction between co-visiters.

The most striking observation of the study was that there was very little interaction between participants during the tours. In the first trial the 8 participants were divided into two groups for much of the tour, and all were strangers to each other. Despite a clear message in our briefing to interact with each other if they desired, the participants remained resolutely solitary. For the remaining three trials we put greater emphasis on the potential to share the tour experience, and there were a few pre-existing social groups: a husband and wife with a small child; a mother with an adult daughter; and various friendships and familiarities among students studying the same architecture course. In these trials we kept the groups of 8 together to maximise the chance for interaction. But again, it was extremely limited. When it did happen it was most clearly about how to operate the device (to adjust the volume, for example) but no clear exchanges about the content or the site were observed. Some rare attempts to initiate interaction were quickly frozen out as each person was drawn back into their own particular content of that moment. Most striking was the lack of interaction between groups of students who often congregated in the zones. When later questioned about socialising with their fellows, one participant in a pre-existing social group talked of being 'annoyed' when interrupted by others. Another expressed a preference for a more contemplative experience. The remainder of this section describes how these solitary participants engaged, or did not engage, with the content.

### Experiment 1: The Balcony.

As suggested by Table 1, the chronological image galleries of the Balcony achieved the lowest level of engagement. Although there was some enthusiasm, the intentionally oblique links between the images and the present site met with disappointment and frustration for many. Some participants variously expressed the view that spatially indexed content was the natural method to represent the dramatic panorama before them. Even some of the participants who rated this zone highly, expressed the view that the greatest experience was in relating content to site features.

Another more general issue arose in the Balcony concerning the level of background information provided by the guide. Some were happy to be launched straight into the particular themes presented, while others wanted a more conventional introduction to the history and significance of the place. In part, this can be interpreted by appealing to differing conceptions of what the mobile guide was intended to be. Some participants appeared to accept our metaphor of an exhibition, implying something selective and thematically narrow. Others appeared instead to evaluate the prototype against the notion of a human tour guide, where a more holistic overview with highlights is the norm. As the study progressed, we raised our emphasis on the exhibition metaphor, but it was unclear if this reduced the contrary expectations.
Experiment 2: The Crypt. With its initially direct links between content and elements in the space, the Crypt produced a more positive response from participants (as suggested by Table 1). A weakness in our method was that we did not collect ratings for the three separate exhibits interpreted in this zone, so instead we rely entirely on observations and comments made.

One of the most engaging techniques deployed in the guide appeared to be the technique of directed-looking used with the Colours (flags). The replication of present objects in images was accepted by many as a useful device to direct closer inspection of 45 flags on display. The value of the technique was made greater because the real flags are high off the ground and difficult to see clearly. Like a magnifying glass, the guide provided enhanced seeing of what was there. Some participants felt that the long gallery of 17 images was too long, while others reported being readily drawn through by the cumulative narrative. Here our prototype was closest to the human guide metaphor. But even in this case, the prototype had its detractors. For example, one person felt that every flag should have been represented; and another did not realise that the flags depicted were those physically present, but felt that they should be.

The interpretation of the Father and Son statue also drew much positive reception. However now there was a division between those who were favourable about the presentation of images of absent objects, and those who were not. For example, some were positive about the exposition of the bronze soldiers through images of real military uniforms as 'logically related'. Others found this distracting from the solemn significance of the present statue. Both types of responder expressed some confusion about whether the absent objects were actually present elsewhere in the Shrine. There was another division between people who preferred the statue's short image sequences and the freedom to choose which sequence to view and in what order (head, body, feet, other uniforms), and those who preferred the longer but more narratively-connected sequence for the Colours.

The content related to the Changi Flag - an automated slide-show with voice-over narration - drew the least positive response in this zone. Again, the inclusion of absent objects - artefacts made by prisoners of war - created some confusion about whether to look for them in the present location. But more significantly, there was a clear dislike of the lack of control afforded to the user by the scripted delivery. Most felt that a four-minute video was too long, and they stopped it before the end. Related to this, there was some suggestion of a general dislike of an institutionally authoritative narrative carried by the voice-over (see Hazan, 2007). One person took a different and highly positive view. This was a parent who was touring with a small child and they listened together using a headphone splitter. This participant had a family member who had been a prisoner in Changi, and also appreciated the balance of male and female content. This highlights the deep idiosyncracy of responses which underlies all of these findings.

Experiments 3 & 4: The Forecourt and Voices.

The film and oral histories presented in the last two zones also elicited a mixture of reactions. Where people were positive, these zone created the strongest experiences and elicited the greatest enthusiasm as 'favourite' parts of the tour.

The short films presented in the Forecourt which were directly referenced to present space, like much of the content in the Crypt, similarly drew much positive response. A favourable response to this technique often coincided with a positive view of the content as representative of significant episodes, and also some appreciation of the juxtaposition of formal ceremonies with an informal anti-war demonstration. Within these positive responders, only a few actually took up the suggested viewing points. Those who did report this as important to their experience, and among this group were those reporting an effect of being transported back in time to the particular episodes depicted. Others used the arrows as an indication of the relevance of the footage but watched them from elsewhere.

There were detractors in the Forecourt too. These people expressed frustration at the lack of significance of the films. Often these were people who were wanted more historical context or who felt detached from the kind of material presented. The presence of positive or negative receptions did not appear to be greatly associated with demographic factors. The best indicator of this was that in both the receptive and non-receptive camps there were cases of older and younger participants, males and females, and Australians and non-Australians.

The audio-only oral histories presented in the Voices zone also elicited mixed reactions. Here, however, nationality did appear to play a role as indicated Table 1. Foreign nationals found it harder to consume the purely oral streams of consciousness; this may have been the extreme demands of English comprehension, and/or the degree of empathy with a shared collective history. For people who enjoyed the Voices, they described the advantages of the non-spatiality of the material, of being free to take in the site while listening. For those who were less positive, they often wanted accompanying images or films. Unsurprisingly
perhaps, most participants felt the audio segments were too long with the two shortest segments of 3 and 4 minutes being selected most often.

4. CONCLUSIONS

We now offer some implications of our study for the design of visual mobile guides for historic sites or places of interest. Given our intention to allow social interaction through the use of silent, lean visual content, the observed lack of interaction between co-visitors in our study was surprising. It suggests that the mobile guide was not treated like a public display of information, but rather it was taken as a private contemplative resource. This was true even for the delivery of images and text where headphones were not needed. The study also points to a strong preference and expectation among visitors for content to be directly organised around the spatiality of place. It suggests a major challenge to offer content organised under other principles, like the time-line in the Balcony zone of our study. These two findings project a potential danger of visual mobile guides as producing visitors who are reluctant to interact with others and to actively search for oblique connections between non-spatially organised content and the site.

More positively our study suggests that powerful techniques of interpretation can be deployed through a visual mobile guide. The technique of directed-looking was effective in the Colours section to direct attention to details of physically present objects (Figure 5). Further, the technique adapted here from Epstein & Vergani (2006), of lining up historic film with present space, can have the intended effect of transporting participants back in time (Figures 8, 9 and 10). While only a minority of participants reported this effect, it seems likely that more refined interface design and curatorship could increase the level of engagement. Relative to text and images, film and oral histories showed the greater potential to elicit emotional effects. They were often talked of as providing unmediated access to the past; though in reality both of these media were highly edited for heightened effect.

The presentation of absent objects was also found to have strong potential, but again design effort is needed to ensure that their status as absent is transparent to visitors, otherwise confusion can result. And finally, on a more mundane note, visitors' attention spans for our mobile guide were mercilessly short, as ever. An ambient audio segment needed to be well under ten minutes, and while one-minute films were manageable, four minutes was far too long!

5. REFERENCES


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