Mapping Memory Routes: a Multisensory Interface for Sensorial Urbanism and Critical Heritage Studies

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Abstract
This demonstration offers the opportunity to explore a multisensory digital interface as part of the wider research project 'Mapping Memory Routes: Eliciting Culturally Diverse Memes for Digital Archives'. The interface is conceived as a tool for capturing memes rooted in the rich intangible heritage of culturally diverse communities in London, opening up a space for intercultural exchange to be used in meaningful urban design. Based on a model developed by artist and researcher Alda Terracciano for her multisensory installation 'Streets of...7 cities in 7 minutes', the interface is used to explore new design methods to elicit cultural memories through the use of multisensory technology. The tool aims to stimulate collective curatorial practices aimed at democratising decision-making processes in critical heritage studies and urban planning.

Author Keywords
Multisensory interface design; Sensorial urbanism; Community curation; Sensorial mapping; Design research; Urban planning; Critical heritage studies.

ACM Classification Keywords
H.5.m. Information interfaces and presentation (e.g., HCI): User Interfaces; J.4. Social and Behavioural Sciences: Sociology

Introduction

Intangible heritage and Memetics

'Mapping Memory Routes' is a digital arts and heritage project produced by ALDATERRA Projects with the support of Heritage Lottery Fund, the Centre for Critical Heritage Studies (a collaboration between University College London and University of Gothenburg) and Politecnico di Milano. The project aims to explore the heritage of culturally diverse communities in London through an observation of the underlying socio-cultural values and practices that shape both the tangible and intangible heritage of the involved communities. In particular, the interface presented in this demonstration is aimed at creating a multisensory experience able to craft deeper connections between people and their ancestral cultural memories. The inspiration for its design comes from the artistic exploration carried out by artist and researcher Alda Terracciano over a period of 8 years for her multisensory installation 'Streets of...7 cities in 7 minutes' [5].

Design intervention

Research

Feedback produced by audiences during the UK tour of the 'Streets of…7 cities in 7 minutes' installation showed a keen interest by members of the communities engaged in the parallel creative outreach programme Living Archaeology of the Place, to see video recordings of memory sessions carried out with the artist becoming an integral part of the installation [2]. They wished the installation could be more interactive on a community level, allowing more opportunities for creative engagement with the exhibited content. This sense of urgency expressed by the participants led the artist/researcher to imagine new ways in which they could contribute to the creation of a bank data of cultural memes they carry with them. In collaboration with the HCI designer and the Politecnico di Milano she decided to explore ways to further develop the artistic installation into a community curated experience, which has the power to negotiate notions of identity, time, presence and transmission of cultural memories through a digital interactive interface for which:

(a) we design appropriate interactions that use sensory modalities extended by digital technologies to augment the embodied experience;

(b) we invite the related communities to curate the exhibited content to strengthen the connections between the communities represented in the interface and those experiencing it.

The importance of supporting autonomy, identity and ownership in engaging with communities has been highlighted in relevant literature [3]. Research has also revealed the importance of including local civic authorities in the design process to create a space in which technologies aimed at sustaining civic engagement, are better perceived in their value, promoting trust between civic authorities and citizens [4].

Digital interface and Sensorial urbanism

The interface presented in this demonstration explores the living heritage of members of Moroccan migrant communities through the use of a multisensory digital tool developed from a series of memory sessions focusing on the cultural memories of Moroccan people in London. These memories, which were part of the consultation process, are shared through a digital

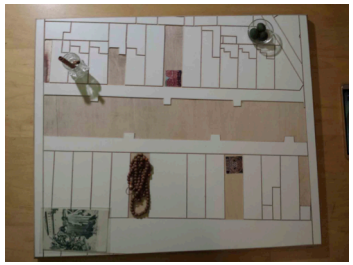

Figure 1: Section of the physical model of the map of Golborne Road. Image courtesy of the artist Alda Terracciano.

Figure 2: Smell of cinnamon sticks.

Figure 3: Touch of Tasbih.

interactive sensorial map of Golborne Road (also known as Little Morocco), which includes physical objects related to various aspects of Moroccan culture, each requiring a different sense to be experienced (smell, taste, sight, hearing, touch). Augmented Reality (AR) and olfactory technologies have been used to superimpose pre-recorded video material and smells, sourced from people of Moroccan descent living, working or visiting Golborne Road, to the objects. As a result, the neighbourhood is represented as a living museum of cultural memories expressed in the form of artefacts, sensory stimulation and narratives of citizens from the area.

The project represents a creative response to the increasing gentrification of Golborne Road neighbourhood, which means that many Moroccan families and businesses are slowly leaving the place and memories of their contributions to making this one of the most culturally vibrant areas of London is risking to get lost. At the same time it aims to awake a critical understanding of cultural stereotypes by stimulating participants and wider audiences to re-evaluate our interconnected histories on both sides of the Mediterranean. In this respect, the interface can be used in other geographical and social settings as a catalyst for community participation to stimulate public responses to the hybrid interface and associated storytelling. The interactive device offers itself to future applications in mobile technology and live performance.

Physical/Digital Interaction

Object manipulation and digital narratives

The multisensory digital interface consists of a tablet positioned within a specially designed frame and mounted with an olfactory device. The tablet runs an AR application, which enables the playback of videos upon tracking a marker. The digital interface operates in conjunction with the physical model of the map of Golborne Road in West London, representing the main buildings along the two sides of the road with Moroccan culture-relevant landmarks especially highlighted (Figure 1). It also includes objects in the form of ephemerae provided by members of the Moroccan community during the consultation process, positioned at the back of the road and/or in place of relevant buildings (i.e. postcards, photos, tastes, and small objects), each object representing a different cultural meme and requiring a different sense for manual/physical interaction by the audience [1]. For example, sticks of cinnamon embody the smell of the spice used in traditional Moroccan cuisine, mainly for cakes and meat dishes, and as a traditional medicine aiding digestion (Figure 2). Samples of couscous evoke taste memories of traditionally prepared food dishes. A string of prayer beads named Tasbih and commonly used in Morocco (Figure 3) invites audiences to engage with the haptic sense to explore the meaning of such traditional cultural object. Hidden memes embodied in the objects then surface through gestural manipulation, e.g. the movement of the thumb passing through prayer beads to count religious recitations, which interestingly is common to other cultures and religions.

In addition to the sensorial experience assigned to each artefact, there are 30 markers distributed along the street (Figures 4, 5). The markers are used by the digital interface to playback video of Moroccan people narrating stories relevant to the specific sense. We used a commercial tablet that runs an AR application able to trigger pre-recorded video sound material stored in a database and readily available in AR upon

Figure 4: Marker of Hand of Fatima

Figure 5: Marker of Henna tattoo

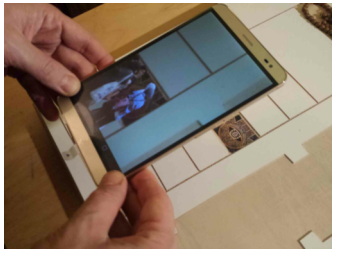

Figure 6: Tablet running the AR application.

positioning the tablet camera over the marker (Figure 6). The stories have been recorded on green screen and the videos are processed in real time to remove any background and show only the person talking as a virtual narrator. At the same time, the markers related to the sense of smell activate the integrated multisensory system, designed and developed at Politecnico di Milano, consisting of a frame in which multisensory devices are integrated to emit evocative fragrances. The olfactory displays consist of air cannons, based on the ultrasonic atomization method for generating fine particles of fragrances, controlled by the AR application via an Arduino board. For what concerns the frame, developed by using rapid prototyping techniques, several Moroccan elements are mixed together. Specifically, in the front part of the device, a "Mashrabiya" inspired pattern is integrated with the logo of the exhibition in a Moiré effect for creating an evocative decoration. This decoration, made of small holes, allows the fragrances delivery (Fig 7).

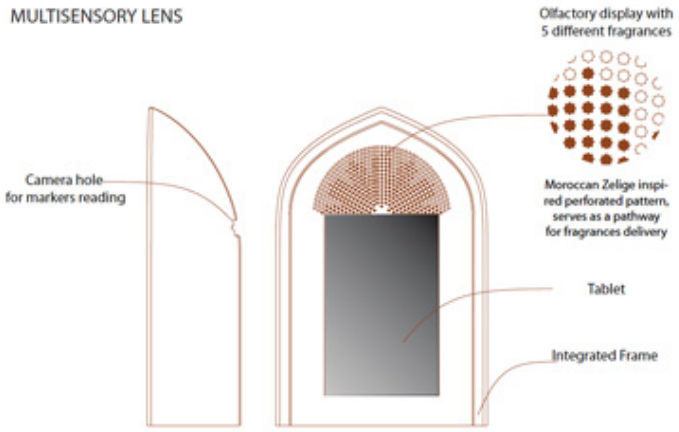

Figure 7: Frame with olfactory device.

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