

Using the critical design approach for rethinking citizens' emotional bond with urban spaces

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ABSTRACT

Taking inspiration from the value that place and space have for people (e.g. for the construction of their individual identities) and from previous works concerning memories in the urban space experienced while cycling, we propose how to design an experiment where ambiguous and cognitively dissonant messages are delivered through a wearable device to encourage individuals to rethink their relations with space.

Categories and Subject Descriptors

D.3.3 [Human-Computer Interaction]: H.5.m. Information interfaces and presentation (e.g., HCI): Miscellaneous.

General Terms

HCI, Critical Design, Urban Informatics.

Keywords

HCI, Wearable Computing, Bodily Experience, Urban Space, Memories.

1. INTRODUCTION

Our main inspiration comes from the work of Matassa et al.[19][20], where the authors designed, prototyped and evaluated a wearable device for collecting memories in the urban space by cycling. Usually, wearable devices are used for tracking information about human beings, especially with respect to fields such as health, fitness and, partially, fashion and design. Matassa et al. tried to extend the scope of wearable computing using it to enhance the relation between city and citizens, taking inspiration from the Senseable City Lab[17] theories and smart city guidelines[18]. Both their works were based on the ideas that a) space is an important element in the construction of personal identity, and b) linking personal memories to specific places can support a greater attention and care for urban spaces.

Leveraging these insights from their work, we propose to use a critical design approach to motivate people to rethink their experiences through the discovery of hidden meanings and new values in urban spaces. More specifically, we propose to exploit ambiguity in design and compare how real and altered memories

stimulate users' reactions and influence their capability to recognize themselves in the urban spaces and in their memories related to the urban landscape. Aiming at this goal, we will define the main elements to carry out a future experiment.

2. RELATED WORKS

Related works mainly deal with ambiguity and memory.

Ambiguity. Gaver et al.[10] show the potential value of ambiguity in design, defining it as a resource through which people can be disoriented and, thus, stimulated to reflect about the context and situation in which they are acting. Similarly, Aoki and Woodruff[12] use ambiguity as a tool for stimulating multiple interpretations of users' behaviour in a social situation, while Chiang and Mitchell[13] propose an observational study about the use of ambiguity in interaction design as a "poetic device" able to encourage the creation of artworks.

Memory. Memory is at the heart of the way most people think about their personal identity: past episodes provide a sense of personal identity and allow people to recognize and recollect themselves. SenseCam[14] is a wearable digital camera, especially meant for people with physical and mental health problems, that tracks and stores an electronic record of users' life. When users play back the stream of images recorded by SenseCam, they act as an autobiographical memory cue. SMOKS[15] is an electronically enhanced garment meant as an experimental platform to record memories. It should encourage the creation of social networks and use our interactions through clothing as a starting point to collect traces of physical and personal memory. Finally, Remembering today tomorrow[16] is a research project about the use of critical design to encourage the development of digital mementos as technology to reflect and meditate about user's personal experience.

3. BACKGROUND INFORMATION

Problem: urban spaces and personal identity. A long tradition of studies shows how human beings establish a deep relation with the physical environment[1][2] in which they live and how their environment influences the creation of their own identities.

Nowadays this relation is hindered by the overabundance of information and events that characterize any environment, due to the pervasiveness in urban spaces of information technologies such as public screens and mobile devices. As a consequence, the distinction between virtual and real spaces[3] becomes unclear and indeterminate. People experience a sort of dissociation from space[4], and the loss of an authentic experience of themselves in their contact with urban space.

We intend to stress this gap to push people to reflect and to rethink their relation with surrounding space.

We are convinced that the existence of an open space, characterised by confusion and disorder, could be the point to

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start a new observation and new relation with urban space. To overcome this dissociation and following the insights derived from Featherstone[5], we propose to choose body as a new way to connect people and environment and we choose wearable technologies to improve the users' experience in urban spaces.

Bodily experience as a way of reconnecting people to their environment. Wearable technologies allow people to interact with places with minimal effort. People, in fact, only need to use their own body to get in contact with the environment thanks to a number of sensors and actuators that can seamlessly trigger events such as, in the case of our experiment, the recording of an image or, more in general, a situation that they are experiencing. The idea to encourage "bodily interaction" first emerged in the use of mobile technology. In particular, Fortunati[6] shows that mobile technology is able to reduce the sense of absence and distance between people, allowing a "present absence". In this scenario, according to Sheller[7] the human body becomes both an entity in urban space, and a node of a micro-network society where time and space have fluid coordinates. Wearable devices go beyond mobile phones, giving more importance to the body as a unique way to interact with the environment. Passing the boundaries between "human" and "machine", wearable computers blur the distinction between an "inside" and an "outside" which was still in force with mobile technologies.

Critical design as a research tool. Dunne and Raby proposed the critical design approach as a methodology of research aimed at stimulating reflection and critical attention on the part of consumers about their everyday lives and how the design of objects, their shape and their representations influence assumptions, values, ideologies, and behavioural norms of their life[8]. Dunne defines critical design as "a form of social research". Its main output is not a new innovative product, but the knowledge and the stream of insights that derive from it and that stimulate a 'critical sensibility' in users[9].

Following the critical design approach, we apply the concept of ambiguity in our methodology to encourage people to analyse urban spaces and to use their insights to collect themselves and establish a deeper relationship with their environment, rethinking them. A new point of view, in fact, causes users to experience a cognitive dissonance[10] in which they perceive a contrast between what they know and think and what they hear and see. Since the dissonance is psychologically uncomfortable, people that experience it are stimulated to reduce or delete it by changing something. How people decide to react to this uncomfortable situation is influenced by their behaviours and their beliefs. In our study, we will propose to analyse how people react to distorted and misrepresented signals about the space in which they live.

4. THE STUDY

We focus our research on citizens that daily use a bicycle to move within their city and that are between 20 and 50 years old. They can be considered active collectors of urban memories because they are oriented to collect memories in urban spaces using various types of social applications such as Instagram or Flickr.

Following the method of critical design, we try to evaluate the use of the wearable device described in Matassa et al. [19][20], to observe how users integrate it in their everyday life, what they do and how their behaviour changes in a certain period of time. The study will consist in three stages:

1. **An observation in the wild** of how participants use the interactive system to collect their memories while cycling for their everyday travels. We will use the technique of shadowing to discover what kind of

feelings, emotions and memories a space evokes and why people may want to keep a trace of it.

2. **An interview** about the memories participants will have mapped. We are interested in gaining an insight about the action of recording memories, the feelings elicited by the receiving of messages and how they use the device to understand the relations between the private and the public nature of urban spaces.
3. A second phase of **observation in the wild** where we will observe participants during a tour in urban spaces, where they receive dissonant memories, altered to provoke some reaction on the part of participants.

We propose to choose three different urban landscapes: city center, suburbs and a pleasure place such as a shopping area, a park and so on. We intend to associate them with some "dissonant" messages that we will use as memories to deliver to users when they will go there. The messages will be in contrast with the common perceptions of these areas, e.g., in suburbs users will receive a message about the pleasure of the landscape.

In the following, we introduce two different scenarios to better understand a) the current scenario of interaction with wearable devices for tracking memories in city, as it was proposed in Matassa et al[19]; b) a future scenario which shows participants' interaction with dissonant memories.

Part A: A simple day in urban space. Luis takes his bike to go to his workplace and he crosses the city center. He has decided to adopt an innovative interactive system, made of a device positioned on his bike and of a wearable device that allows him to get in touch with urban spaces. When Luis arrives in a place where he recorded a previous experience, the device makes him aware that he stored an important memory connected to that place. Through a mobile app, Luis can visualize and enrich stored memories, get pictures and information about his thoughts, or about the mood he was in and the friends that were with him. He can also share his memory with his friends. Luis re-thinks about that place, how it changed over the years and how it is meaningful for him, becoming aware of the role of space in his life.

Part B: Dissonant memories. One morning, Luis receives a strange message, a memory about a wasteland. The urban space is in contrast with the retrieved memory, because Luis sees that the landscape around him is very enjoyable. He is trying to find again where and when he created such a memory, when he feels frustrated and annoyed by the landscape. He thinks he might well have lost this memory, but he is sure that there is something strange in today's message. When Luis arrives to his workplace, he wants to re-build the correct memory and perception about the urban space and the received memory.

5. DISCUSSION AND CONCLUSIONS

We propose this experiment to prove how ambiguity in design can be a resource to stimulate a deeper reaction on the part of users and with respect to urban areas. Following Gaver[10], we think that ambiguity can push "people to interpret situations for themselves, it encourages them to start grappling conceptually with systems and their contexts, and thus to establish deeper and more personal relations with the meanings offered by those systems"[11]. Introducing some components of variation in the content of users' memories, we encourage users to reinforce their relation with space and personal identity.

Our main goal is to find out how an interactive system that stimulates people's reaction with incorrect messages could induce

people's reflection, awareness and care of spaces, and to understand the correlations between people and urban spaces.

We intend to measure the results obtained from this experiment by tracking how incorrect memories pushed to users can drive them to correct memories and feelings about a specific place. We focus on data inserted by users to reply to dissonant memories, and propose to analyze the type of corrections users introduce, as well as the kind of activity they do on memories.

The results we expect from this experiment are multiple. On the one hand, we imagine that users will reply rapidly and strongly to these strange messages remarking their disagreement to them. Some people might even refuse the adoption of the wearable device, feeling frustrated by the received memories. On the other hand, we hope that users will be able to discover new unexpected bonds with urban spaces and with their personal memories thanks to critical design, reviewing their memories about past events. To analyze users' reactions to dissonant messages, we intend to use the Transtheoretical Model[21], a model useful to describe the paths that people follow to modify and change their problematic behaviors. It allows to recognize the phases that happen when individuals realize that there are inconsistent meanings in their behaviors and attitudes with urban space, and to define behavioral patterns that people adopt to cope with them.

The steps for the future realization of our experiment are:

- 1) Choosing a technological device to give to users for supporting the storage of memories in the urban space.
- 2) Selecting a certain number of dissonant messages to send to users in order to disturb their urban interaction;
- 3) Monitoring users' reactions to dissonant messages
- 4) Adapting the device to improve the connections between city and citizens and encourage their civic engagement to take care of urban spaces.

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