1. THE STUDY:

The Urban Screen as a platform for communication

Ava Fatah gen. Schieck and Eamonn O'Neill

The Bartlett Graduate School, University College London, UK, Department of Computer Science, University of Bath, UK.

We explore shared encounters mediated by technologies. We investigate aspects that influence the interactions between people and people, and people and their surroundings when technology (a responsive digital screen) is embedded in the physical surroundings in selected locations in the city. In particular, we highlight the importance of space and the role of place in providing temporal and spatial mechanisms facilitating various social interactions and shared encounters.

THE PROTOTYPE

A prototype was implemented as a portable digital screen that can be embedded as an interactive installation in different locations in the city of Bath (Briones et al, 2007). It is made of two layers. The first layer is a grid of LEDs (light-emitting diodes) embedded in a surface (1.8mX2.8m) that contains 21 units of rubber door mats. The second layer is a grid of pressure pad sensors, which is located under the LEDs layer. Both the LED and the pressure pad layers form a unit that sends the user’s input to the computational program and performs the outputs as well, in the form of blinking LEDs. The pressure pads detect people walking on top of the surface. In response, it illuminates the series of LEDs. The lights turn on or off depending on a computer program, which defines the behavior of each light at every instant.

When pedestrians walk over the surface a pattern of blinking lights is generated dynamically following the pedestrians’ movement over the surface. The aim is to generate a rich urban experience that can be introduced in various locations in the city. Using the body as an interface, the digital screen acts as a non-traditional interface and as a facilitator between people and people, and people and their surrounding environment.

The prototype was tested in three different locations in the city of Bath, with low, medium and high pedestrian flows. The selection of the locations makes use of space visibility and connectivity in the urban space and in relation to attractions and services that work as movement attractor. Four test sessions were carried out over three days. Three of these sessions were performed during daytime (one for each location). An additional test session was conducted during the evening.

Figure 1: The prototype (credit: Carolina Briones, 2006)
THE OBSERVATIONS

Our observations of the public interactive installation indicate that the screen may provide a stage for emergent social interactions among various people. This depends on various factors such as:

- **Awareness**: from peripheral awareness to focal awareness to direct interaction. Different levels of awareness are observed from simply glancing at the interactive prototype, to people stopping around it and wondering about its function.

- **Shared experience**: People behaved differently in different situations and this varies depending on whether the interaction takes place among friends (upper diagram) or strangers. Most people share the experiences with friends; however, a few of the participants share the experience with a stranger (lower diagram). The most common pattern observed when strangers interact was that they were waiting for their turn.

- **Social proximity**
  The social proximity or person-to-person distance plays a profound role in influencing the shape of interactions with other people on the digital platform. The distance is different between strangers compared to that between friends and it seems that this aspect has influenced peoples’ perception of their personal space.

- **Physical properties of the installation**
  The physical properties of the digital platform can have quite profound effects on the way it is used in a public setting. One of the central issues in introducing a new form of technology in the public space is people’s uncertainty regarding how to interact with it. One factor, which needs to be taken into consideration, is the physical affordance of the interactive display. For instance, installing the large interactive platform as a horizontal surface in a public space would encourage people to walk over and congregate around it in a socially conducive way.

- **Playful use of technology**
  One way to trigger shared encounters among people is to encourage playful use of technology. In some cases this could be built up amid anticipation as people use relevant prior experience and expectations of a new experience e.g. often people recognize the horizontal prototype as a ‘dance floor’ before they interacted with it. We also observe differences between singles and groups behaviour. In a group we see a dynamic flow of interactions. People tend to play with the installation while interacting with of the group members.

- **Temporal**
  One of the interesting aspects we observed during the evening session is that the nature and duration of the interactions were different than those during day time in the same location. Although a fewer number of people stop to engage with the installation, during the evening session people tend to be ‘themselves’ and express different visions about the digital installations.

- **Spatial setting and movement rhythm**
  We observed clear differences in the intensity of interactions with the digital surface and with other people in the different locations in the city. This seems to be determined, to some extent, by the spatial configuration of the city. Moreover, city rhythms – the way that variations in pace and density are structured over time – played an important role in shaping the type and intensity of interaction with the prototype in different locations. Being able to understand the movement flow.
and movement rhythm is of value. Good local knowledge of these rhythms with respect to the spaces is key in determining appropriate approach for triggering different types of interactions.

- **The screen as an urban performance**
  We suspect that in order for the public display to be engaging, the viewer needs to be able to construct a meaningful social relationship of which the display forms a part. The engagement with ‘a compare’ offers one example of this. In this case the user puts together the presence and activity of the human who is setting up the ‘event’ with the presence and behaviour of the display.

![Figure 2: Awareness varied from peripheral awareness to direct interaction. Different levels of interactions were observed among people walking around the area; some were simply glancing at the interactive prototype. Figure 3: Playful use of technology. Figure 4: social proximity: Interacting with friends. Figure 5: strangers waiting for their turn.](image)

**Next steps:**

Our observation indicated that introducing a digital platform as a public interactive installation in the urban space may provide a stage for emergent social interactions among various people and motivate users to actively and collaboratively play with the media. In particular we note the importance of constructing socially meaningful relations between people mediated by these technologies. In our on going work a comparison will be made between the two cities with the BBC screen displaying the same content in both locations and conducting various observations but also by running site specific content in each location.

![Figure 6: Birmingham, Victoria Square.](image)  
**Figure 7: The big Screen in Swindon: individual and collective experience**

**Acknowledgements:**

We thank Carolina Briones for her valuable contribution. The project is partially funded by Cityware (EPSRC: EP/C547691/1).

**References**


2. THE CROWD-BASED EXERCISE

We propose the following exercise. The aim is to trigger various individual and collective experiences, and to encourage playful interactions with public ‘displays’:

We propose to use mirrors (with distorting effects) in various forms and locations some of these will allow individual interactions and other will allow collective interactions (see inspiration sources below).

The aim is to illustrate the above mentioned factors (in section 1) (for individual experience and collective experience) in general, and highlight aspects of social proximity and shared encounters among friends and strangers (in the collective experience) in particular.