Exploring Embodied Mediated Performative Interactions in Urban Space

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ABSTRACT
Digital media developments have augmented everyday interactions, creating visual and auditory interaction spaces that enable various types of performative experiences as we interact within a shared space. Our research investigates some of the types of shared interactions that such technology enables. In this short paper we summarise some of our research into applying methods based on intervention in urban space and playful use of technology, exploring how people appropriate the medium and perform embodied interactions in diverse contexts. We note the importance of constructing socially meaningful relations between people mediated by these technologies.

Author Keywords Urban space, performance, digital technologies, shared encounters.

ACM Classification Keywords

General Terms

INTRODUCTION

The built environment plays a key role in the construction and reflection of social behaviors [8]. Within a supportive physical environment and temporal continuity, people perform a place ballet; a set of integrated gestures and movements that maintain a particular aim within a habitual space-time routine in everyday life [14].

Public places such as the bus stop or the town square can act as "encounter stages" on which people perform various interactions of a social and cultural nature. From time to time, events might interrupt the habitual nature of everyday rhythm and stimulate conversations between strangers – acting as interventions that alter the status of these interactions. The individuals' actions in these situations seem to turn into a performance that is bound to socio-cultural conventions.

Goffman describes performances in everyday interactions and suggests that they are shaped by the environment and the audience. The individuals assign roles to themselves, and the others, and perform face-to-face interactions suitable for their assumed roles [6].

Like space, technologies can mediate interactions. How and what form these interactions take (and how "appropriate" they are judged to be) is influenced by the affordances of the space within which the performance takes place. Mediated interactions are influenced by the people present, the nature of the space and the characteristics of the artefacts or devices through which performance is mediated.

Increasingly, digital technologies allow interactions remotely between different spaces, which may at times seem to be reducing the quality of the individuals' experience of place and shared encounters. However, the introduction of situated technologies as intervention in urban space may motivate and modify social interactions or stimulate new performative behaviours. It may interrupt the habitual nature of everyday interactions, creating new stages on which people can play out their engagements mediated by the new media technologies. What happens when playful digital technologies such as the public display or a reactive sound installation are embedded in the urban space? What kind of performative interactions do the visual and auditory interaction spaces [12] support people to embody? What happens when people are aware of these interventions? Will this stimulate different types of social interactions?

In order to explore some of these facets of sociotechnical behaviours within the urban context, we deployed two prototypes using the body as an interface. In the next section, we describe two studies and investigate technology-mediated shared encounters. We address various aspects related to the physical and performative interactions within the urban context.

THE STUDIES

In the first intervention study we deployed the "urban carpet", a horizontal digital display with a grid of responsive LEDs. When pedestrians walk over it, their locations are sent to a computer and a pattern of lights is generated, creating a visual interaction space that follows their movement dynamically [3, 5].

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In the second intervention study, we deployed a reactive sound installation that consists of an array of two infrared proximity sensors, forming two distinct sound "corridors". The range of the sensors was indicated using visual guide lines on the floor. The infrared sensors estimate the distance of objects (within 5 meters) and send the proximity values to a computer that produces different sounds with different qualities, through a set of speakers, creating an auditory interaction space.

Figure 1. Urban performance (the public display as a dance stage).

Figure 2. The sound installation creating honey-pot effect (left) and making sense of the sound installation (right).

EMBODIED PERFORMATIVE INTERACTIONS

In both studies we observed that the technologically created interaction space (visual and auditory) provided a common stage for emergent social and embodied performative interactions, in which the spectators participated actively in the performance.

Awareness

In the first study, different levels of awareness were observed, from passers-by simply glancing at the interactive prototype to people stopping around it and wondering about its function. The installation prompted reactions from peripheral awareness and passive engagement to focal awareness to direct engagement and active performance.

Shared experience

In both studies people behaved differently in different situations and this varied depending on whether the interaction took place amongst friends or strangers. Most people shared the experiences with friends; however, a few of the participants shared the experience with a stranger. The most common pattern observed when strangers interacted with each other was while they were waiting for their turn to engage actively with the prototypes.

Social proximity

Social proximity or person-to-person distance played a key role in defining the nature of performative interactions with others and this influenced peoples' perception of their own personal space [7]. The installation required people to negotiate their intimate and social boundaries in order to interact with each other and the distances were typically different between strangers compared to those between friends.

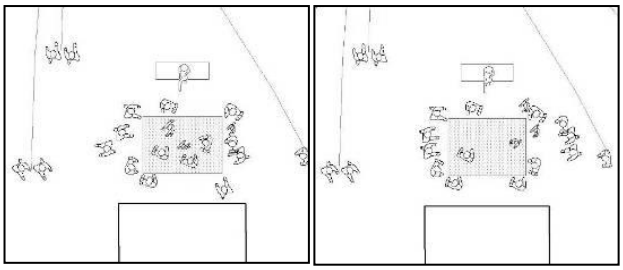

Figure 3. Interactions among friends (left) and strangers (right).

Interaction space mediating urban performance

The urban context is complex with different types of people engaging in the setting from all ages and backgrounds. Interacting with the technologically mediated setting was a social inhibitor for some people [11]. However, the installations created a feel of an urban performance that unfolded over time. It was clear that in addition to the effect of the visual and the auditory interaction spaces created by the technology, people attracted more people. Observing people interact is pretty much part of the experience [13]. In both studies, when there were people interacting with the installation, other people were attracted to observe and engage with it themselves. We also observed differences between single person and group behaviour. In a group we typically see a dynamic flow of performative interactions. People tend to play with the installation while interacting, for example dancing, with other group members.

Figure 4. Interactions among friends (left) group performance (right).

The display as a stage and spectator experience

The LED carpet created a public spectacle in which the spectators' experience was important. We suspect that in order for this kind of public display to be engaging, the viewer needs to be able to construct a meaningful social relationship of which the display forms a part [5]. The engagement with "the compere" offers one example of this. In this case, the spectator puts together the presence of the person who is setting up the "event" and performing in order to encourage the viewer's engagement with the presence and performance of the display.

Sense making seems to be at the heart of how we understand and experience technologies [10]. Watching other people before participating seems to be influential as it is unclear to many people how to behave in this new situation [9]. In both studies, people stayed at a safe distance from the installation from where they could passively observe ongoing interactions with it before choosing to join in, forming a honey pot effect [1]. In the sound installation in particular, and as the interaction space was invisible, people relied on each other to learn about the possibilities and limitations of the setting. Another important characteristic we identified was that people tended to mimic behaviours.

Figure 5. Honey pot effect (left). Urban spectacle and engagement with the compere (right).

Figure 6. mimic behavior

Playful use of technology

In both cases the playful use of technology triggered shared performances amongst friends and strangers. In the first study, for instance, often people recognize the horizontal prototype as a "dance floor" before they interacted with it. People found the installation enjoyable and to provide a potential for engaging with other people who happened to be in the same 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. The physical affordances of the public display need to be taken into consideration. For instance, installing the large responsive platform as a horizontal surface in a public space encouraged people to walk over it and congregate around it in a socially conducive way, encouraging active bodily and performative participation.

Spatial setting and movement rhythm

In both studies, we observed clear differences in the intensity of interactions with the technology and with other people mediated through this technology in 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 interactions with the prototype in different locations. Good local knowledge of these rhythms with respect to the urban spaces is key in determining appropriate approaches for supporting different types of interactions [4].

Temporal performative interactions

One of the interesting aspects we observed during an evening session in the first study is that the nature and duration of the interactions were different from those during day time in the same location. Although a smaller number of people stopped to engage with the installation, during the evening session people tended to be "themselves". They performed widely with their whole body using exaggerated gestures and movements and expressed different visions about the digital installation.

Finally, the size of the public display in the first intervention study played an important role in influencing the nature and type of interactions. In some locations, it wasn't immediately possible to trigger or support social interactions. Many passers-by did not realize that the prototype was there or it was not big enough to host interactions amongst large numbers of people at the same time. In this regard, the size of our prototype was a weak point.

CONCLUSION

We have presented two intervention studies in an urban context. Both examples explore different roles of technology in providing a stage that supports social encounters and generates rich performative interactions creating a feel of an urban performance that unfolded over time. The two prototypes differ in the ways they relate to the built environment in which they are embedded and also in the ways in which they reconstruct the relationship of the audience and participants to their surroundings and to other people around them.

Our preliminary evaluation suggests that by setting up the installations and introducing a change in an area within the urban space, we interfered in the habitual time-space routine of everyday life in these locations and made people aware of other people around them. While demonstrating differences in how users' intentions and consciousness can vary, the results show that people are willing to negotiate their social boundaries when faced with mediated intervention in their spatial and social setting. Spectators engaged with the technology in performing interactions (with each other and the technology), expressing desires to perform and interact in novel ways. Situating digital media in the urban space, and encouraging embodied and playful use of technology, can provide a stage for rich types of performative interactions that contribute to reinforcing a diversity of shared experiences in the physical places, not only unconsciously but also as performance of consciously intentional interactions [5]. The nature of these interactions and their appropriateness are tied to the nature of the space as well as the affordances offered by the technology. Factors include the type of audience and their cultural backgrounds, the temporal dimension, and the nature of the spatial context. The complexity of the urban setting requires further research into various aspects. In particular, we want to investigate how mediated encounters can influence the experience in the urban space and how different interfaces (visual vs acoustic) can have different effects on people's performative interactions. We wish to explore which factors influence people's perceptions and actions in detail and how they do so in relation to the spatial setting, and evaluate the degree to which this approach might motivate people to alter the ways they communicate and interact with others and connect socially in various settings so as to maximise the quality of the public experience within the urban environment.

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