Social Interaction with an Interactive Media Installation in a City Center

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Abstract  
In this workshop paper, we describe our experiences from a public trial, where a sculpture at Oulu city center was used as part of an interactive media installation. The media installation used the sculpture of a giant stone ball resting on a water fountain as a method of interaction. By rolling the stone, people could rotate a 3D model of Earth presented on a display next to the stone ball. During a public trial, approximately one hundred people interacted with the system, and we witnessed how it facilitated social interaction, education, and community cohesion.

Author Keywords  
Tangible interaction; urban user interfaces; ubiquitous art; natural element user interfaces; public spaces interaction.

ACM Classification Keywords  
H.5.m. Information interfaces and presentation (e.g., HCI): Miscellaneous.

Introduction  
Weiser’s vision describes how computing interfaces become embedded to our physical world, and will disappear as when they integrate to the everyday life surrounding [6]. In our project, we sought to look at an urban space from a point of view, where we linked the
conventional constructions into an interactive, computational installation. In our City Mouse project we were interested in exploring how interactive media can be entwined to the tangible elements of urban spaces. Earlier research has reported that the use of natural materials such as water [4], ice [5] or soap bubbles [2] facilitate playfulness, and we sought to design the media installation along similar lines by using unconventional materials in the user interface, stone and water.

**Interactive Media Installation**
In autumn 2012, we organized a City Mouse media installation at the city center of Oulu, Finland. In the project, we utilized the Rotuaari ball sculpture, see Figure 1, which is a well-known landmark in the city center, and used commonly among the local people as a meeting point or when navigational instructions are given. The sculpture consists of a large stone ball of approximately one meter in diameter, see Figure 1. The stone ball rests in a spherical stone bowl that has been carefully carved to match the shape of the ball. Water is pumped into the bowl and forms a thin layer in between two stones, allowing the heavy granite ball to rotate when pushed. Our interactive installation uses the rolling of the giant stone ball as an input. By pushing the ball so that it rolls, the user(s) can rotate a 3D model of Earth that is visualized on a screen next to the sculpture (Figure 2). The rotation of the stone ball was tracked with an optical mouse (Logitech M90) placed directly on its side. The mouse was covered with transparent plastic bag and sealed within a box, which was placed and balanced to gently touch the wet granite ball.

Although the shape of a large ball is a relatively rarely used form factor among control devices, spherical user interfaces have explored earlier e.g. in Sphere project [1] and with volumetric displays [3]. A sphere is a well suited form factor for multiuser interaction as it allows 360 degree access to the system.
Facilitating Social Interaction and the Community

During the trial organized during one day in August 2012, approximately a hundred people interacted with the system. Altogether, the system was found playful and engaging, and especially the interaction with the large, heavyweight stone ball was perceived to bring a unique flavor into the user experience. However, our public trial led also to the following observations that were not directly linked with the interaction itself, presented in the following. We found out that our demo facilitated social interaction in situ.

- facilitated social interaction in situ
- was turned into educational material
- provoked expressions of community that related to the use of the existing public objects in the system.

Facilitating Social Interaction

The installation facilitated social interaction very well. People interacted with the ball simultaneously – sometimes just trying it out, but also to navigate together to see a certain location (typically their home country). Especially children were eager to play with the demo together. Also, the installation evoked social interaction that was not directly related to interacting with City Mouse. Both short and lengthy discussions were born at the installation. Some people started to comment where they had travelled, and tell their experiences with different countries or cultures.

Turning the Demo into Educational Material

Several times the installation was used as an educational material. Some parents encouraged children to find out Finland, where the demo took place, and which was the home country for most of the participants. In a family travelling together, parents showed the children where they had started their trip.
and where they were located now. In one family, the father stood by the display and pointed out different counties that were shown while the children rolled the giant ball, see Figure 3.

Community, Ownership and Engagement
Interestingly, a feeling of a community (of the people living in the city/area), or how they perceived the sculpture surroundings as their own (common) territory was mediated from the audience behavior. During the public trial we were addressed several times with questions and comments where the set-up was referred with an expression “our [sculpture]”, e.g. “What an Earth are you doing with our Ball?” Also, a number of comments referring to the sculpture in historical or temporal perspective, revealing that people passed by and paid attention to the place quite regularly: “Good that this [landmark] is finally used for something more, it has been pity that its just stands there”.

Discussion
When designing the media installation, our original focus was to investigate the tangible user interface and the use of materials with it. However, our experiment turned out to be interesting also for the social and behavioral aspects it provoked.

We believe that integrating something that was familiar and an integral part of the common urban space to the interactive system had a positive effect in catching the audience’s attention. It provoked curious reactions, and in our experience, also lowered the threshold to try out the interaction and to express opinions of the system. Our findings indicate that if people perceive that the interface or installation is “theirs”, they are more eager to try it out. We were surprised by the positive feedback of integrating the media installation into the already existing elements of the public space, and this encourages us to continue within this design direction.

References