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New Geographies of City Childhood: Wearable Computing Devices and Children's Re-inhabitations of the Urban Environment

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Abstract

This paper outlines exploratory research being undertaken by the 'A New Sense of Place?' project in Bristol into the potential wireless mobile computing technologies has for enhancing urban children's socio-spatial practices. The paper introduces the project and its overall aims and the nature of emerging mobile computing technologies. It then outlines the research activities and methodologies. Finally, it outlines the project's findings and links these back to the project's overall objectives.

Keywords: Urban; children; wireless; soundscapes; geographies

1. Introduction

This paper intends to introduce work being undertaken in Bristol under the project title 'A New Sense of Place?' (NSOP). The basic objective of NSOP is to explore whether new emerging mobile ICT, variously known as mobile, wireless, wearable, embedded, and ubiquitous, can engage with aspects of children's lives in positive ways. In particular, we seek to explore whether the novel spatial and mobile capacities of these technologies can, in some ways, help enhance children's geographies in terms of independent, outdoor mobility.

NSOP is primarily focused on urban childhood and works upon the basic premise that, although not straightforwardly so, children's access to public outdoor spaces in the city have been increasingly restricted, controlled, and in some cases, problematised and commercialised in the UK and beyond (see for example Hillman, 1999; Lee, 2001; Travlou, 2003).

We feel these emerging technologies will be taken up by children and be integrated with, and change, their socio-spatial practices (as previous technologies from bicycles to desk computers and mobile phones have also done) (see Lee, 2001, on childhood and extension). We feel that they do have potential in empowering children, particularly if considerations of children's needs and how children can use them are fed into the ongoing design of the devices and the applications they carry at this early and formative stage. The advantages for Hewlett Packard, the private sector partner in Mobile Bristol, which has jointly developed and provided the prototype technologies, software and support for the project, are that it learns what children expect, desire and respond to in the devices and applications as thus far configured.

2. A Brief Introduction to Mobile ICT

Wireless computing technology is now emerging into the everyday urban social realm, for example in the form of free-to-use wireless broadband connection points at stations, and wireless community networks such as manchester*wireless*.net. This 'next wave' of ICT may merge personal computing and personal communications technologies and practices into a form where small devices may be habitually worn/carried, which can receive and send

location-sensitive audio and visual information while the carrier is on the move. These technologies are set to have a major impact on socio-spatial practices. They will bring new digital dimensions and spaces layered over the 'real' space. Another example of this is the digital information now being 'attached' to English Heritage 'Blue Plaque' buildings which can be picked up by new generation phones and handhelds (English Heritage, 2004).

Mobile Bristol, the parent project of NSOP, has coined the term 'soundscape' for these layers of spatialised digital information which can be posted anywhere and by, in time, anyone. It is anticipated that many forms of soundscape will be layered across physical space, authored by public and private organisations, and also, significantly, community groups and individuals. It is worth noting that 'soundscapes' are just one version of the broader concept of 'mediascapes', where text, pictures and other forms of media can be authored and viewed in the same way as sound files (see details of other projects in Mobile Bristol (www. Mobilebristol.com). These 'mediascapes' (see also Urban Tapestries) rely on more advanced 3G technology than soundscapes, which can be set up relatively easily using current mobile devices and networks.

3. Methodology

NSOP has adopted a methodology of a series of workshops with children from two schools in Bristol. These workshops are progressing from first principle experimentation in computer labs to taking the technology out into the urban environment. All workshops have been based upon the principle of child-led development. This means that children are provided with the equipment, the knowledge and the support to build their own soundscapes.

Although we have strong visions of how this technology might be deployed and used, we have deliberately not directed the children in what they do. We have, while acting as supporters in the workshops, acted as participant observers, videoing and recording the children's activities and exchanges. At the various points when the workshops have been nearing completion, we have also interviewed children in groups and pairs to explore their thoughts on the technologies they have come to know through use.

The ethical aspects of the research were carefully considered, particularly in terms of the children being used by a private sector company for what could be seen as unpaid product development. On balance we feel that the benefits gained by the children in terms of enjoyment and education, and the fact that these workshops were bringing children's needs and opinions to the attention of the research unit at Hewlett Packard, outweighed concerns of exploitation. The main driver for the project was to explore how children could be included both in the design of technology, and the use of the urban environment in a digital and real-world sense.

Workshop 2 entailed a group of 36 nine to ten-year-old children working for two hours a week over a 12-week period in their primary school class, with various project workers and supporting technicians. In the first stages of the workshops they mapped, drew and recorded in logs their knowledge, memories and experiences of a small patch of semi-derelict land opposite their school. Experimental exercises, such as children taking blindfold walks around the space were also conducted to expand and challenge their imaginative knowledge of the landscape. At the same time, the children were introduced to the principles and practicalities of outdoor mobile computing including experiencing GPS at work, locating themselves on electronic maps of the space from satellite signals, and adding sound files to PC data sets for use in soundscapes construction.

In the second phase of the workshop, the children, working in pairs, were given time and facilities to build a soundscape located in the patch of land opposite their school. These were tried out on each other and, when completed, were experienced by parents, teachers and friends on an open day towards the end of the workshops. Once the children were familiar with the concepts and technologies associated with soundscapes, we conducted a 'Big Map' exercise, which explored their experiences of the local neighbourhood. This 'Big Map' exercise used a very large-scale map (1:1250) of the streets and parks around the school. The children were asked to annotate the map with sticky labels showing which places they liked and disliked, real-world sounds they associated with places, and which places they would augment with virtual sound tags using the wireless soundscape technology that they had been introduced to.

4. Findings

The first phase of the workshops revealed that the children had a rich but varied and restricted relationship with the patch of ground opposite their school. To most adults, this area looked bland and unpromising, with a few scrubby bushes to break up the monotony of the grassy area, rough gravel, brambles and weeds. The OS MasterMap® depiction of this area shows it as a blank rectangle with no distinguishing features (see figure 1). However, the children had numerous memories and associations with this space, many of which had been organised through the school. A number of the children had used it for PE lessons, football and sunbathing. Summer fairs, barbeques and bonfires also featured highly in their drawings and narratives, as did interesting flora and fauna.

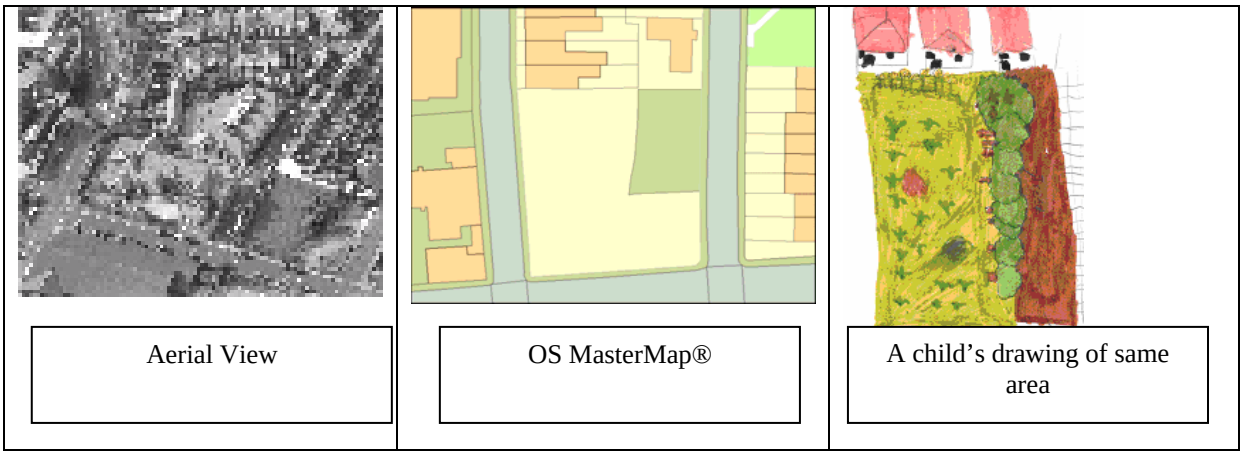

Figure 1. Patch of ground opposite the school as represented in mapping and one child's drawing

The second phase of the workshops switched from the children's perception of the space to be used for the soundscapes to the technology involved. Using the Mobile Bristol editing software on their school IT suite, they produced 16 soundscapes layered over the space. These soundscapes could be viewed and heard through the Mobile Bristol Client software held on the personal digital assistants, or PDAs (see Figure 2). In this figure, the shapes represent areas chosen and sized by the children to which they have attached sound files via a database of locations. As the device wearer enters these areas in the physical space they will hear, by wireless network, the sound files as selected by the child as soundscape author. These were varied in form and content, but in general the sounds they chose reflected their musical tastes and influences from commercial media. The sounds they chose also included sound effects from the internet, as well as self-recorded mini-dramas, raps and themselves singing favourite

pop-songs. Most of the sounds they chose did not bear any relationship to the location they were placed in, suggesting a strong division between the real-world environment and the virtual layer of sounds the children created. Rather, the children designed the soundscapes to be listened to and enjoyed by friends in a social context of sharing their work.

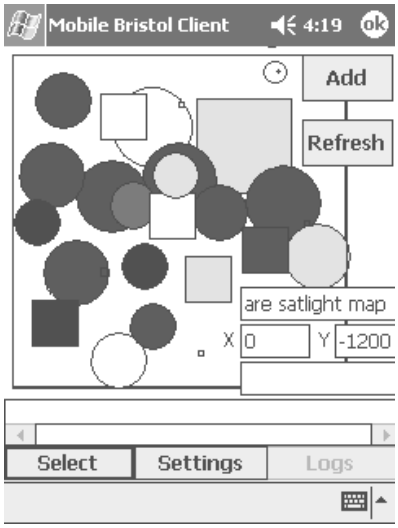

Figure 2. An example of one of the soundscapes designed by the children

The third phase of the workshops, which consisted of the 'Big Map' exercise, was design based, looking at how the children would use their local neighbourhood to annotate their local environment with virtual sounds. The results from the 'Big Map' exercise were entered into a Geographical Information System (GIS) software package and analysed against OS MasterMap® backdrop mapping (see Figure 3).

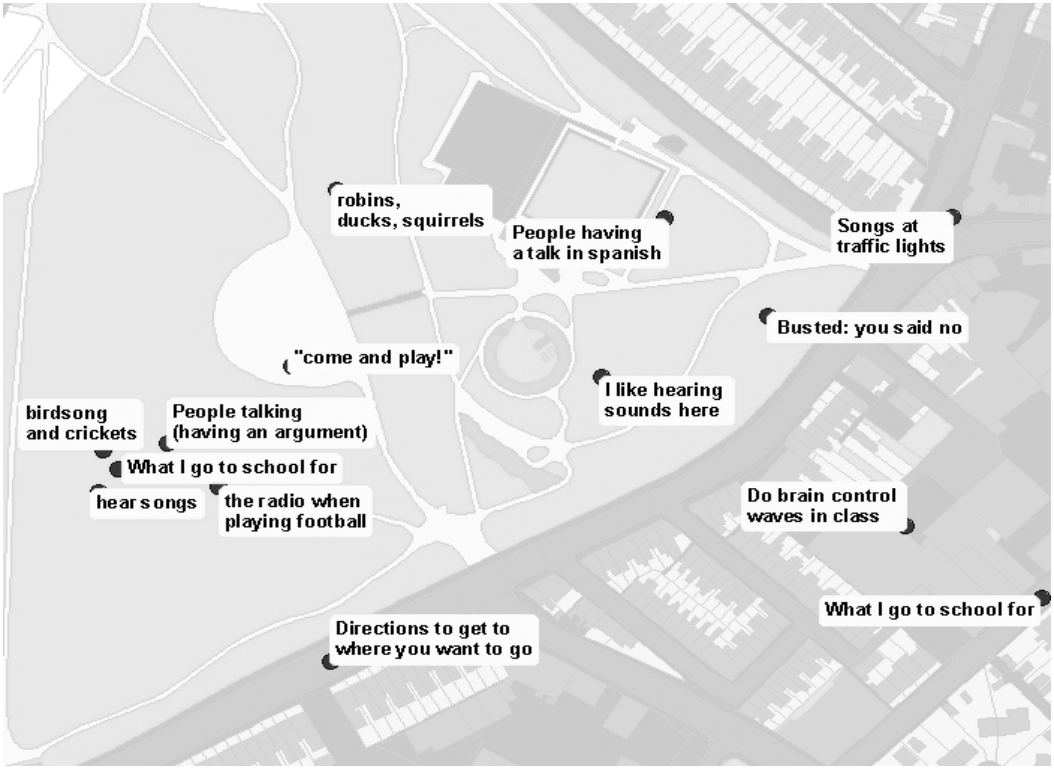

Figure 3. Virtual sound labels transcribed into ArcGIS. Extract showing the park area of the 'Big Map'. Backdrop mapping OS MasterMap®

This extract from the aggregation of all the children's soundscape labels shows the type of sounds that the children wanted to place in a large park in their local area. The sounds are varied in their type including music tracks, dialogue, nature sounds and advice tags such as 'directions to get to where you want to go'. Unlike the soundscape for the patch of land opposite their school, there does appear to be more of a relationship between the sound chosen and the location it is placed in for the neighbourhood as a whole. The virtual nature sounds add to the sounds that are already experienced in the place, but perhaps provide extra certainty that these noises will be experienced, rather than being a random encounter. The sound tag, 'the radio when playing football' enhances the feeling of this space as a leisure space associated with relaxation and sport. In other parts of the neighbourhood, the children would place music tracks that their friends liked onto their friend's houses showing the importance of social lives in the potential use of this technology.

5. Conclusions

Our conclusions thus far are that although such technology is not yet widespread, it may well have a potential impact on children's socio-spatial practices and their engagement with the city (just as other technological innovations have done from bicycles to mobile phones). We feel the technology can be used to a), enhance the quality of children's existing uses of some spaces; and b), enhance their overall opportunities to engage with city space. This latter conclusion is developed in relation to notions of risk, security and surveillance, parental attitudes, and children as stakeholders in urban space. Although this, or any other single technology and/or initiative, cannot offer a panacea to the problematics of children's interaction with the city, these technologies and related applications will integrate with, extend and develop existing childhood practices. These technologies allow children ways to possess, order and author space in a way that may re-engage them with it in physical terms.

Key Concluding Points

- Children are attracted to this technology and the social-spatial potential it has.
- Like the www, this technology may carry information/practices which are hostile to childhood as well as information/practices which are 'child friendly'.
- This technology has the potential to offer parents and guardians childhood monitoring/tagging capabilities while at the same time offering children recreational, educational, communication, and social potential (current child tagging/tracking systems tend not to offer other more positive parallel uses).
- This technology may allow children the chance to take new forms of interest in, build stakes in, and repossess and occupy spaces from which they have been excluded.
- This technology may allow children to superimpose their own stories, meanings and activities on landscapes in ways which do not clash with adult meanings and expectations. It therefore offers a new means of children's geographies being able to interpenetrate through often dominant and restrictive adult geographies, in ways which do not invite censure.
- This technology and its applications need to be developed with children in mind.

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