Using Ethnography or Technology Probe: Understanding Children's future use of Roadside Interaction

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ABSTRACT

This paper introduces methodological issues regarding a project where we intend to invite children in design of applications that bridge the gap between road-users and bystanders. We discuss the design-space along the roadside and how communication and information technologies can empower neglected groups such as children. Two methods of collecting a deeper understanding of the design possibilities for roadside interaction are presented. Ethnographic methods and technology probes are two approaches to unravel different details of children's active in order to develop tools for roadside interaction.

Keywords

Roadside interaction, children, ethnography, technology probe

1. INTRODUCTION

We have an interest in exploring the possibilities to design a system supporting the interaction between roadside bystanders and road users. This paper presents methodological problems in obtaining understanding of children's expressive behavior towards road-users - given the possibilities to communicate. Ethnography and technology probes are presented as two approaches to explore probable design issues. Our aim is to develop tools for children to interact with road-users that pass their childhood geography. But we find that such development is dependent on our understanding on how the roadside – as an interactive design space - will be utilized by children.

Increasingly our society revolves around mobility. We move between activities such as work, leisure and rest. This is a reality for many in our world, especially when studying the everyday mobility of *automobility* [2]. However, in automobilty, children are neglected as members; they are (for good reasons) excluded from partaking. Still roads are important part of their childhood geography.

The road and its surroundings are of interest for road-users as well as for bystanders. Our aim is to bridge the gap between these groups, that we find both have an interest on and regarding the road. This approach will enable us to understand the detailed texture of the children's local culture that can be expressed towards the road-users. By enabling interaction between bystanders and road-users, knowledge regarding the road can be transferred enhancing the sense of a vibrating "living" road. We hope that it will outline what expressions the children will mediate.

The paper is organized as follows. First, we consider the understanding of roads and how roads are a part of childhood geography. We continue by presenting the roadside as a field for designing interaction and briefly how children previously have been enrolled into design. Then we present some of the problems that this project faces and suggest two methods that might resolve some of these problems. Finally we discuss the two methods in comparison with our design objective to conclude the paper.

2. CHILDREN AND ROAD-USE

The importance of road, roadsides and vehicles increase as our everyday life is spent within these spaces. Roads are often described as, placeless; history-less strips of asphalt and concrete. But can also be understood as a public space in which many activities and actions take place. Roads are even used as media for individual and political expression through the use of bumper stickers [3, 5]. Places, as some roads, can be sensed as cold or they can create a sensation of vibrating with life. The differences are understood by observing how we create an understanding of the place. "The liveliness of a place is influenced by… the transparency of the setting (that is, by how it makes visible the activity it contains); the way people can leave perceptible traces of their presence; the manner in which things express their action and purpose; the pattern of ownership, which always have sensory consequences; and the mix and density of movement and activity" [14, p35]. The road environment does not offer many clues in relation to what happens on them, who the abutter to a particular strip is (who "owns" it), etc. Thus it is hard making any understanding of the road dependent of forms of mediation. The neglect is especially true when focusing on the children's abilities to partake in the liveliness of the roads.

Children perceive road differently than adults, where we se functionality of transportation, children see a playground [18]. Moore describes the multifarious ways that children use roads, they are places for discovery of animals, objects, trees and hedges, and they are places for movement and play where the

children can "hop, skip, jump, climb, crawl, leapfrog, balance, skate, slide, run, chase, hide, pounce, sit, lean, and twirl"[18, p51]. Roads are also "the social hub of the neighborhood, where children meet, learn about each other and their adult neighbors, and investigate their surroundings"[18, p47]. Further, while studying children in the age between 9-16 years old, Matthews [17] finds that the road is a liminal space for children, i.e. that it is a space for young people in their transition between child and adult. Matthews shows that there is a shift in the activities children conduct on the road between 9 and 16, from being a place for play it becomes a place to meet and socialize. Roads are indeed a mundane part of the children's life.

3. DESIGNING ROADSIDE INTERACTION

The study is part of a project that investigates peer-to-peer information sharing between road-users and between road-users and bystanders. A system has been developed that enable rapid peer discovery and sharing information between units of PDA´s in traffic [6]. Previous studies have focused on interaction between road users whereas this study explicitly focuses on bystanders. The setting of the road environment is unique since the isolation and the speed of the vehicle contradicts with the necessity of social interaction to handle problems and contingencies [13]. The limitations in the roadside environment are particularly obvious when studying the interaction between bystanders and road-users. Road-users are limited to the use of horns, flashers and the movement of the vehicle. Whereas bystanders use signs, buildings, flags and other symbols along the road "compensate for the direct contact with people"[16, p584].

If the restricted interaction between road-users and bystanders is perceived as a limitation, Information and Communication Technologies can compensate for the direct contact [12] (particularly since "direct contact" would have a devastating meaning in road-use). One could speak of enhancing the roadside environment. In light of these possibilities using or perceiving a road: "should be designed as a meaningful and informative experience." [15, p574] Even though there are rational and task-oriented values to be pursued with this work, our objective in this study is to design for "activities we really value" as playful creatures [8].

Children are playful creatures that see the roads differently than adults [18]. They are also bystanders that could benefit from the ability to interact with road-users in the immediate surroundings. Therefore we include children in the preliminary stages of the design process, shaping the applications from the children's interest rather than translating existing applications for children's use [4]. Involving children in the design and development of Information Technologies has become grounded in the research field of Human Computer Interaction. In a historical overview of this approach, Druin [4] identifies four different roles that children can play in the design and development process, as users, testers, informants and design partners. The role of the child depends on the goals of the study, the relationship the children have with adults during the study and the children's relationship to the technologies that are studied. Since this study is explorative and as we are using probes, the role of the child as informants is what we think is suitable for the study. Thus, the children can provide feedback on the idea of supporting interaction between bystanders and road-users, they can also provide and insight in the information that this type of media can channel.

4. STUDYING ROADSIDE INTERACTION

This project intends to explore and develop the road as a media, providing children with the means to interact with road-users. However this poses several methodological challenges First, roads are used, in an adult perspective, to generate mobility. Settings involving mobility are difficult because quite often what the researcher intends to study is or gets distributed. Weilenmann [20] suggests that we can follow mobility through four different approaches, i.e. by following the technology, following the people, studying a place or by studying the information space. Two or more of these approaches are preferably conducted in combination to increase the understanding of mobility. Road-use interaction is difficult to study due to the speed of the vehicles and the metal cage (i.e. the car) that the driver is seated in, most often the researcher has used the passenger seat, following one subject at a time, to study road-use [see e.g. 11, 13]. Third, children are not simple or safe subjects, they have even been described as furious [Bunge & Bordessa quoted in 1, p12]. Neither is "children" a simple category, it is very diverse and so are the subjects that "children" refer to. The definition of a child is therefore difficult. Working with children is guaranteed to slow down the design process even though it might in the end be rewarding [4]. Finally, we wish to explore aspects of mediated interaction that still doesn't exist, with the purpose to design and outline tools that support this kind of mediated interaction. We are caught in a paradox where we whish to understand the use in order to design but we have to design so that we can study the use. In this section we will describe two methods to obtain an understanding of childhood geographies that can inform the design process, namely ethnographic involvements and technology probes.

4.1 Studying children

There are various ways to study childhood geographies e.g. "Bench tests" are commonly used to evaluate the development stage of children whereas Lynch used drawings as a way of analyzing children's perception of their territory [14]. However these only briefly reveal children's geographies, such studies are according to Aitken "too far removed from the children's lived experiences"[1, p4]. In order to study children we have to be where the children are. At the same time, as adults, there is no possibility to conduct unobtrusive observations, we have to engage with the children's worlds and learn from them. According to Aitken: "The most important distinction between these ethnographic methods and those of cognitive and spatial science is the relationship between the researcher and the researched. The ethnographer is not seen as an expert on the subject under study but instead the participant's expert knowledge of her or his culture is stressed"[1, p15]. Thus the role, as an engaged curious student, is proposed for the researcher. This ethnographic approach is suggested not only since the researcher studies the children at *their* place but also as it shifts the asymmetrical power relation between children and adults.

In a study on how childhood geography Rasmussen and Smidt [19] use a variation of ethnographic interviews. They gave 88 children a disposable camera with the instruction to always have the camera with them and to photograph places and things that they were involved in. An interview with the children was conducted after developing the photographs. The photographs structured the interview, i.e. the researcher would ask the children

to describe each picture and further questions would follow from that. The children were given an active role in the research process by using this method. This was also the intention for using this approach, i.e. the method recognized children as actively in creating their own lives.

An ethnographic study would increase our understanding of how children use and utilize the road. Participating at a kindergarten and using video while the children are on and beside the roads, especially during small excursions, would provide data on how children actively attend to the activities on the roads. It has been argued in e.g. Computer Supported Cooperative Work (CSCW) that an understanding of current social practices, by using ethnography, is important when developing computer-mediated-communication [9]. It seems that conducting ethnography could provide detailed descriptions of how children handle the road, but that does not imply that we can get a notion of the content of children's interaction efforts with passing drivers, if they were given the opportunity to communicate with road-users.

4.2 Studying through Probes

Probes are instruments that intervene with its environment in order to collect data. In design, so-called cultural probes have been used to gather data about everyday life that can inspire the development of novel technologies [see, e.g. 7]. Hutchinson et al. [10] present an alternative method of using probes. What they call a technology probe balance the data collection for three interdisciplinary goals in social science, engineering and in design. This is similar to our project that also has different interdisciplinary goals. We hope that a probe can collect data regarding:

- *Sociological issues*: what and how do children want to express when given the opportunity to mediate it to road-users, what is the content of their messages. Will the probe affect the children's perspective on roads and road-use and if so in what way.
- *Engineering issues*: is the probe used and if so who and to what effect.
- *Design issues*: explore the road as an interactive media by studying how children utilize and engage in new spaces for interaction.

However, the design of a probe requires careful consideration. Its ability to collect data is dependent on the construction of the probe. Hutchinson et al. propose a couple of features: First, the probes have to be simple with only a few functions. Second, the probes should be flexible or open-ended i.e. the probe should not inhibit the user to find new other purposes in using the probe. Third, the probes should log and collect data. Fourth, probes should be used early in the development process.

To follow these features we propose a simple probe with a gathering phrase and a sending/throwing phrase. The gathering phrase consists of devices that the children can use to create/gather messages: these devises are 1) scanner, so that the children can send drawings, 2) digital camera, to take pictures and a 3) sound-recorder, to collect sounds. The data that these devices collect are then available in the device that the children use to send/throw data to passing drivers. For every message that is sent, a new message has to be collected. It is important that the sending/throwing device is located where the children can see the road. During the sending/throwing phrase the child will, by pushing or squeezing a button transmit a message through a wireless network to passing drivers. The probe will log the gathered and sent messages for analysis.

5. DISCUSSION

The aim of this project is to obtain a better understanding of how children can utilize mediated interaction with road-users. Gathering data that helps us understand this is problematic without things that the children can hold, test and play with. We think that it is important to study the children in *their* place during everyday life. Thus, a probe would gather data, created by the children at their place, but at the same time it would be unable to obtain data regarding the practices that evolve around the probe. We find that ethnography is a useful approach when studying current practices and to get a deeper understanding of the children's use and ways of handling the road and road-users. However, this understanding might not reveal the practices that will evolve around the roadside as an interactive media.

Therefore we think that neither ethnography nor technology probes can provide a thorough understanding of the practices where children express themselves towards road-users. However, a probe can provide data with the messages that the children channel, and ethnographic interviews, similar to Rasmussen & Smidt [19], can provide an understanding of the context in which the messages are created. This combination, we find, is important in the design process of roadside interaction.

6. REFERENCES

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