

Situating In-betweenness

1 Introduction

As Urban Computing emerges as a distinct field of research in the area of Human-Computer Interaction (HCI), new approaches to designing technologies for the city are being developed in response to the challenges of an increasingly complex and multi-faceted urban experience. Social action and spatial form in the built environment have been described as being deeply entwined and inter-related [Hillier & Hanson, 1984] and one strand of social action which is increasingly being explored is peoples use of mobile technologies. These relationships – of the social to the spatial, and the role of technology within this – have been studied in detail by anthropologists, geographers and social scientists [e.g. Sheller & Urry, 2006, Crang & Graham, 2005] These studies often focus on understanding and analysing the current situation, and developing theories around this. We are interested in building on this work and exploring how an understanding of the articulation between the spatial, the social and the technological might enable designers to identify new design spaces for mobile technologies and services within the built environment.

The question we have been studying is how can we start to understand how does peoples use of technology change their behaviour in in-between spaces, and how do we begin to design new technologies and services to respond to this? Mobile technologies and urban lifestyles have led to changes in proximal relationships and local communities, with the rise of non-geographical connections and splintered communities, and the flexibility of mobile technologies means that the activities of business, leisure and home life are increasingly entwined. Just as the development of the telephone helped enable skyscrapers to become a viable business environment in New York in the 1920's, mobile technologies are today changing the way we interact with the built environment. People search out a quiet corner of a public square to make a business call, seek out the table with the strongest wifi signal in their

favourite café, or chat simultaneously with friends around the table and with those on the other side of the world. Consequently, a challenge has arisen for designers to understand these new socio-spatial configurations and to design technologies and services appropriate to them.

While there is a large body of research investigating the use, design and appropriation of technologies in the home [e.g. Gaver et al., 2006, Brown et al., 2007], the workplace [e.g. Heath et al., 1999] and what Oldenburg calls 'third spaces', that is social spaces such as bars, cafes and leisure venues [e.g. O'Hara et al., 2004] we believe there is a gap in research into the role of technology in the spaces and activities that fall between these areas. That is, within loosely defined public spaces, or areas of what we call 'in-betweenness'. We consider in-betweenness to be the moments of transition between places and activities; the walk to your car, the wait at the bus stop, the daily commute, the checkout at the supermarket, the path through the park and so on. These are situations and spaces we encounter everyday and by acting in them and reacting to them, they acquire meaning for us and become places. Augé's concept of 'non-places' [Augé, 1995] includes some situations we consider as in-betweenness, including airports, highways and transport lounges. However, this term has a negative connotation that we prefer to distance ourselves from; instead of considering these situations as the void between meaningful activities or places, we suggest thinking of these places in their own right, and in terms of how they are actively constructed by a city's inhabitants.

Can developing a deeper understanding of these in-between spaces benefit design? Mobile computing research, on which much Urban Computing is based, has been criticised as potentially resulting in a limited understanding of the urban experience and consequently producing mobile technologies based on a narrow range of ideologies and agencies [Dourish et al. 2007]. Techniques from the social sciences such as observation, participant interview and fieldwork have recently been employed within the field of HCI as ways of exploring the context into which new technologies might be situated. Projects such as Familiar Stranger [Goodman & Paulos, 2004], Urban Tapestries [Silverstone & Sujon, 2005] and Uncle Roy All Around You [Benford et al., 2004] exemplify an approach to discerning the urban environment, and our behaviour within it, through observation of people's actions and interactions via a custom-made application or device. This approach, which is simultaneously design and research, can be considered as

an example of ‘situated perspectives’, as defined by Harrison et al [Harrison et al. Under review]. Harrison suggests that this umbrella-term collects together a number of approaches currently found in HCI research which have a common point of reference in a particular model of interaction, suggesting that these approaches all “*treat interaction as a form of meaning making in which the artifact and its context are mutually defining and subject to multiple interpretations.*” This definition implies that a tripartite relationship exists between the spatial and social situation of a technology and the designed artifact. However, design studies produced so far in Urban Computing have tended to focus on one particular activity – story-telling e.g. [Nisi, 2006] or game-playing e.g. [Barkhuus et al. 2005] for example, or an explicit location e.g. [Jungknickel. ongoing] and have not greatly considered how technology relates to more ambiguous social and spatial concepts.

2 The Challenge

The difficulty with understanding and designing for in-betweenness is that these spaces tend to be unstructured and weakly defined. Mobility and indeterminacy are two properties we consider to be characteristic of in-betweenness; activities may emerge spontaneously out of the general ebb and flow of the city, disappearing again as quickly as they arrived leaving behind few traces of their existence, while occupants are often transient and mobile, located in these spaces only temporarily. In these places distinct social behaviours frequently arise in response to the spatial context; for example, a queue for an ATM develops on a crowded pavement, positioning itself so as to leave a gap between the person at the ATM and the start of the queue. Responding to both the spatial and social context of the in-between situation, not only does this leave room for pedestrians to pass by but it also offers privacy for the current ATM customer. This behaviour is dynamic and transitional in nature; once the queue at the ATM has dissipated there are no traces left in the environment informing future queues of how they should form; knowing how to queue requires local knowledge.

3 Our Approach

How then do we begin to understand and design for in-betweenness? Our approach has been to break down this broad topic into more manageable instances and to explore a small number of focused and tangible topics. By comparing and contrasting the outputs of these more constrained investigations we can begin to see how in-betweenness is similarly and differently constructed and begin to recognise future opportunities for design. To this end, we organised a series of workshops focusing on specific aspects of in-betweenness that are visible in our everyday environment.

Within these workshops we looked at how the built environment, people's activities and their use of mobile technologies are inter-twined and related. We were interested in exploring how a deeper understanding of the existing situation might lead to a broader, more nuanced, range of designs able to reflect people's lived experience of the city. By looking at everyday social practices in situ we believe that a more discerning understanding of these situations might be cultivated and new design spaces identified.

To date, our findings have been;

- Observation identified a number of common characteristics and themes of in-betweenness that cross all contexts and locations studied.
- However these themes and characteristics manifested themselves differently in different social and cultural contexts.
- Engaging designers in observational activities led to a wide range of designs for public spaces reflecting the social and cultural context in which they were situated.

4 The Workshops

To date, we have held three workshops. Each of the workshops took a different perspective on the topic of in-betweenness providing us with a number of lenses through which we could view the subject. Our first workshop, 'Why Wait? A workshop on place, time and future technologies', took place in central London in July 2006 and explored aspects of public

waiting – the places in which people choose, or are forced, to wait and the activities and technologies that support this waiting. In this workshop we considered in-betweenness in terms of time, where waiting constitutes a ‘pause’ in the rhythm of people’s everyday lives. The second workshop, *Betwixt*, took place in September 2006 in Orange County, California, an ‘exurban’ environment sprawling south of Los Angeles. While *Why Wait* began its examination of in-betweenness by considering waiting as an in-between activity, *Betwixt* focused on the spatial aspects of in-betweenness, in particular, transitional spaces – the highway, the pavement, the mall, the pier, the drive-thru – that are characteristic of the everyday life of this environment. In *Betwixt* we considered how these spaces revealed their qualities of transition, and who they were (and weren’t) transitional for. Our most recent workshop,

‘A Public (in)Convenience’ took place in Amsterdam in November 2007. This workshop looked at one specific example of an in-between space – public toilets – and considered the relationships between social attitudes and values and spatial form and technology design. Research of technologies rarely deals with the physicality of body functions and public toilets exemplify an often overlooked space. In *A Public (in)Convenience* participants considered these sites as being a precise intersection of social and spatial in-betweenness and reflected on how social and cultural conventions and practices can be reinforced or subverted by design.

Each of the three workshops had the same structure. They began with a session of research speed-dating which compelled participants to introduce themselves to each other. This was followed by a fieldwork activity in which participants were divided into groups, given identical lists of scavenger-hunt style tasks to complete and then sent out into the local environment. Completing the list of tasks required participants to actively engage with the situations they encountered as well as observe and document them. On returning to the workshop venue, each group presented their documentation of the fieldwork to the other participants. A discussion followed which drew out the predominant themes around the topic and offered participants an opportunity to share their theoretical and personal perspectives. Finally, during the design session groups were asked to select a situation or individual they had documented during the fieldwork and to produce a concept design inspired by this image. These design sketches were then presented and

critiqued by the workshop participants. For more information on the rationale behind this workshop structure see [Bassoli et al. 2006].

Each of the workshops generated findings around the particular subject – waiting, transitional spaces and public toilets – but here we’re going to focus on the question of what we can learn about the social and spatial nature of in-between spaces in general by looking across all of the workshops, and how this understanding might be of use to technology designers. Looking across all of the workshops we begin to see a number of common themes which emerged naturally in each case. By comparing and contrasting how these themes manifested themselves in each of the workshops similarities and discrepancies in the social and cultural construction of in-betweenness were revealed. To illustrate how this comparison across the series of workshops can deepen our understanding of in-betweenness, we will take a look at one of these themes in depth, that is, the concept of LEGITIMACY. In this case, we define legitimacy as the right to be in a certain place at a certain time.

5 Legitimacy in Why Wait?

In *Why Wait*, the discussion of legitimacy focused on social negotiation – exploring and understanding the ways in which certain actions made one’s waiting legitimate to the other people in the space. For example, waiting in certain places could require different attitudes or postures, to make clear to people around that the waiter’s presence is socially legitimate. In figure 1, a girl sits outside a café checking her text messages as she waits for a friend, her behaviour indicating to those around her, ‘I’m busy, don’t speak to me.’ This action, observed by a group of our participants, affirms her right to be there alone. In this case, the mobile phone was being used as a form of social defence against unwanted attention. In other situations our participants noted, the act of waiting itself was called on to legitimise presence. In another example a workshop participant approached a girl standing outside a theatre, wanting to ask her what she was doing there, ‘I’m sorry,’ she said, ‘I don’t have time to talk to you. I’m waiting for a friend.’



Fig. 1: A girl checks her mobile phone as she waits for her friend outside a cafe

One group of participants observing the actions of pedestrians and drivers at a busy zebra crossing noticed that pedestrians and drivers took it in turns to take an active role. For a certain period of time pedestrians would assume the right to cross the road, drivers would then indicate to pedestrians when they felt they had waited a reasonable amount of time by edging slowly forward onto the crossing. After allowing cars to pass for a while, pedestrians would step onto the crossing forcing the traffic to give way. In this way, the physical actions of pedestrians and traffic were used to negotiate who had the legitimate right of way on the crossing at any moment in time.

6 Legitimacy in Betwixt

In Betwixt, different aspects of legitimacy were observed and commented on. During the fieldwork activity participants took a photograph showing a list of regulations painted directly onto the Newport Beach pier. This lengthy set of

rules describes all of the things one is not allowed to do in that location. Another group of participants, who visited the Irvine Spectrum, a shopping mall, for their observations, was struck by the incessant cleaning, noting that there seemed to be more cleaners than customers and saying that they felt the mall space was entirely prescriptive. To them, everything appeared pre-planned leaving few real choices for the visitors; smoking or eating, for example, could only be done in very particular locations that had deemed to be the “right” place for that activity. Our participants stressed that even “public places” in Orange County are often actually privately owned and so legitimacy here was less about negotiation with other people in the space, but more about a set of rules and legitimate behaviours imposed by people with authority over the space. In Betwixt then, unlike Why Wait, the focus was not on legitimacy to one’s peers or co-occupants of the space, but more about legitimacy with regard to the owners of the space and there appeared to be little room for social negotiation over acceptable types of behaviour.



Fig. 2: Legitimacy in Betwixt; A list of rules painted on Newport Beach pier

As gender-specific spaces public toilets are subject to strict social codes of behaviour covering legitimate use of the space and participants felt that design was able to subvert or support these codes. The picture in figure 3 was taken by one of the groups during the fieldwork session of a Public (in)Convenience and shows one of the portable urinals that are placed around the city centre during weekends. In this case, the group felt, legitimacy of people to use the urinals was constrained by their physical form. One participant pointed out that, in fact, the design of the urinal excluded more than just the female section of the population, it also discriminated against children and non-able-bodied males. In the discussion following the fieldwork presentations, several participants expressed the view that, in this way, design legitimises and reinforces cultural values. The provision of these urinals, participants felt, reflected the attitude that it was acceptable for men to urinate in the streets but not for women.

By looking across all three of the workshops we can show that despite apparently sharing few characteristics of form or activity, there are commonalities in the themes and behaviours that take place in in-between spaces. Observations made by the workshop participants revealed legitimacy to be a common attribute of in-between spaces, with occupants often desiring to find ways to legitimise their presence in the eyes of others. However, the form of this legitimacy, and to whom it is necessary to make your presence legitimate, varied depending on social and cultural context. In our workshops legitimacy in in-between-spaces was observed to be enforced by social negotiation, regulation as well as through the design and form of objects and technologies.



Fig. 3: A temporary urinal on the street of Amsterdam, only accessible to a portion of the population

8 Designing for In-betweenness

Our question now is how can observations ‘in the wild’, such as those of the workshop fieldwork activity, help us open up new design spaces for in-betweenness? As we described earlier, the workshops were structured so that participants engaged in fieldwork, discussion and finally, a design activity, and our approach to answering this question was to look to see how the former influenced the latter. We maintained a strong narrative thread throughout the workshop, guiding the group from one activity to the next and helping establish a common frame of reference for participants. In the fieldwork, groups undertook identical scavenger-style list of tasks then were asked to present their findings to the other groups when they returned. During the discussion which followed we encouraged participants to illustrate theoretical points with concrete examples drawn from these fieldwork presentations which helped overcome participants differences in vocabulary, technical knowledge and background. The same thread continued into the design session when groups were asked to choose one situation encountered during the fieldwork and to design a tool or service to support or subvert it. For this exercise, groups were given between one and two hours in which to come up with their design sketches and told not to consider practical matters such as technical constraints, cost or materials. Our aim in this session was not to come up with implementable designs during this activity, but to explore the links between observation and design and the potential for opening up new design spaces.

We found that taking part in an observation exercise out in the ‘real’ world and drawing on this as the basis for design led to a wide variety of designs for public spaces each of which reflected the social and cultural context in which it was situated. To illustrate this further we’ll follow the theme of legitimacy again as it re-emerged as a basis for design in each of the workshops.

9 Legitimacy in the Design Activity

Observing how people currently act in public spaces, how they adapt the environment to support their actions and what objects they bring into the space with them can suggest new roles and design spaces for future technologies. Using an image of a man waiting at the bus stop as inspiration,

one group from Why Wait produced a design sketch for a device they called 'Myst-Air'. This was a breath-activated appliance, similar to a cigarette, though larger and less fragile, which instead of creating a cloud of smoke around the user, generated a watery mist. The group said that they wanted to devise a positive response to waiting that allowed for both territory marking but also had a calming effect on the user. During the critique of the design, other participants commented that the design was open-ended enough to allow the owners to either admit other people around them into their "cool bubble" by sharing the device, or to use the cloud of myst to keep the space for themselves. In this way, one could mark the boundaries of one's personal waiting space, while also engaging in an activity indicating to others your legitimacy to be there.

In Betwixt, one group responded to the concept of legitimacy in a very different way. Using as inspiration both a photograph of a woman cleaning the mall and a video from a group who had spent time interviewing a homeless man, they developed a design they named 'Tuckatruck'. Similar to the TukTuks of South East Asia, the Tuckatruck is a single-person, three-wheeled vehicle. The group described it as a pedal-powered cart big enough for a homeless person to sleep in but also featuring a large rear compartment to be used in the collection of objects for recycling. This design was inspired by the challenge of providing a homeless person with a legitimate presence in the mall; with this design the group sought to legitimise an existing activity in the eyes of others.



Fig. 4: Photograph of mall cleaners from Betwixt observations; TuckaTruck design

Another perspective on legitimacy was represented in a design sketch created by one of the groups at A Public (in)Convenience. During the discussion participants had debated at some length issues around the role and working conditions of the toilet attendants whom they had encountered during the fieldwork. While participants observations and conversations revealed toilet attendants to feel a certain amount of ownership over the place in which they work, the later discussion and some of our participants previous research brought out details of the low-pay and social isolation often suffered by toilet attendants. Taking these issues, and the image of one of the participants in conversation with a toilet attendant as a basis for their design, a group came up with the concept of the Toilet Paper Publishing Company. During a chat with one toilet attendant, the had group discovered she was writing her memoirs describing her 35-years as a toilet attendant and the group designed a means for her to publish these memoirs to a wider audience. Using the toilet paper publishing service, her observations or funny interaction with customers could be captured and written down, reappearing in the toilet cubicles printed on the toilet paper. The group suggested that the service might be networked between remote toilets enabling better communication between toilet attendants, which it was suggested, might in turn lead to greater legitimacy of this occupation.

From the diversity of these design sketches, and the variety of approaches which groups brought to concept of legitimacy, we can begin to see how observation in situ might lead to designs able to address in-between spaces and situations in general, while retaining a social and cultural specificity.

10 Conclusion

The questions we were interested in were, how does peoples use of technology change their behaviour in in-between spaces, and how do we begin to design new technologies and services that respond to this? Through a series of workshops we found that breaking down broad concepts of urban experience into observable instances allows us to discover their social, spatial and cultural specificities and that observation of current practice, social convention and behaviour in a number of culturally different locations can reveal new design spaces for future technologies. We believe that using observation as part of the design process helped establish a common frame of reference and store of

examples and engaging in a collaborative process of observation allows individuals to refer to these shared experiences as concrete illustrations of more abstract concepts. Within a single workshop we can see how the topics raised by these observations were reflected in a design activity, but also expanded upon. However, with more than one workshop to draw on we begin to understand how the themes are both generalisable and locally specific and by tracing the process of the evolution of one particular theme through three workshops we can see a dialogue beginning to emerge. We believe that engaging designers in observational activities can lead to a wide range of designs for public spaces capable of reflecting the social and cultural context in which they are situated.

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