∞ **proboscis**

URBAN TAPESTRIES
Public Authoring, Place and Mobility

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About Proboscis

Founded in 1994, Proboscis is an artist-led creative studio which researches, develops and facilitates innovation. Led by Alice Angus and Giles Lane it acts as a production company, commissioning agency, design studio, think tank and consultancy.

Collaboration is at the core of our creative practice and ethic: Proboscis works across disciplines and practices, drawing upon a network of associate artists, writers, curators, critics, designers, technologists, filmmakers, scientists and theorists to develop new ways of exploring social, cultural and creative issues.

Our research programme (the SoMa, social matrices, think tank) also works in partnership with a network of arts, civil society, academic and business partners.

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EXECUTIVE SUMMARY

Urban Tapestries explores the convergence of mobile technologies with geographic information systems from the point of view of people going about their everyday lives. Proboscis identified this as a crucial area to develop as a majority of research projects focused on tourists as the main user group and replicated nineteenth and twentieth century print and broadcast communications methods. Urban Tapestries builds upon the distributed nature of twenty first century network communications.

pockets and threads as viewed on a SonyEricsson P900 mobile phone

This people centred approach was led and managed by a cultural organisation rather than by a commercial or technology focused company, and the project had a strong cultural and arts focus rather than a technological one. To understand the everyday interactions between people at a very local level we developed and adapted a set of research methods such as experimental ethnography and bodystorming experiences. These enabled us to observe and record the emergent behaviours formed by the process of mapping and sharing local knowledge and experience – what we have termed 'public authoring'. These methods gave us insights into people's relationships to place, context, time and mobility that are radically different to the user scenarios for location based services that are focused on 'pushing' content to consumers. Urban Tapestries revealed people's strong desires to act as agents not just consumers in their adoption and use of new technologies.

Based on these insights we built working prototypes using variety of technologies including Mesh WiFi, GPRS, PDAs, mobile phones and a custom spatial annotation system. These were tested in two public trials in Central London during 2003 and 2004. Observation of and feedback from the trials resulted in evidence supporting notions of public authoring and demonstrated the kinds of content people want to share. In particular it showed that there was a strong desire to share knowledge but this was tempered by questions about who this knowledge would be used by and the importance of context of the knowledge. Mobile phones were considered to be imperfect routes to access information and that internet access, community television, public information points and more traditional information access routes such as libraries or community centres would be preferable for many people.

The research identified a need for highly specific trials with particular communities to explore the kinds of knowledge people wish to share in and between communities. To enable this work we need wider access to high definition geographic information (GIS) data, interoperability across mobile networks and platforms, affordable mobile data costs and multiple platforms for accessing and authoring content appropriate to different people's use, interests and competencies with different generations of technologies.

POLICY PROPOSALS SUMMARY

Innovation from the margins to the centre
Governments, researchers and businesses need to pay greater attention to the needs of actual people in real contexts and situations rather than relying on marketing scenarios and user profiles.

Open Networks for Mobile Data
Telecom network operators need to recognise the desires of people to communicate (by voice or data) with each other irrespective of the company they purchase their service from.

Open Geo Data
There is a clear and pressing need for free public access to GIS data to make public authoring and a host of other useful geo-specific services possible.

Reinvigoration of the Public Domain
Public authoring has the potential to be a powerful force in enriching the public domain through the sharing of information, knowledge and experiences by ordinary people about the places they live, work and play in.

Public Services Engaging with People
Public authoring could be employed to create new relationships of trust and engagement between public services and the people they serve. Public authoring proposes a reciprocity of engagement whereby public services would not just provide information but benefit directly from information contributed by citizens.

Market Opportunities
The wealth of public data created by public authoring will provide many market opportunities for business people and entrepreneurs. The not-for-profit sector needs to embrace the energy and creativity this engenders as much as the commercial sector needs to embrace the need for people to be more than just consumers.

Location Sensing & Positioning
The technological imperative for defining a person's position needs to be dropped in favour of an approach that incorporates the rich nature of the physical world's location information – street signs, shop signage etc.

Including Everyone
The drive to use the latest technologies and services must not exclude those who choose not to adopt them, or cannot, for whatever reason.

Time and Relevance to Everyday Life
These new forms of communicating will not appear overnight but will need careful cultivation and time to flower. To realise their fullest potential they will need more than just grass roots enthusiasm and activism. They will require regulatory nurturing and calculated risks on the part of business people.

INTRODUCTION

Urban Tapestries was a two year research project created and led by Proboscis from 2002 to 2004. It explored how the convergence of geographic information systems with mobile technologies could be harnessed to create new opportunities for individuals and communities to share their knowledge, memories and experiences of the places they live and work in.
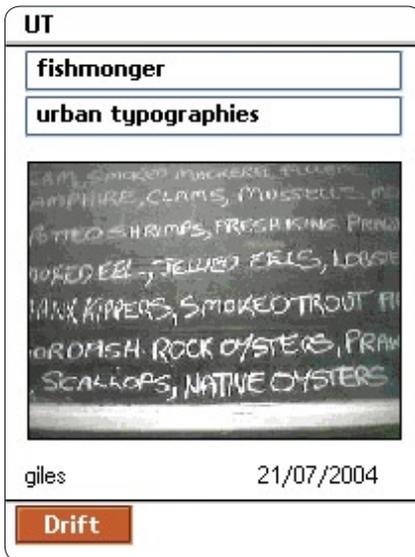
Screenshot of a 'pocket' as viewed on a SonyEricsson P900 mobile phone

Building upon previous work by Proboscis exploring public spaces and the ways in which we inhabit them, our primary goal was to try to understand *why* people would use emerging pervasive technologies, *what* they could do with them and *how* this could be made possible. We sought to create a framework that could enable people to use these technologies as authors and agents, not merely as consumers of content provided to them by telecoms and media corporations.

A cornerstone of the Urban Tapestries project was bridging the different worlds of the arts, academia, industry and government. Proboscis achieved this by creating close collaborations with the London School of Economics, France Telecom R&D UK, Orange, Ordnance Survey and Hewlett-Packard Research Labs. This bridging was also reflected in the financing of the project – funds being provided by the Department of Trade & Industry, Orange, Arts Council England and the Fondation Daniel Langlois (based in Montréal, Canada).

Urban Tapestries had a core team of eight people, led by Giles Lane and Alice Angus, with another seventeen people contributing to the project's development at different stages. The project sought to adopt and adapt innovative research methodologies to reflect the core values of its key concepts – *public authoring* and *social knowledge.* The project also sought to engage the public directly though techniques such as the bodystorming experiences, films, publications and the trials of the working prototypes.

In creating and demonstrating an alternative vision for the use of pervasive technologies for grass roots knowledge mapping and sharing, we have sought to inspire business, industry, government and civil society to challenge the established models for services. Our vision proposes that society embraces the potential of distributed network technologies to allow people to be the authors and distributors of their own experiences, not just the passive consumers of syndicated entertainment and information. These technologies are tools for communication – one of humanity's most basic everyday needs. Communicating with each other helps achieve greater understanding and tolerance of difference, and growing awareness of what others have to offer us.

This report presents Proboscis' vision for public authoring and our conclusions on its relationships to place and mobility. We argue for design solutions to focus on actual people in real world contexts and situations, offer insights from the public trials of our prototypes and set out Proboscis' own future vision and research agenda. Finally we recommend a series of policy proposals for realising a public knowledge commons, structured around place.

Giles Lane & Sarah Thelwall
London, June 2005

PUBLIC AUTHORING AND SOCIAL KNOWLEDGE

What is Public Authoring?

Public authoring is the term used by Proboscis to describe the mapping and sharing of knowledge, information, memories, stories and experiences. We contrast the concept of a publicly authored knowledge and experience commons to the traditional way in which information is passed from a centre to the margins – the broadcast model of newspapers, television and radio. Public authoring offers an alternative to the passivity and narrow focus of consumerism. It presents a new opportunity for people to be agents, actors or authors in the world of communications and knowledge sharing.

Public Authoring as imagined during a Bodystorm workshop

Public authoring proposes that everyday people become the authors of a complementary flow of knowledge that adds local specificity to the more generalised material that can be offered by media companies. In seeking to understand the potential of emerging mobile and geographic information technologies we began with a very simple insight that the only 'users' whom researchers were looking at were tourists.

We asked the question, "If most people are only tourists for about two weeks of the year, what location-sensitive services are being devised for the other fifty weeks?". The answer seemed to be mobile advertising spam and coupons for "buy x and get y free' 'loyalty' services triggered when 'consumers' passed by shops.

This vision seemed to be unnecessarily impoverished and we undertook to explore what was it about local places that mattered on an everyday basis to people as they went about the very mundane routines of daily life: going to school, work, shopping; dealing with neighbourhood issues, planning, access to local services etc. In all these cases it was apparent that the most knowledgeable people are those who would be considered the consumers of such information by traditional marketing focus groups and studies. Actual daily life is richer and more complex than this, relying as much on social networks, personal experiences and chance interactions and connections. We believe that pervasive wireless and mobile platforms should attempt to reflect this richness and complexity, rather than re-purposing solutions designed for a different age.

What is meant by Social Knowledge?

Social knowledge is a deliberately flexible term used by Proboscis to talk about the ephemeral communications that are the glue of society and communities: the everyday and essential sharing of information, stories, knowledge, memories and stories with friends, family, neighbours and strangers. Social knowledge posits communication as story-telling, a social and cultural practice that is not just informational or practical. This sharing or gift of social knowledge is often undertaken only for the pleasure we take in doing it.

Social knowledge can be interpreted as encompassing both ideas and memories as well as behaviours. It is a term that attempts to indicate the broad variety of human activities, concepts and ways of being social: from how we interact with shopkeepers and follow routines of travelling through the city, to how we take part (or do not) in

communal activities. It could be described as the hidden or obscured resources and assets of a locale or of a community – created between and around people as they go about their daily life.

As we come to define more and more clearly what constitutes social knowledge, so we are able to articulate its value; to make concrete what can often appear ephemeral, or intangible. Social knowledge can be understood as a form of social capital – something that has intrinsic value within a context of locality and community, if not a clear relation to monetary value. The more deeply embedded within a context such knowledge is, the harder it is to gauge its value – what public authoring offers is a means to expose this knowledge and the social networks that support it, widening access and understanding of crucial resources.

The Challenge for Traditional Knowledge Centres
As the ability to map and mark places becomes more widely available, the practice of public authoring will offer new opportunities for people to intervene in situation and contexts that have previously been very tightly controlled. An example of this might be a museum or gallery and the way in which the interpretation of the works displayed is the preserve of the curators and experts employed by the institution.

With public authoring it isn't hard to imagine alternative viewpoints of interpretation being locally annotated that challenge an institution's position (and which in other cases the institution wouldn't permit being voiced or written within its physical domain). The pervasiveness of wireless technologies means that digital graffiti will be a possibility for almost anyone wherever they are.

The challenge for traditional knowledge centres is not to see this as an attack on their authority, but people's desire to participate. They should embrace and support it – treat it as a flow and exchange of ideas and opinions from outside, to be welcomed and appreciated. Not all the participants in such exchanges will be amateurs – some will have their own expert knowledge to offer, perhaps translating across one discipline to another.

Public authoring may well cut across traditional boundaries and hierarchies – seeking a plurality and openness that are not always evident in our society.

Four Principles for Public Authoring
Cooperative Not Hierarchical
Public authoring relies fundamentally on cooperative, and largely anonymous, sharing of the kinds of knowledge, stories, memories and information that people think will be of interest to others in their vicinity. It complements and augments traditional centres of knowledge but side steps their top-down validation through trust, risk and chance.

Co-creation Not Just Consumption
Public authoring relies on the co-creation of its own content by the people who participate in sharing it, rather than the consumption of pre-prepared content offered by media companies. It is essentially another form of personal communication, differing only in its link to geographic places and the public nature by which it is shared. It is a reminder that people are not just consumers – they are the actors, agents and authors of their own experiences.

Organic Not Static
Public authoring should both grow and fade with time, at the pace set by the people who participate in it. It is both the layering and excavation of layers of knowledge and experience – a real-time microcosm of how our cities and communities develop, change, prosper and die. It adds persistence to local memories and knowledge that otherwise might completely disappear. Sharing in an open, distributed way enables knowledge and information to pass beyond the limits of its originators social circle or the immediate situation and context. Yet it shouldn't point to an over arching desire to record everything or that all content should persist indefinitely... Some content might be time-sensitive and expire automatically on the date being passed, other material might belong to a class or category that fades with time. The point of public authoring is to reflect the complexities of the world we live in, not to simplify it or attempt to replace any aspect of our human interactions.

People Not Systems
Public authoring should augment and assist our everyday life, not seek to replace any aspect of it. It should be the trigger for social encounters, not a barrier to participation in social or community activities.

PLACE AND MOBILITY

Place Not Location
In our research for Urban Tapestries, we have come to believe that place is more communicative of the social and cultural construction of our environments than an emphasis on location. Furthermore the trials have demonstrated that it is as much a group or community activity as that of the individual. As such, it distinguishes between the abstract and conceptual Cartesian division of location into the grid of longitude and latitude, and the subjective, negotiated social spaces of lived experience.

visualising relationships to places via public authoring

Proboscis has explored how human to human relationships are structured around fluid notions of place and identity. That communication is a as much about story-telling as it is about conversation or the exchange of practical information. Places are subjective, with vague and shifting borders depending on who is describing them. People may share a general sense of a place, but the exact location of its edges tends to blur from person to person.

The push for Location Based Services (LBS) has been driven on a technological imperative that seeks make meaning by adding location coordinates to information and media objects (pictures, sound, video etc). But it tells us nothing of the context or the situation, let alone the person responsible. Public authoring proposes the building of relationships to geographic places, and extending these relationships further by linking them to other places, people and things. It is associative – building up connections and making meaning through accretion and emergent patterns.

The practical problems of achieving this vision – slow uptake of GPS and A-GPS in mobile phones and networks, the corraling of high definition GIS data, and simplistic understandings of what is meaningful about places and locations to people – make the reliance on technical solutions bound to fail. The world we live, especially in urban centres, is richly annotated in physical signs. We need more effort to be placed in developing location positioning systems that are hybrids which call not only upon technologies but also upon the signs and phenomena of the world around us.

Place and Chance
The history of many cities demonstrates that associations of place are important in establishing new industries, neighbourhoods and cultural practices. By extending these associations of place to the contemporary world of distributed communications, new opportunities are created for reinforcing learning, reinvigorating the public domain through the flow of ideas and for new kinds of chance encounters to take place. Projects like Urban Tapestries propose a new ability to visualise ideas and knowledge spatially or geographically. These offer an entirely new set of relationships to branch out, forming new patterns of associations connection and behaviours of their own. A feature of metropolitan life is the serendipitous way we encounter new things and

ideas – our work has shown that this is considered by many people to be of great value and benefit – one of the great pleasures of living in a big city. For a public knowledge commons not to reflect this in its essential structure would be to impose an overly rational system on the content and how people would be likely to make discoveries that are meaningful to them.

Mobility, Presence and Time

Mobility needs to be considered from many points of view for public authoring to make sense to people as they go about their lives. Mobility does not simply refer to the kinds of devices we use, such as mobile phones, but concerns how we traverse our cities, what flows we dip in and out of, what barriers and obstacles – physical, social, economic, religious etc – are encountered. Mobility is about how, individually and collectively, these issues are addressed.

Presence is linked to time and continuity as much as physicality, and it is not hard to imagine public authoring becoming a tool for maintaining a sense of one's own presence in a place or community which is physically distant, but emotionally close. Perhaps the place a person grew up in or a community which they were once part of. Just as the telephone has enabled people to maintain links with their homes and roots across the world, so too could public authoring technologies enable people to keep abreast of what's happening in places important to them but far away, and to leave their own annotations in those places for local people still in the area or community to feel their presence (albeit virtual) persisting across time and distance. Such a practice could be thought of as an asynchronous inhabitation of place.

The rhythm of our daily lives governs so many of our interactions with other people and the places we pass through, occupy and desert. Time is the factor that often defines us – of which there is never enough if we are busy, and far too much of if we are bored. Time plays a role in creating context that surrounds the situations we find ourselves in going about our lives.

These layers are fundamental to the fabric of everyday life, defining the trajectories we take as much as urban planners and architects shape our physical experiences through the design of buildings and street plans. Public authoring offers some new ways for the mainstream of

people to layer their own architectures of experiences – emotions, stories, pictures and sounds – in the immanent world of data, to occupy places by proxy; building their own imaginary (and yet real) cities.

Citizenship

Place and mobility are critical to the definition of citizenship, about where we feel we belong and who bestows citizenship of that place upon us. Citizenship concerns the nature of our journeys through places and the communities we choose to join and those which allow us to belong. At this juncture in history the questions of how these issues are controlled – by individuals, communities of interest, the state – are of immense social political economic and cultural significance. Public authoring offers another layer by which we may come to view and understand the different kinds of relationships, associations and forces that make up the world around us.

Authors will include both individuals and communities, local residents and visitors. The power of public authoring to engage people with local geography has the potential to encourage greater knowledge of and sense of ownership of an area, an affect of promoting a 'cultural investment' or 'active citizenship' in the environment. A newcomer to the area may use the system to discover their new locale and to arrange social encounters and network with the community. Others may simply enjoy the act of sharing local knowledge with their neighbours and friends, and the 'familiar strangers' they see on the street.

We now have the opportunity to build in to emerging communications networks unparalleled possibilities for re-appropriating public (and private) space, changing our perceptions of 'ownership' of space and challenging conventions which traditionally bind our behaviour in relation to 'public' spaces (so often marked by a respectful silence and decorum instilled by social norms). Technologies and practices like public authoring allow us to construct our own modes of inhabitation, to occupy and communicate the beyond physical limits of places, to treat the city as a kind of conversation where community and communal life begin to collapse physical boundaries and become structured by different paths, be they emotional, cultural, spiritual or linguistic.

DESIGNING FOR PEOPLE AND SITUATIONS

People Not Users, Situations Not Scenarios

Traditional technology development is focused on servicing and developing the needs of users of specific technology products. To help understand these users, scenarios are devised to profile types of users and explain how they would use technologies. But people are not merely consumers, they are agents of action and change – making choices and decisions everyday. As new technologies and communications take on a distributed structure, so too do the ways in which we use them to facilitate daily life.

bodystorming at Marchmont Community Centre, Bloomsbury

Urban Tapestries sought to develop a people-centred approach to our research into how people create and share knowledge and experiences about places. Our prototypes were responsive not only to the technologies available at the time, but looked ahead to the future. Our guiding principle in the design was that technologies are adopted because of their appropriateness to the tasks that people wish them to fulfil – our role was to imagine which technologies could support and augment the everyday knowledge mapping and sharing that people already do. We set out to imagine and demonstrate the concept of a public knowledge commons linked to place that reflected the real world context and situations people find themselves in their daily life.

Transdisciplinary Approach

One of the distinctive aspects of the Urban Tapestries project was the methodology by which decision making and development was achieved. The whole of the core team was involved in each task area so that we learnt from each other's knowledge and experience not just by observation but by collaborating together. This is unlike a multi-discilplinary 'silo' approach to development where contribution and decision making is by those with the 'expert' knowledge. We have found that by combining skills and expertise from widely different backgrounds we add distinctiveness and freshness to established practices. This process also created a powerful group dynamic and energy that supported individual efforts and enabled a whole field of enquiry to be opened up and explored in a short span of time without sacrificing richness or complexity.

This collaborative approach created an environment whereby all the decisions of the team in any one area of practice were offered the perspective and expertise available from others. We learnt how to question and challenge many of our own assumptions and the conventions that drive our practices day to day. The benefit of this was to force us to rethink many of the familiar themes and ideas of location based services, spatial annotation, ideas about location, technologies and research methodologies to use and ways of engaging the public with our ideas. The transfer of skills and knowledge within the team was very high, in a way reflecting the wider aspiration of public authoring as a social and cultural practice.

Experimental Ethnography

An important component of the project was Proboscis' collaboration with Professor Roger Silverstone and researcher Zoe Sujon of the Media and Communications department at the London School of Economics and Political Science. Bringing in expert social science knowledge to complement our practice as artists, designers and technologists enabled a richer understanding of what people do to be part of the project.

The researchers proposed 'experimental ethnography' as a set of methodological tools for looking at emergent technologies. It involved a methodological triangulation of participant observation, phase interviews and experimentation. This resulted in a formal academic paper published in March 2005.*

Bodystorming Experiences

To test our ideas and assumptions about public authoring with actual people we needed an iterative methodology they could participate in. We designed an 'experience' that could be used with different groups and indifferent settings, based on *bodystorming.* It is a technique for manifesting ideas into physical situations and settings allowing people to act out concepts and ideas with props and scenarios, but which has the added bonus of making things real enough for emergent patterns and behaviours to be discerned.

Starting with hypothetical scenarios of use, we acted them out both in the studio and out on the streets of London. In doing so we felt our way through the many steps that public authoring would require. This process also allowed us to look at the kinds of annotations, knowledges and stories that could be shared. We ran a series of events with people from many different walks of life, including several with a local community centre.

Technological Agnosticism

Our engagement with people through the bodystorming experiences as well as the events demonstrated to us the problem of the interface and creating single instances of interface and interaction. Knowledge, experiences, memories, stories all come in different formats and ways. Having just one or even two ways to share those with others is far too limiting and technological for most people to bother with.

It became very clear to us that public authoring needs to be responsive to people in the contexts and situations they find themselves in – which often vary dramatically for the same person throughout the day. In many ways public authoring could be seen as a means of orchestrating the notes, snaps, memos and half worked out associations we make everyday.

Public authoring should also be seen as a group activity – perhaps where one groups (seniors) have the stories, and the another group (youths) have the time and inclination to work the technology. This reflects the findings that not only do different age groups have different technological capabilities, but that they have very different motivations for sharing memories and knowledge. For seniors it was not as important that other people had access to the stories and memories they shared, but that they came together regularly to share amongst themselves. There was some interest in leaving these memories as traces of their presence in the city, but this wasn't as strong as the sense of community created by the activity in the here and now.

Openness and Public Debate

Designing for people means creating feedback loops to incorporate the responses to your work in the research and development process, not waiting until the outcome is finished. Putting our research into the public domain to stimulate informed debate and to share insights and revelations with our peers was crucial for Urban Tapestries. From the Creative Lab and Public Forum, our bodystorming experiences and films, event documentation, research papers and articles for conferences and journals, the project consistently sought the engage the public and peers in a dialogue about public authoring.

We extended this for the trials developing a new feedback model using blogging software to capture and immediately disseminate the experiences of participants. This has enabled instant access to the feedback by peers and public, not least to the participants who were able to read each others comments. They were also able to return and post additional comments after the event. We plan to continue using the blog as a public discussion forum for exploring key issues arising from our research – helping inform and shape our own development.

* http://www.lse.ac.uk/collections/media@lse/pdf/EWP7.pdf

TRIALS AND OBSERVATIONS

During the project Proboscis ran two highly successful trials of the software platform, each time exploring social and cultural uses of public authoring through different technologies and scales of urban coverage.

Public Trial – December 2003

For the first trial Proboscis established a local WiFi Mesh network using Locustworld's MeshAP system and a network of MeshBoxes sited in buildings around Bloomsbury, Russell, Bedford and Brunswick Squares in Central London. The use of WiFi for network connectivity enabled the small group of participants to have high bandwidth, but exposed the extensive difficulties of using WiFi in public spaces.

One hundred participants over nine days borrowed HP iPAQ PDAs loaded with the Urban Tapestries software client for up to two hours at a time to access and embed their annotations whilst out in the surrounding streets. The client software used a map created for the project by the Ordnance Survey from their MasterMap GIS system covering about four square kilometres of the Bloomsbury district of Central London. Feedback from the trial was captured via video interviews and blog posts.
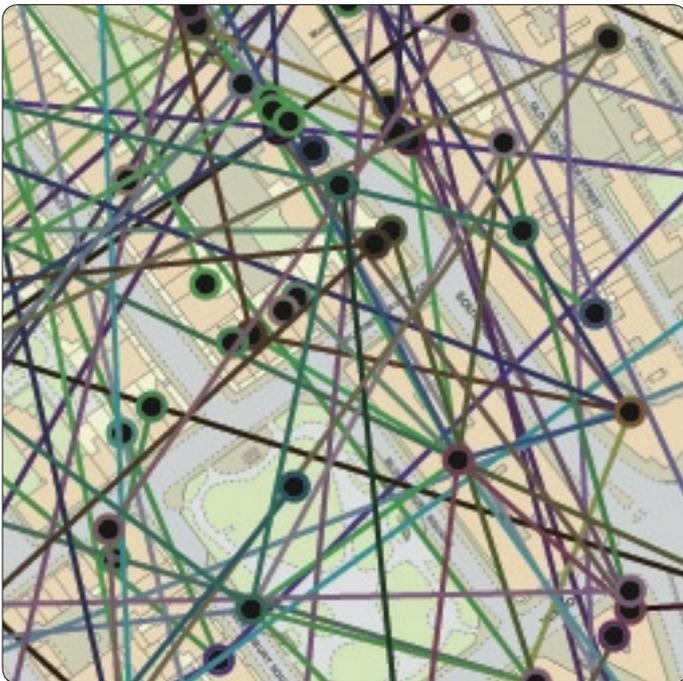
Urban Tapestries: map of threads around Bloomsbury Square, London September 2004

Field Trial – June/July 2004

For the second trial Proboscis selected a smaller group of eleven participants who were given SonyEricsson P800 mobile phones for four weeks each. The phones used Orange's GPRS network to connect to the Urban Tapestries system giving them independent coverage across the whole of London (and in fact across most of the UK), although at much slower connection speeds than WiFi. New client software running natively on Symbian was developed with France Telecom R&D UK's iLab team, including an OS MasterMap map covering thirty-six square kilometres of Central London. Some new features were added to the client, notably filtering and address searching as a new means of navigating the map. The devices were also able to support sound and photo recording for upload – something that the original PDA version had stumbled over.

This trial sought to understand more about the role of time and familiarity in relation to public authoring. The form factor of the P800 was more like a standard mobile phone and the length of time participants were able to use the devices both contributed to the richness of the experience and the outcomes for participants. The sample of participants was much smaller than previously, and participants were selected from people with both an existing familiarity of the technology and the ideas of public authoring and spatial annotation.

Feedback from the participants was a series of questionnaires completed throughout the trial period. A companion publication to this report contains our detailed evaluation.*

* *Urban Tapestries: Observations and Analysis*, Giles Lane, Alice Angus, Victoria Peckett & Nick West

General Trends

Across both trials, as well as in the bodystorming workshops we ran throughout the project, we were a able to discern a series of general feelings and trends about the processes and relevance of public authoring to everyday life:

Time

The issue of time and context emerged as one of the most important for making public authoring an everyday activity and not a burden or cumbersome addition. As people move through the city and the patterns of their daily lives, the system needs to respond to the context and situations they find themselves in. On a typical day a person might need multiple interfaces to the system depending on where and what they were doing at any time. A mobile interface might be useful for making quick notes, capturing images or sounds whilst outside, but the time to enter the content into a spatial annotation be too distracting. At work or home, we here the person might have a PC and broadband internet access there is the possibility of editing and crafting annotations. Alerts to new content posted within a set of parameters might be received via SMS or RSS without the need for a visual map interface.

Purpose

Public authoring was seen as being about sociability – as a new way of engaging in conversations about places that are fragmented and happen over time as well as in space. The use of the system was seen as much as a catalyst for social encounters an end in itself... Many of these uses of focused around enabling people to build up relationships with others based on commonalities such as locality and interests.

Searching & Filtering

Our small trials indicated that public authoring can quickly generate large numbers of annotations. For a system to be useful to people there will need to be very powerful searching and filtering of content so that people are able to block content of no interest to them and highlight things they are specifically looking for.

However this still needs to be flexible enough to allow for serendipitous encounters – just as chance is a major factor in how we learn and enjoy the environment around us, so too should public authoring enable things we don't know we might be interested in to come to our attention without having to look for them.

Collaborative Authoring

The ability for people to join together – not only with friends, family and colleagues but also with strangers – to create collaborative content was high on participants' wish lists. This was seen as crucial for the building up of new relationships, not only between content shared, but between people who are authoring it.

Pragmatic versus Aesthetic

The participants in the trials generally broke down into two types of author – those who saw and used public authoring to add layers of practical information over the city; and those who's approach to authoring was more personal, impressionistic and playful.

Attention

It had been raised before and during the trial that using a mobile device in the streets might lead to an issue of being too absorbed in the device and not in the real world. This was somewhat offset by participants saying it caused them too look again at familiar surroundings and notice new things, and by more practical solutions where participants simply stopped using the device except when they had time and convenience to use it.

Location Spam & Mobile Advertising

The participants in the trial were dead set against marketing information from businesses. They were not interested in coffee coupons or offers from local shops at all, in fact this would stop people using LBS if it actually happened. Participants didn't want to be subjected to more advertising, but to feel ownership of their communications with surrounding world.

Privacy

This has been a major issue in the lead up to the trials – with many concerns being voiced about the dangers of information about people being gleaned from the content they author and the places they author in, as well as fears over what commercial organizations might do to commoditise and exploit the content shared in the public domain by authors.

In practice we found that participants did not raise the issue of privacy as it did not seem that what they used public authoring for would reveal anything about themselves or their habits that they could not control. This extended to the fears of commercialisation, with authors making clear judgements about what was *appropriate* to share as they were making annotations.

FUTURE VISION AND RESEARCH AGENDA

Early on in the Urban Tapestries project we began to understand that the very best way of understanding what knowledges people had and shared about places was to work *in situ* with actual communities. As this was beyond the scope or resources of the original project we began to sketch up a framework for running a series of experiments and projects with small local groups and communities that would build upon the Urban Tapestries software and concepts of public authoring we had developed.

Social Tapestries

Social Tapestries
In Spring 2004 we began exploring and developing relationships with civil society organisations and local communities.* These relationships are now bearing fruit as a number of projects and experiments are underway and others are in development. Proboscis has identified four main areas in which we are developing specific project and experiments with these partners and collaborators:

education and learning
 – looking at how local informal knowledges can be gathered, represented, understood and shared by schoolchildren and lifelong learners.

community engagement & arts
 – working with artists as facilitators for local communities in engaging with regeneration contexts and local issues.

social housing & environment (active citizenship)
 –exploring how new forms of neighbourliness could emerge where existing physical structures (such as social housing estates) create barriers and where issues such as safety and presence in the community can be addressed through sharing information and knowledge.

local government & public services
 – assessing the impacts on communities of locally specific information gathered by local public services and local residents' ability to interact with them.

Technical Research
To support the experiments and projects Proboscis is continuing to develop social software tools – re-engineering the Urban Tapestries software architecture from the ground-up during the first half of 2005. This public authoring system has been developed way beyond the original demonstration version into a powerfully-featured system able to interact with many types of interface and client devices. Proboscis is also developing some of our other formats and means of dissemination. These include an online DIFFUSION eBook Generator** to allow people with no design skills or access to expensive graphic design software to utilise Proboscis' downloadable eBook format.

* http://socialtapestries.net
** http://diffusion.org.uk/generator/

We are also working on a three dimensional paper narrative device, StoryCubes, for use in workshops and exhibitions as a means of building up stories in space, not just the in time it takes to tell a story. The StoryCubes allow participants in the process to see parallel stories emerge simply by looking from another perspective, and to reconfigure a story simply by changing the orientations of a single cube.

Multiple Interfaces to Social Knowledge
The rich diversity of media in everyday life requires that public authoring reflect this. In addition to creating ways of mapping and sharing knowledge via new and emerging technologies, it is critical that older methods of capturing and sharing knowledge are not ignored – otherwise huge segments of the population will be excluded. Not everyone chooses or has the ability to use mobile phones, personal computers or the internet, therefore other formats must be addressed.

During the two public trials of Urban Tapestries we encountered consistent issues regarding the familiarity and usefulness of the PDA and mobile phone form factors. Our work with senior citizens also highlighted the importance of making access to the system available to those who have no interest or desire in adopting new technologies. For someone who is housebound a mobile device might be the interactive television remote and landline telephone because it is their portal into the world outside the confines of their home.

In continuing to develop the Urban Tapestries platform Proboscis is making this possible, so that we may incorporate access and/or authoring (where possible and appropriate) through technologies such as interactive television, teletext pages, voice automated systems and traditional print media such as postcards (for pockets) and posters (for threads).

Enabling Different Kinds of Inputs
In addition to knowledge individually added by people we are investigating how we could allow for uploading of information from web services and other automated systems. This might be via an open API to enable other knowledge bases (such as OpenGuides* or the Consume**) to upload and keep updated pockets and threads of geographic related knowledge. It might also

be a way for people to use other services such as BBC Backstage† to create their own dynamic data that could be automatically updated.

Proboscis is currently developing some experiments with non-human authors – robots and embedded devices. The robots are being developed with celebrated engineer Natalie Jeremijenko as an experiment†† in engaging in new forms of local social activism based on adapting toys robots for environmental sensing. Proboscis is building an interface to allow the robots to upload environmental data into the UT system, and for local people to be able to further annotate these threads with comments, pictures, sound and video.

Proboscis is also researching the use of building interfaces to embedded devices for upload into the UT system. Such devices might be static pollution or other environmental sensors updating sense data on a regular basis. A third experiment, Sensory Threads†††, is also in development with Birkbeck College, University of London to investigate the social, cultural and ethical issues of body sensor networks. Our research will investigate how people taking part in a trial of wearing such a network feel, from issues of responsibility for personal health to privacy and surveillance.

Peer-to-Peer Architectures
Proboscis believes that the future of public authoring technologies lies in peer-to-peer hosting and distribution systems as central server models will require too much investment and effectively corral grassroots-created content into old-fashioned archives. As the network effect of distributed communications is felt through the massive sharing of knowledge and experiences, so too should its architecture mirror the messy and heterogeneous nature of everyday life.

Proboscis will begin a feasibility study for re-engineering the Urban Tapestries software platform as a peer-to-peer distributed system in late 2005. This research will look into peering not only at the level of the UT core and database server architecture, but also at the possibilities of peering on mobile devices too. This research is being conducted in collaboration with researchers from Birkbeck College.

* http://openguides.org
** http://consume.net

† http://backstage.bbc.co.uk
†† http://socialtapestries.net/research/feralrobots/
†† http://socialtapestries.net/research/sensorythreads.html

Grid-Computing Systems
Grid-computing systems also offer tantalising opportunities for the enhancement of the public knowledge commons, not perhaps directly in its authoring but in the analysis of relationships, connections and associations. Understanding the role these associations will have in our lives could be a mammoth task if spatial annotation and public authoring make the transition to the mainstream. Billions of annotations and relationships being formed in time, space and across communities will require stupendous resources to make sense of. For a grass roots based vision of building up knowledge commons it makes sense to investigate a grass roots and distributed based approach to analysing and searching the data for patterns that are relevant to people.

Mesh and Ad Hoc Networking
Proboscis' experience working with a WiFi mesh network highlighted problems with considering it as an effective alternative to mobile telecommunication networks, but also underlined its crucial strength for ad hoc networking and routing around the many physical barriers to enabling network communications in built up areas.
We are interested in exploring this aspect of creating highly specific local networks and services that also allow for public authoring. Building slim versions of the Urban Tapestries system into local WiFi/Mesh nodes may allow for a distributed network of public authoring databases to be started that contain very local information relating just to the vicinity covered by the wireless signal (perhaps no more than a hundred square metres).

Location Sensing & Positioning
Proboscis continues to research multiple means of determining location that employ not just electronic technologies and massive governmental systems (such as GPS). We have already begun to investigate the use of passive location sensing technologies, such as placelab*, but we are also interested in hybrid systems that allow people to create artefacts in the physical environment that contain location data that can be read by a person or by a device.

An example of this would be clearer signage on streets giving a finer granularity of location positioning, another would be the adoption of 'visual barcodes' containing location data that can be scanned by cameraphones. A simple means of creating the visual bar code (for

example, *Shot Codes**) and printing it out (perhaps via a web interface) would mean that people without specific technical knowledge, such as shop keepers or enthusiasts, could easily mark places with high definition location data.

The most simple form of location sensing remains where the user inputs a location themselves via a street address, post code or pointing on a map. A hybrid approach combining a range of the automatic possibilities with some of the one's that take people's own intelligence and sense of location into account seems the most fruitful direction for the future.

POLICY PROPOSALS

Proboscis argues that the Urban Tapestries project has successfully demonstrated that the concept of public authoring of geo-spatial social knowledge is highly desirable and useful for people, government, civil society and business. In order to achieve this vision of a twenty-first century public knowledge commons that has its origins in grass roots authoring and sharing, it will be necessary to overcome significant hurdles that are not just technological but social, cultural, regulatory and current business models.

Proboscis proposes the following recommendations for public and corporate policy makers to consider, based on our experience gained in researching and developing Urban Tapestries:
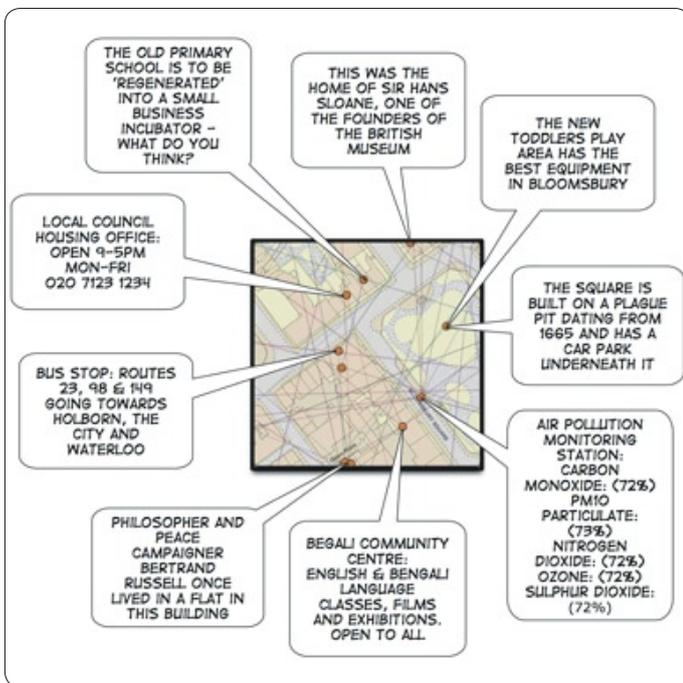
Public Authoring

Innovation from the margins to the centre
Governments, researchers and businesses need to pay greater attention to the needs of actual people in real contexts and situations rather than relying on marketing scenarios and user profiles. As communications and technologies become increasingly distributed so the ability of ordinary citizens to creatively adapt them to their own needs and desires becomes more and more widespread. Organisations who ignore this trend leave themselves at a disadvantage in being responsive to the needs of people whose custom they exist by and for.

Open Networks for Mobile Data
Telecom network operators need to recognise the desires of people to communicate (by voice or data) with each other irrespective of the company they purchase their service from. Just as with market penetration of mobile phones, once a tipping point is reached it is likely that mobile data costs will drop in a similar fashion to those of voice calls. The sooner this tipping point is arrived at the sooner mass take-up of mobile data services will begin and the natural ingenuity and creativity of people will result in an incredible array of new services as yet unthought of, or simply uneconomic in the present climate.

Operators do not regulate the content of voice calls – why should they seek to control the ability and content of data people wish to communicate with each other? In the long term it is inevitable that the 'walled gardens' that currently predominate and regulate the kind of data sent between people should disappear, just as they did to enable SMS and MMS a few years ago.

Open Geo Data
There is a clear and pressing need for free public access to GIS data to make public authoring and a host of other useful geo-specific services possible. Access could simply be provided along the lines of the non-profit, non-commercial use license* proposed in

* http://research.urbantapestries.net/pdfs/NatMapAgency_draft_CC_license.rtf

April 2005 by Proboscis to the UK's national mapping agency, the Ordnance Survey. This need for public access extends to the Post Office's post code system which is at the heart of many of the kinds of useful public services that centre on geo-specific information.

With other government owned corporations providing a lead in this area of public access to publicly-owned materials (cf. the BBC and Channel 4's Creative Archive License Group*) the time is ripe to bridge the gap between the not-for-profit and commercial sectors to everyone's benefit.

Reinvigoration of the Public Domain
Public authoring has the potential to be a powerful force in enriching the public domain through the sharing of information, knowledge and experiences by ordinary people about the places they live, work and play in. People who participate would be part of a shift away from a crude consumerism that seeks to turn everything into commodities that can be bought and sold.

Public authoring as a practice is not just about social utility – helping oneself by helping one's neighbours, it is also about creative expression and participating in culture for its own ends.

Public authoring has also the potential to drive different kinds of social activism, from very local issues to national politics. Grass roots campaigns could help build up heterogeneous bodies of knowledge that could transfer ideas, experiences and information outside their specific focus area to others.

Co-efficient with this invigoration of the public domain will be a need to coalesce patterns of acceptable behaviour in making and sharing annotations – not only to counter obvious concerns such as race-hate or 'poison-pen' content, but also other forms of emergent anti-social behaviour, such as blanket advertising or unacceptable commercial exploitation of public goods contributed to the commons.

Public Services Engaging with People
Public authoring could be employed to create new relationships of trust and engagement between public services and the people they serve. Public authoring

proposes a reciprocity of engagement whereby public services would not just provide information but benefit directly from information contributed by citizens.

On a central governmental level this could involve coordinating national infrastructures to geo-locate services they provide so that they can be visualised geographically by citizens. Central government could also play a powerful role in arguing for greater decentralisation of the traditional hierarchies of information and communication between public services and the people they serve.

On a local governmental level public authoring could help local authorities provide geographically specific information to residents who could navigate the complex types of information simply by geography. Residents could use public authoring for such uses as reporting problems and issues that need attention from public services, seeing directly how responsive the service is in addressing their concerns.

Market Opportunities
The wealth of public data created by public authoring will provide many market opportunities for business people and entrepreneurs. Trade and business are intrinsic parts of our everyday life – from buying a newspaper at the local shop on our way to work to using network communications to arrange to share the weekend with friends and family. This flow and exchange of goods and services are as critical to society as the culture we create and participate in. The not-for-profit sector needs to embrace the energy and creativity this engenders as much as the commercial sector needs to embrace the need for people to be more than just consumers.

Location Sensing & Positioning
Location-sensitive services need to become meaningful to people on an everyday basis beyond the limited vision of tourist-guides, restaurant reviews and local advertising 'pushed' to mobile devices as they pass by. The technological imperative for defining a person's position needs to be dropped in favour of an approach that incorporates the rich nature of the physical world's location information – street signs, shop signage etc

To assist the take up of services more granular address

* http://creativearchive.bbc.co.uk/

information could be provided both by government, big business and at a more grass roots level. Local authorities could add GIS coordinates to street signs – perhaps in the form of visual barcodes that camera-phones could recognise. Large businesses could sponsor street-level interfaces to local public authored information – perhaps via interactive screens at bus stops. At a grassroots level, local shops and community centres could help by posting granular GIS coordinates in publicly visible spaces.

Including Everyone
The drive to use the latest technologies and services must not exclude those who choose not to adopt them, or cannot, for whatever reason. These reasons could be economic, through disability or simply a lack of interest in new technology. It is crucial that other familiar media forms, such as print, radio and television are incorporated into this vision so that people can choose the most appropriate means for them to access and author material, irrespective of the technology (analogue or digital).

Mobility should no longer be used to describe the device but the person: their physical capabilities and the technological means by which they communicate with others. This shift in focus from the capabilities of the device to the capabilities of the person is critical for a future where we imagine and design services for people that augment their daily lives rather than forcing them to adopt and adapt to ever-changing technologies.

Time and Relevance to Everyday Life
These new forms of communicating will not appear overnight but will need careful cultivation and time to flower. To realise their fullest potential they will need more than just grass roots enthusiasm and activism. They will require regulatory nurturing and calculated risks on the part of business people. The range of benefits presented here in qualitative terms – social, cultural, governmental and commercial – could be quantified now to assist this process.

Only when individuals and groups of all kinds find simple and everyday uses for location-sensitive technologies will speculations turn into reality. The role of artists, designers, researchers, technologists and activists is to sketch a rich and enabling vision of the possibilities in this future, whilst keeping an eye on the limitations and social costs. There is also a definite responsibility to shepherd it along the fraught path of development avoiding excessive commercialisation, over regulation or banal implementation. The role of business and policy makers is to be sensitive beyond their own range of experience to the needs and desires of people. They need to make room in their plans for our future that take these into account.

PROJECT CHRONOLOGY

Thiis chronological account of the development of the project provides detail of, and context for, the key issues that arose over its two year span. In describing the activities and outcomes of the project it also connects the completion of Urban Tapestries to the research brief for Social Tapestries, a follow on research programme. A summary of the outputs, press coverage, some statistics and project credits are listed at the end of the section.

PREPARATION – JUNE 2002 TO JANUARY 2003

Early concept scenario
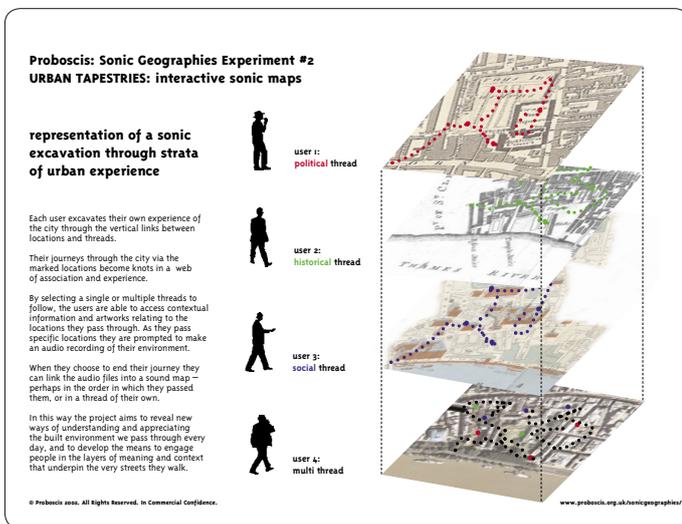
Urban Tapestries began as an off-shoot of two earlier Proboscis projects: *Private Reveries, Public Spaces* and *Sonic Geographies*. In 2001 Proboscis established a collaborative research programme, SoMa, with Media@LSE at the London School of Economics and Political Science (LSE). This allowed us to incorporate elements of social research into our creative projects blending the concerns of art and design with social sciences. As our projects sought to understand more about the nature of creative expression and the ways in which it circulates through culture and society, the role of communications, and in particular distribution, became one of our core areas of interest.

Private Reveries, Public Spaces* (PRPS) was a research project exploring the changing nature of our relationship to public spaces through the media of personal communications. Proboscis invited a group of people from arts, design, social science and cultural backgrounds to join a selection panel. The panel met to choose and invite fourteen arts and design practitioners to submit proposals for artistic and creative interventions in public space with new or emerging network systems. Three proposals (by Rachel Baker, Natalie Jeremijenko, Shona Kitchen & Ben Hooker) were then commissioned to be developed further into 'conceptual prototypes' which were presented at a Public Forum at the LSE in June 2002.

Sonic Geographies** was a smaller unfunded artistic experiment taking sound as the entry point for excavating and mapping urban experience and invisible infrastructures of the city. A series of experiments and sketches were developed that operated as maps and journeys but also as highly personal renderings of sonic experience – sounds of the personal world in conversation with sounds of the city.

Initially conceived as a scenario for mapping journeys through urban experience with sound, Urban Tapestries developed over the summer of 2002 into a proposal for a research project to build and test a demonstration version. As we explored our ideas we were contacted by colleagues at Hewlett-Packard Research Labs in Bristol who were in the process of setting up the City & Buildings Virtual Research Centre (VRC)

* http://proboscis.org.uk/prps
** http://proboscis.org.uk/sonicgeographies/
*** http://www.mobilebristol.com

with the University of Bristol to develop the Mobile Bristol*** platform. What interested them was our concept of 'public authoring' – using the technologies of 'pervasive' and 'ubiquitous' computing (PDAs and mobile phones) not to send information to users that had been repurposed from existing media content, but allowing people to contribute knowledge, information and experiences to a collective memory based on locality.

The team at HP Labs invited us to join the VRC and submit a proposal to the Department of Trade & Industry (DTI). To do this we further developed our plans and focused the project on this key aspect of 'public authoring' and the kinds of 'social knowledge' it would contain. The level of support that DTI funding would offer required that the project to grow from being a limited demonstration to a working prototype, involving considerable research and technical development, something Proboscis had not engaged in before. The project would also need a cast of skills and expertise beyond our own, so we began forming a team and developing close collaborations with key partners such as the LSE and Orange. During December and January we also made funding applications to Arts Council England (ACE) and the Fondation Daniel Langlois for additional support.

To articulate our ideas for what Urban Tapestries would be we created a *Visual Concept Scenario** and two short animations. These were used to convince the funders as well as to illustrate our ideas and why they were innovative to our collaborators and partners. Urban Tapestries was not only to be an R&D project to develop a working prototype, it was also to be a social research project and a cultural work in itself, with all of its outcomes considered works in their own right.

By early February 2003 the project had been awarded funding by the DTI (as part of its Next Wave Technologies and Markets Programme**) and ACE. This itself was unique – the first time that ACE and the DTI had co-funded a technology research and development project led by an arts organisation.

* http://research.urbantapestries.net/pdfs/UT_scenario_Feb2003.pdf
** http://www.nextwave.org.uk

STAGE 1 – FEBRUARY TO MAY 2003

Initial Steps
Following notification of the award of DTI funding, Proboscis organised the first of the monthly team workshops in early February 2003. In these monthly workshops the core concepts and methodologies employed in the research and development phase were put together. The core team put together by Proboscis comprised a diverse set of skills and expertise: filmmaking, visual art, literature, creative research, ethnography, system architecture, games design, conceptual design and information architecture.
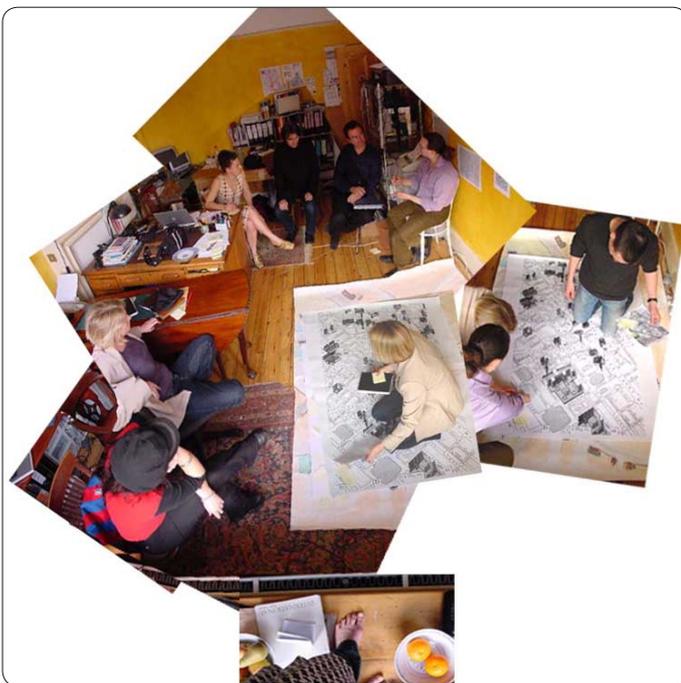
**bodystorming in
the Proboscis studio**

During February and March the team looked closely at the project's aims and objectives as well as questioning our assumptions about people, places and technologies. We had planned (in the preparation phase) to create a workshop-type process that would help us investigate the ideas of public authoring – *bodystorming experiences* – and during this time we used the practice of bodystorming extensively as a group to map out issues, problems and scenarios. In these few months we outlined the majority of the social, cultural, economic and political issues that defined the trajectory Urban Tapestries would take as both a creative and a technological development project. We designed not only the form that the prototypes would take, and the technologies we would use to achieve it, but also innovative research methods and practices of public engagement.

In early May the Daniel Langlois Foundation awarded Proboscis a grant for Urban Tapestries, bringing private philanthropy into the mix of funding and partnerships.

Transdisciplinary Approach
The project was structured as a close collaboration but the team was geographically dispersed. Five team members were spread out across different parts of London, one in Bristol, one in rural Scotland and one in New York, USA. To keep conversations flowing and knowledge being shared across the whole team, we relied not only on the monthly meetings at Proboscis (including a video stream for those not able to attend), but on fortnightly conference calls, a project wiki and mailing lists for specific project areas. For those team members not familiar with the wiki collaboration software and use of mailing lists, this required a steep learning curve and reflected our own research into why people adopt technologies and how they use them.

We were skeptical of traditional multi-disciplinary approaches to research, where each skillset or discipline works in isolation from others. With a core team of just eight people, we could all participate in each of the key areas that the project would need to address, learning not only by observing each other but by collaborating directly. This resulted in a dramatic and dynamic cross-fertilization of knowledges, experiences and methods, enabling team members to add each other's insights into their own areas of practice. We believe that this process gave the project richness and roundness and that it short-

circuited many of the iterations a traditional multi-disciplinary approach would have needed to arrive at similar results and conclusions.

Designing the Bodystorming Experience
To design an 'experience' that could be used with different groups and indifferent settings, we used the bodystorming technique ourselves. This enabled the team to explore the practices of public authoring that we were beginning to sketch out in our research and observations of everyday knowledge sharing.
We developed scenarios of use and acted them out, both in the studio and out on the streets of London, trying to feel our way through the steps that public authoring would require. This process also allowed us to look at the kinds of annotations, knowledges and stories that could be shared.

The final experience which emerged in late April drew upon a common fascination with maps and traditional board games like Monopoly. We chose to use a map from a 1930s pocket guide to London for the beauty of its many axonometric drawings of landmarks (churches, museums, theatres, cinemas, railway stations etc.). It was printed as a 10 foot square map, big enough to walk upon (participants removed their shoes to walk on it). Subsequent versions used different maps sources as well as smaller print sizes (senior citizens preferred a table-top versions as bending down is hard). We created some sample content tagged to specific places on the map, mocked up to look like a PDA and mobile phone. Participants use coloured post it notes to make their own annotations, with stickers of pictures provided as a stand in for a camera.

Creative Lab & Public Forum
The first stage of the project concluded with the Creative Lab and Public Forum held at the beginning of May. Rather than wait until the end of the project to present our findings, we felt that the project would be better served by engaging in a public debate on the concepts of public authoring and social knowledge from early on. We hoped that this would provide a broader space in which to develop our ideas alongside the bodystorming experiences which were to be the main form of public engagement throughout the project until the trial at the end.

Accordingly we organised a two day event hosted at the London School of Economics, based on a model devised by Proboscis for its Peer-2-Peer project, an informal network aiming to bring together the arts, design, social sciences, technologists, civil society, government and industry to collaborate on projects like Urban Tapestries.

The Creative Lab brought together an invited group of peers from academia, the arts, design, government and industry to workshop our concepts of public authoring and social knowledge and to reflect back on our proposed uses of wireless and pervasive computing to achieve them. The event cemented some of the relationships with key collaborators and partners from the LSE, HP Labs and Orange as well as widening the circle of interested parties.

On the morning of the second day we held the first Urban Tapestries bodystorming experience for the attendees of the Creative Lab with an additional group of peers invited to join in. The success of the bodystorm in generating emergent behaviours and patterns when people actually started to annotate a map and share ideas, knowledges, memories and stories was greater than we imagined and a short film was quickly cut together by Alice Angus and Katrina Jungnickel before the Public Forum which followed in the afternoon.

The Public Forum was also well attended by a diverse group of people from arts, design, academia and industry and generated a lively debate involving most of the participants at one time or another. Many of the issues we had begun to sketch out within the team's research process were given an intellectual scrutiny from many different angles, allowing us to see them from other people's perspectives. This alone was of enormous benefit to the project, and conversely the response we received from the participants at both the Lab and the Forum indicated that the concepts, scenarios, methodologies and overall vision of the project had been both fresh and inspiring.

Publishing and Presentations
Urban Tapestries' first appearance was in May when Giles Lane presented a paper on Urban Tapestries at the first Appliance Design conference (1AD) held at HP Labs in Bristol.

STAGE 2 – JUNE TO SEPTEMBER 2003

Refining the scope and vision
After the Creative Lab and Public Forum the team took stock of how our concepts and strategies for public authoring and wireless technologies had been received by our peers and the public who attended the events. The Creative Lab and Public Forum had been an intensely rewarding and challenging two days bringing to the fore many new issues and implications, from the social and cultural to economic, political and technological. From May to September the team worked diligently to shape the project and scope of our research to address these – the added benefit of testing some of the resulting ideas and responses in the bodystorming events prior to the main technical development phase of the prototype.

An intergenerational bodystorming workshop at Marchmont Community Centre, Bloomsbury

Researching Location Positioning & GIS Data
Our research into how to annotate geographic places had followed the well-trodden route of relying on satellite positioning of the user via GPS device and associating that with a visual map correctly marked up with latitude and longitude. This seemed an overly technical solution to a problem encountered everyday by people as they navigate successfully through the streets of cities all over the world, using their own local knowledges and visual prompts (street name signs, building names and addresses, visible landmarks etc). Simply adding location coordinates to stories, photographs, sounds or video didn't seem to us to reflect either the complexities of how we come to define places, nor the relationships that are made and hold significance for people.

Having tested and encountered the well-documented problems of GPS 'canyoning' in London we also looked at the issue of the current lack of integration of GPS into everyday technologies and the cost of adding modules to PDAs. This made the prospect of GPS positioning in ordinary mobile phones seem very far away and far too much of a stretch to ask people to imagine that this was an everyday technology. Even in June 2005 there is just one mobile phone available on the UK market that has an integrated GPS module*.

As we delved deeper into the intricacies of geographic information systems (GIS) and how we would be able to match the public authoring concept to places and locations, we encountered the problem of the lack of public access to GIS data. The United Kingdom (UK) is probably the most highly mapped country in the world, with over 200 years of continuous surveying and mapping by the Ordnance Survey (OS) down to a resolution of twenty centimetres. The OS is one of the key players in the development of GIS standards and until 1999 was a government department, before its conversion into a 'Trading Fund' (nominal share holder being the Office of the Deputy Prime Minister, ODPM) operating on a cost-recovery basis. The OS is required to recover the costs of mapping the UK and makes available commercial licenses for its highest resolution mapping products. No non-profit/non-commercial use license for free access to the data is available yet.

* Motorola A1000 3G phone with A-GPS available on the 3 network

This crucial stumbling block for organisations like Proboscis wishing to create free social software tools that rely on GIS data opened up an opportunity to use Urban Tapestries as a case study for demonstrating the public benefit in allowing free non-profit/non-commercial access to the data. In June we approached with the Research and Innovation (R&I) group at the Ordnance Survey and presented our ideas for Urban Tapestries and the social and cultural context in which it was being developed. At a meeting in early July the OS's R&I group agreed in principle to join the collaboration on Urban Tapestries providing free access (under a special developer license) to their GIS data, as well as technical support in integrating the data into the UT system and outputting maps at very high resolution (delineating individual buildings, footpaths and spaces between buildings) derived from the OS MasterMap data source.

It was agreed that one of the key elements of this collaboration would be the development of a non-profit license that could be adopted by the OS in order to facilitate similar collaborations with the non-profit sector. The R&I team were keen to collaborate with Proboscis because of its direct engagement with the public that could reveal new insights into how people understand and would like to make use of high resolution map data – currently not available as a product to the public.

Defining the Prototype for the Trial
In late August the team finalised the scope of the prototype we would test at the public trial in December and decided what limited functionalities we would be able to provide given the relatively short development time. The initial task of defining the Java core system and database schema was completed by mid-September and we began to put in place the resources needed to create a working client prototype for the HP iPaq PDAs we had been offered for the trial.

During the summer our collaboration with Orange began to take shape and it was agreed that Orange would provide additional funds to help Proboscis deliver not just a PDA-based client prototype but also a mobile phone prototype. Orange also agreed to provide devices and SIM cards with GPRS networks access, and offered programming resources to build the client software. At the same time we confirmed our decision to use a mesh-based WiFi system for the trial providing the

network access to the PDAs. We had been introduced to Locustworld through James Stevens at Consume back in April and had explored the capabilities of Mesh WiFi with Richard Lander and Jon Anderson for providing blanket wireless access in public spaces (streets, parks etc). We took the decision to acquire 10 Locustworld MeshBoxes which we would site in buildings around 4 main public parks in Bloomsbury: Bloomsbury Square, Russell Square, Brunswick Square and Bedford Square.

Planning the evaluation of the participants experiences during the trial was also initiated in September. Being predominantly an arts based organisation Proboscis was not committed to any particular method of gathering feedback and we discussed the different possibilities (interviews, questionnaires, etc) and what each would offer. As the main focus of our research was social and cultural rather than technological it was decided that we should develop a way of encouraging the participants not to fill in a form but to share their feelings, observations with us. In the months leading up to the trial we developed a process to achieve this.

Bodystorming
During June two further bodystorming experiences were conducted, one by Giles at Trinity College Dublin with a small group of PhD students in the Electrical and Mechanical Engineering Department, whose close links with MediaLab Europe included the DAWN project (Dublin Ad-Hoc Wireless Network).

A second event was held at Hewlett-Packard Research Labs in Bristol for our colleagues in the projects of the City & Buildings Virtual Research Centre. The whole UT team travelled down to take part and, as much as introducing our methodologies and concepts for public authoring and pervasive technologies, it was an important meeting up of the participants in several related projects. One of the key outcomes of this event was the adoption of the bodystorming experience as a methodology by Mobile Bristol (as 'Modelstorming') and its use in the *New Sense of Space* project with primary school children.

Proboscis ran a further bodystorming experience at the London School of Economics during August, attracting a new range of participants from different backgrounds including public policy, social activism, local government,

* http://www.mobilebristol.com/place.html

community development, urbanism and business. At this event we adopted a new documentation method creating individual DIFFUSION eBooks of the threads participants created. This proved to be a great success as it enabled the participants to keep a visual memento of their experience as well as to share it with others, both as a physical (paper) object, and as a PDF file they could share via email.

Intergenerational Bodystorming
A the beginning of September Proboscis began the first of several bodystorming workshops with the Marchmont Community Centre in Bloomsbury. Working with a group of senior citizens (women from a mainly white working class background) and a group of teenagers (mainly from the local Bangladeshi immigrant community) we used the technique to explore storytelling and mapping as a means of sharing knowledge and memories of places that brought together the differing experiences of people from distinct linguistic, ethnic, cultural, religious, economic and even political backgrounds.

This was the first time that we were able to test our assumptions and ideas about how people experience, remember and share experiences of their locality and environment. It was important to us that this was a real community, not a scenario or an ad hoc group convened by Proboscis. We placed very little emphasis on the technological aspects of the project, focusing more on what knowledge the participants had about the area and wanted to share. The discussions about how this changed not only their perceptions of this place, but also opened up the space for conversations between the generations gave it a richness and importance for our research that outweighed many of the other events we had run with people more interested in the technological aspects of the project. As an oral history project it was considered to have been one of the most engaging and rewarding that the participants had taken part in and that the centre had run.

Experimental Ethnography
The social research was devised and conducted by Professor Roger Silverstone with Zoe Sujon from the Department of Media and Communications at the London School of Economics. The researchers proposed 'experimental ethnography' as a set of methodological tools for looking at emergent technologies involving a

methodological triangulation of participant observation, phase interviews and experimentation.

Zoe participated as a core member of the Proboscis Team from the start in February and, as part of the transdisciplinary process, brought her social and ethnographic research skills. In turn the team assisted in helping define the methodology for the experimental ethnographic study – identifying the kinds of people to be observed, creating materials to explain the concepts of public authoring and the technologies available, and designing a bodystorming experience for the participants in the study. This experience differed from the others run by Proboscis during the project in that, as well as using a printed map, post-it notes, pens and stickers, the participants were also taken on a walk through Bloomsbury equipped with disposable cameras, local maps, stickers for annotating places and a specially designed notebook for making comments about the places they took pictures of or wanted to annotate.

The study comprised eight in-depth interviews with nine socially, economically and culturally diverse respondents. Its findings suggest that Urban Tapestries augmented respondents' relationship to place, but the early (non-functional) demo failed to convince many of them that this was a valuable asset. These findings were situated in relation to respondents' 'technological identities' (their relationship with media ranging from television to PDAs), their relationship to Bloomsbury, and the ways in which Urban Tapestries opened up the exchange of social knowledge. The report concludes by pointing to the need to explore the relationship between Urban Tapestries and its potential to facilitate community based interactions, social cohesion and social relationships.

The report was completed in Spring 2004 when a paper was submitted to the LSE Media & Communications Department's Working Papers series. It was peer-reviewed and published in March 2005*.

Film
As the project gathered pace and momentum we decided to explore and document the transdisciplinary research process we were using. Alice Angus directed and edited a short film, *Urban Tapestries: Research Process*, which was used to disseminate our ideas and practices in conferences and talks.

* http://www.lse.ac.uk/collections/media@lse/pdf/EWP7.pdf

Publishing and Presentations

In July two papers on Urban Tapestries written by Giles Lane were published: U*rban Tapestries: public authoring & social knowledge*, a paper for the 1AD Appliance Design Conference in a special issue of Personal and Ubiquitous Computing, and *Urban Tapestries,* a paper for the Digital World Research Centre's 4th Wireless World Conference in the Conference Proceedings published by the University of Surrey.

In September two further articles came out: *Where History Comes Alive*, an article for DigitalEveNow by Katrina Jungnickel and *Urban Tapestries: an experiment in location-based wireless co-creativity,* an article by Katrina Jungnickel, Giles Lane, Rachel Murphy & Nick West published on the Urban Tapestries website.

In June Giles Lane gave presentations on Urban Tapestries at the *Building Synergies Seminar*, Lighthouse Media Centre, Brighton (as part of Architecture Week 2003), and as a half-day seminar at bodystorming experience for the Department of Electronic and Electrical Engineering at Trinity College Dublin (hosted by Dr Linda Doyle).

In July Giles Lane gave a paper on Urban Tapestries at the Digital World Research Centre's 4th Wireless World Conference at the University of Surrey.

STAGE 3 – OCTOBER TO DECEMBER 2003

Building the Prototype
By late September the first iterations of the UT core system had been created by the project's software architect, Danny Angus, and we were ready to start development of the PDA and mobile phone versions. Since May John Paul Bichard had been creating Flash mock-ups of interfaces to help us define the interaction design and for the PDA version we decided to continue to develop with Flash for the client application. Two programmers from the University of Bristol (and based in the Mobile Bristol project offices), Huw Jeffries and James Wilkes, came on board to finish the PDA prototype.

New Partnership
The final partner to join the project was the newly established iLab at France Telecom R&D UK Ltd, a subsidiary of the former French national telecoms company set up to service the R&D needs of its Orange mobile phone network. Our collaborators at Orange had been unable to provide the programming resource to create the prototype for the mobile phone as they had offered but were able to turn to the iLab team who embraced the project enthusiastically and committed a team of programmers to the effort.

**map of threads around
Bloomsbury Square,
London September 2004**

Public Trial – December 2003
For the first trial Proboscis established a local WiFi Mesh network using Locustworld's MeshAP system and a network of MeshBoxes sited in buildings around Bloomsbury, Russell, Bedford and Brunswick Squares in Central London. The use of WiFi for network connectivity enabled the small group of participants to have high bandwidth, but exposed the extensive difficulties of using WiFi in public spaces.

One hundred participants over nine days borrowed HP iPAQ PDAs loaded with the Urban Tapestries software client for up to two hours at a time. This allowed them to access and embed their annotations whilst out in the surrounding streets. The client software used a map created for the project by the Ordnance Survey from their MasterMap GIS system covering about four square kilometres of the Bloomsbury district of Central London.

The trial was based in an empty shop front in the newly refurbished Victoria House on Bloomsbury Square. Members of the public who had signed up for a place on the trial came to the venue, were provided with a device and some training in using it and the UT software, then let loose into the streets of Bloomsbury to annotate at will (WiFi access providing). At the end of their time slot they returned to the venue and were briefly interviewed on video before being encouraged to sit down and write up their thoughts, feelings, observations and other experiences on the project blog*.
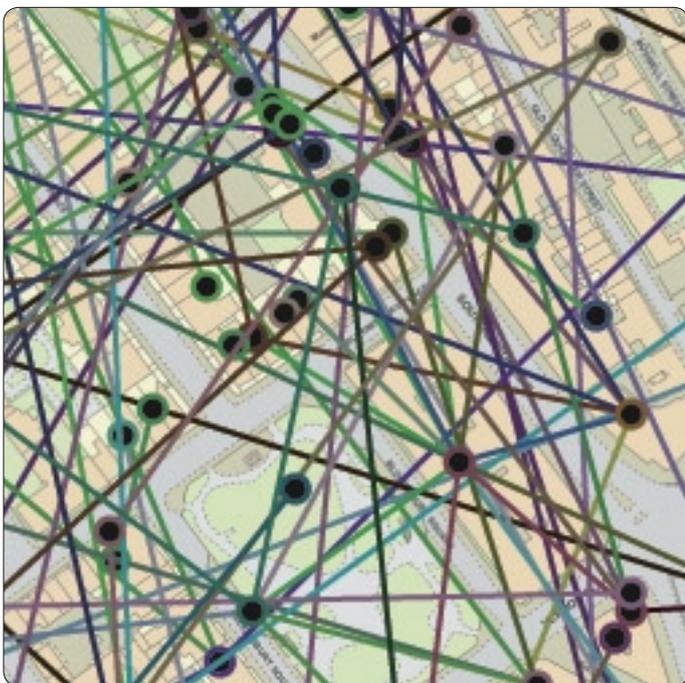
* http://urbantapestries.net/weblog/archives/cat_trial_feedback.html

This dual process of capturing the participant feedback was the outcome of our exploration of how best to get at the social and cultural feedback we were specifically searching for. The use of the video interviews was intended to prompt the participants to articulate verbally their experiences and impressions of participating. We felt that a gentler and more conversational start to the feedback process would make it easier and less formal than responding to a set of specific questions. When they then sat down in the space to blog their experiences we found that the conversations continued around the table and further reflections augmented many of the blog posts.

A further advantage to the blog was that, as soon as it was posted, the participant's feedback was available to anyone to read via the internet. This meant that a significant part of the feedback process was done entirely in the public eye so that people unable to participate directly in the trial could get access to the comments on it by those who were able to participate. It also meant that the participants could add further comments in the days after they took part if they wanted to – about five percent actually used this facility. The public nature of the blog has also meant that within just a few weeks of the trial's conclusion it became a rich resource for other researchers in the field and has become widely cited for its unique source material.

Conceptual Design: A Catalogue of Ideas

Conceptual Designer Rachel Murphy (Rudegirl Designs) was a core member of the team from that start of the project and had been working on a series of conceptual designs that were not constrained by the limits of the technologies available for the prototype, or for the practicalities of making available the many types of content and data held on locations by different kinds of institutions.

In December she completed her *Catalogue of Ideas* which was published on the UT website just as the public trial began. We found these to be an excellent anti-dote to the entirely practical efforts we had to undertake to create and deploy the prototype – freeing our imaginations from the shackles of what *can* be done to think again about what *could* be done.

Film

Urban Tapestries had developed in many ways during the year and it was felt that we needed a new film to help disseminate our concepts of public authoring and social knowledge. Alice Angus directed and edited a short film, *Urban Tapestries: Contexts*, which articulated the contexts in which the project came to be, its aims and objectives and our vision for what these concepts and practices could offer society and culture. First shown in New York in October 2003, the film was updated in March 2004.

Publishing and Presentations

As well as the Catalogue of Ideas, Urban Tapestries generated a number of new essays and presentations in the period leading up to the trial.

In September Giles Lane and Katrina Jungnickel attended the Place Conference at Intel Labs in Portland, Oregon, and Giles Lane presented some of the techniques, formats and methods used by Proboscis in Urban Tapestries at the *People Inspired Innovation* Conference at BT's Adastral Park in Suffolk.

In October Giles Lane travelled again to the USA to present Urban Tapestries for Blur03 curated by Carol Stakenas of Creative Time and Robert Ransick of the New School University. Three other presentations on UT were given at Parsons School of Design (hosted by Andrea Moed), the School of the Visual Arts (Kathy Brew) and at New York University's Interactive Telecommunications Programme (Anthony Townsend).

In November Giles Lane and Rachel Murphy gave a paper – *Dimensions of Information: Location-Specific Information and Public Authoring in the Museum* – at the CHART conference on museums and new technology at Birkbeck College, London. This was followed by three more presentations on UT by Giles Lane at the Architectural Association (hosted by Pete Gomes), London School of Economics (Professor Robin Mansell) and at the DMZ Festival, Limehouse Town Hall London.

In December Giles Lane gave a presentation for the *Intelligent Media Institute Workshop* at Imperial College London (hosted by Professor Philip Treleaven).

STAGE 4 – JANUARY TO JULY 2004

Evaluating the Public Trial

Once the public trial and Christmas break were over we began to evaluate the participants' feedback. An LSE researcher, Victoria Peckett, was brought in to help analyse and evaluate the comments and observations contributed to the blog as well as the filmed interviews with trial participants. This developed into a narrative evaluation of the salient themes emerging from participants' comments (available in the companion publication to this report, *Urban Tapestries: Observations and Analysis*).

We were also able to observe many factors affecting the performance of the technologies deployed in the trial. The PDAs turned out to be an unfamiliar device for most of the participants in the trial. Using them on the street made many of them feel exposed and vulnerable to robbery. The PDA's battery life – two hours continuous usage at best – suffered in the cold of December and may found their device ran out of power after little more than an hour. On one particularly cold day some refused to power up. We also found a number of issues with the performance of WiFi as a mobile networking technology. The signal was subject to lots of radio interference from all kinds of environmental conditions – from rain 'washing out' the signal even at close range, to interference caused by vehicle engines and power conduits. Buses caused the most dramatic interference, absorbing all the radio signal every time they pass. Our final estimation of WiFi was that it was excellent for a portable network connection – moving from one place to the next and accessing the network whilst static, but failed to cope with the uncontrolled environment of public spaces.

View of the Symbian client

Developing the Symbian Client

At the end of the public trial the DTI invited Proboscis to bid for a funding extension to our original grant to enable us to continue working with France Telecom R&D and Orange to complete and test the Symbian client. Changes in the team required a new system developer, Paul Makepeace, and by mid-February we were on track to enhance the core system's functionality and were in the unusual position of being an arts organisation managing a corporate lab's programming effort on a joint project.

Enhancements to the system included:
• increasing the area covered by the location database to thirty-six square kilometres (from about four square kilometres in the first trial)
• the method of assigning locations to pockets was changed from relying on street addresses (and their known latitude/longitude coordinates) to absolute geo coordinates, making it possible for users of the client to be specify the location of their annotation to the resolution of 1 metre square.
• client-server communication was re-defined to improve speed and compression of data between the UT system and the Symbian mobile client. Whilst this dramatically improved the speed of connection over the slow GPRS network, it had the unfortunate side-effect of rendering the previous Flash client unusable, and issue we were unable to resolve.

Enhancements to the client included:
• using GPRS as the network connection – slower than WiFi but available throughout the whole of Orange's UK network area
• use of Orange's Cell-ID location-positioning service, centering the map in the UT client on the location of the current mobile cell which the phone was connected to
• enabling search by location – users could search for a specific location by street name or post code with the server returning a list of all matches for the user to choose form and centre the map on
• filter functions – users could filter out pockets and threads by media types (text, sounds, pictures)
• map zoom – several levels of map zooming were introduced
• map selection – the mobile phone client supported the possibility of loading in different maps (correctly tagged with geographic coordinates). Combined with corresponding location data held on the UT server this gave us the potential to run trials anywhere where we could acquire maps and corresponding GIS data
• picture/sound upload – by using the device's in built sound recording and camera functions, users were able to capture, upload and edit sounds and images.

Conceptual Design Animations
Rachel Murphy completed her conceptual design work on the project with two short animations, *eGeoglyphs* and *Geo-Jogging**. These explore playful ways in which public authoring could be used to create different kinds of relationships to the physical space of the city.

ISEA2004
Giles Lane and John Paul Bichard travelled to Helsinki in March 2004 to meet the team running ISEA2004 and to scope out possibilities for adapting UT to Helsinki for the conference and festival. Having identified what was needed to make it happen, we developed a proposal to create a special version of UT for delegates at ISEA to use to collaboratively map sensual experiences in the city. Unfortunately the resources (GIS data and maps for Helsinki, mobile devices and SIM cards, development and set up funding) didn't come together and in June we had to take the decision to pull out. At this time the project no longer had the resources even to attend ISEA and we were unable to participate in the panels which we had been invited to be part of.

Development Roadmap
A master list of all the functionalities that a public authoring system should require had been in development as part of our research efforts since May 2003. Guided by information architect, Nick West, it was informed by the team's research and experimentation as well as through the insights gained from the bodystorming workshops and the first trial. As the field trial got under way in June 2004 Proboscis published this list on the project website** to indicate the depth of our research into what a complete (as opposed to prototype) public authoring system would need to satisfy the issues and desires we had identified. It was published as a roadmap to indicate too how we imagined we might be able to continue developing the Urban Tapestries platform towards achieving most of this functionality.

Field Trial – June/July 2004
For the second trial Proboscis selected a smaller group of eleven participants who were given SonyEricsson P800 mobile phones for four weeks. The phones used Orange's GPRS network to connect to the Urban Tapestries system giving them independent coverage across the whole of London, although at much slower connection speeds than WiFi. New client software running natively on Symbian was developed with France Telecom R&D UK's iLab team, which included a map covering thirty-six square kilometres of Central London.

This trial sought to understand more about the role of time and familiarity in relation to public authoring. The form factor of the P800 was more like a standard mobile phone and the length of time participants were able to use the devices both contributed to the richness of the experience and the outcomes for participants.

Eleven participants took part in the trial recruited mainly from people working in fields of arts, design, research, medical science and new technologies. Proboscis was approached by (and accepted) one person with a mobility impairment who wished to annotate the city according to physical access issues she faced everyday.

Over a period of approximately four weeks the participants explored the system, getting used to (and frequently frustrated by) it. Some came with a specific task in mind but found the practice of authoring compelling them to broaden their use. Others found their

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interest waning as they failed to encounter content that inspired or interested them. One participant began to use the system as a geographic diary, but then worried that her authoring of personal experiences revealed too much. Another participant used it as a tool to capture impressionistic sounds and images of places, trying to build up a sonic history of his wanderings.

The range of uses dreamt up and experimented with during the four weeks by the participants gave a taste of what might happen if the ability to map and share knowledge and experiences were commonplace. By allowing the participants to take time to begin to weave public authoring into their daily lives, we were able to understand more of the critical factors affecting the adoption or disinterest in these kinds of technologies by the mainstream: time, place, context and situation.

Time affects how we move through the city, the pace and speed of our journeys and (ma)lingerings.

Place is subjective and dynamic – subject to shifting boundaries as we reconfigure how we relate between one place and others.

Context governs how we construct the relationships between people places and things that give meaning to our interactions with each other and the ways we occupy space – domestic, public, commercial, work.

Situations require us to respond to them in an appropriate way, and that we have access to data and the ability to author in the most

These form a kind of rubric we can apply when thinking about the 'fitness for purpose' of new social practices like public authoring and the kinds of technologies they require to be transformed from elite or 'high culture' into the everyday. A fuller evaluation of our observations and participant feedback is available in the companion report cited previously, and our conclusions in the white paper, *Urban Tapestries: Public Authoring, Place and Mobility*•.

Publishing and Presentations
In early July Proboscis published two Cultural Snapshots: *Urban Tapestries: sensing the city and other stories* by Katrina Jungnickel based on her presentation at the DigiPlay Seminar in April 2004 at the University of Surrey; and *Social Tapestries: public authoring and civil society* by Giles Lane outlining a vision for the social and cultural implications of public authoring.

In January 2003 Giles Lane and Nick West gave presentations on Urban Tapestries at the *Approaching the City* conference at the University of Surrey, as well as two in February for Ordnance Survey in Southampton and Orange in London.

In March Giles Lane gave a series of presentations on our work on Urban Tapestries to the BBC Creative Research and Development group in London, to staff and collaborating artists at The Public in West Bromwich, to MA students studying at the Universities of Westminster and Middlesex and to the Insight and Foresight team of Nokia in Helsinki, Finland (with John Paul Bichard).

In April Giles Lane and Nick West presented UT in a panel at the *Life of Mobile Data* conference at the University of Surrey, at *The Crossing Project* at the Finnish Institute, London and at Cybersalon's *Mobile Futures* event at the Science Museum's Dana Centre in London. Katrina Jungnickel presented a paper on UT at the DigiPlay Seminar held at the University on Surrey and Giles Lane gave a presentation on UT at the Ferens Gallery in Hull for Hull Time Based Arts.

In May Nick West travelled to New York to present Urban Tapestries and run a bodystorming workshop at Glowlab's *PsyGeoConflux* Festival.

* *Urban Tapestries: Public authoring, Place and Mobility,* Giles Lane & Sarah Thelwall

STAGE 5 – AUGUST TO OCTOBER 2004

Evaluating the Trial Feedback
At the end of the field trial Proboscis had gathered extensive participant feedback from both trials. During the first trial we had recorded short video interviews with participants and encouraged them to post their thoughts and comments on a blog. Whereas in the second trial, with a far smaller sample of participants, we adopted a more formal questionnaire approach. Participants completed questionnaires at the outset of the trial, at the end of each week and at the end of their participation.

Map of all the pockets and threads created during the trials

The process of evaluating such a disparate range of materials – including an attempt to grapple with the server logs generated during the second trial – proceeded through the summer and into the autumn of 2004 as we sought to make sense of it and shape our conclusions. The main bodies of participant feedback had been analysed into a narrative evaluation by Victoria Peckett. From this basis Proboscis was able to consolidate the key observations from our interactions with participants in the two main areas of public engagement (the bodystorming experiences and the trials). *Urban Tapestries: Observations and Feedback** contains the results of the team's observations and evaluation of the bodystorming experiences and two trials.

Communicating Ideas
The focus of the project had, for most of 2004, been firmly on technical development of the UT platform and Symbian client for the field trial. Alongside this was a parallel planning and development phase for a new research programme, Social Tapestries, that would explore the conclusions and implications of Urban Tapestries. We had realised the limitations of creating experimental prototypes and testing with small groups of like-minded people and now began to think about how we would engage actual communities and groups of people to understand their communication patterns, their existing mapping and sharing of local knowledge, information and experience.

To help think through a couple of scenarios that would illustrate some of the potential benefits that public authoring could be used to bring to everyday life, we devised two online animations. The first animation imagined a young city-dweller temporarily handicapped by a broken leg and having to traverse the city on crutches. Discovering physical barriers he uses Urban Tapestries to see if anyone else with a similar problem has added any relevant content. He finds an alternative route to his destination courtesy of a disabled person's thread and in using it discovers a park he didn't know of and further threads by a person who reads there and keeps a book list. The second animation concerned a person leaving their home city for a few months and using Urban Tapestries to maintain a sense of connection back there by keeping in touch with new content added to the area and continuing to post content herself.

* http://research.urbantapestries.net/pdfs/UT_Observations.pdf

As fictional scenarios the animations are limited tools for understanding actual behaviours that people might adopt in daily life. However they do offer a means of beginning to articulate the different kinds of cross-cultural and cross-society benefits that public authoring has the potential to deliver. Their value to Proboscis lies in making our ideas more widely accessible.

Broadening Access: RSS Feeds & Web Browser
The increasing visibility and interest in the 'semantic web' and 'social software' we encountered during the period of researching and developing the project suggested investigating and potentially adopting some of the technologies being deployed. Given our limited resources the most useful we could easily integrate into the Urban Tapestries software platform was Rich Site Summary feeds (RSS), which was added in September. Visitors to the UT trial site could view a page which dynamically created RSS feeds for each author and each thread in the system. A further option enabled visitors to select a location (within the thirty-six square km covered by Urban Tapestries) and a radius (100m, 500m, 1km) to create a custom location-specific RSS feed. Subscribing to the feed in a newsreader would update the feed each time a new pocket was added within the parameters set.

Although we had planned to incorporate a web client into the field trial we had not been able to bring in the additional help required until after the field trial was completed. Based upon the initial Flash prototype for PocketPC we decided to adopt Flash as the interface for a web client, however a number of significant changes to the core system created a communications problem between Flash and the Java system that we were unable to resolve at the time. A workaround using the RSS Feeds was used which allowed the Flash interface to browse (but not author) content on the system.

Creating these two enhancements to UT enabled Proboscis to creating increase access to the system and the content created on it during the trials. The web browser gave us a means to demonstrate the visual metaphors of pockets and threads laid out over a highly detailed map image, weaving a tangible web of relationships that might otherwise be unspoken, opaque, fragmented. The need to access content in time-, context- and situation-specific ways was made tangible by our use of RSS feeds, the FlashBrowser and the Symbian mobile phone client. As we began to plan

version 2 of Urban Tapestries, making the system flexible enough to support any access/authoring interface/device we could think of (robots, embedded devices, teletext, billboards etc) was crucial to supporting the aims and objectives of the experiments in Social Tapestries.

Exhibiting at Archilab 2004 (October-December)
Proboscis was invited by curator Bart Loosma to create an exhibit for the prestigious architecture biennial Archilab. The theme of the biennial and symposium was *La ville à nu / The naked city* and brought together a diverse range of architecture and urbanism projects at the FRAC Centre in Orléans, France. Nick West wrote an essay for the exhibition catalogue and spoke at the Symposium.

For the exhibition a series of large scale panels illustrating some of the key concepts, methods and trials used in the project were created by Giles Lane with Nick West. In addition to this the *Urban Tapestries: Contexts* film was looped on a monitor and a web terminal with access to the FlashBrowser for visitors to explore the content on the system were made available. A bilingual text accompanying our exhibit was also published using Proboscis' DIFFUSION eBook format. Visitors to the exhibition could print out and make up the downloadable PDF booklet *in situ*.

Wrapping Up
The closing aspects of working on Urban Tapestries consisted of completing a film, *Urban Tapestries: public authoring in the wireless city*, and a limited edition artists publication, *Urban Tapestries: Box*, both of which are in final production for release in late summer 2005.

Urban Tapestries was a pivotal project for Proboscis at a turning point in our evolution as a creative studio. It remains the largest single project we have undertaken in our eleven year history. It grew from a small sketch into a major research and technological development project requiring the skills and energy of around twenty-five people. As the project grew in size and complexity, so too did its vision, refining itself ever further into an understanding of how people communicate through place and time, how they build relationships with other people, places and things, how we might find new and culturally engaging uses for emerging mobile communications.

More than any other project we have undertaken, Urban Tapestries required us to learn new skills, to be informed by the skills of others and to engage with communities, groups and individuals we hadn't anticipated working with before. Proboscis has found different roles for itself and intervened in areas of practice, such as public policy, that arts organisations rarely stray into.

By our own measure, the project has been a significant success – it brought together hundreds of people, from team members and partners to bodystorming and trials participants to explore public authoring and its implications. It produced numerous individual creative works – films, publications, an exhibition – as well as helping refine and develop innovative methodologies for transdisciplinary collaborations. The project was also innovative in its blend of partners and funders – bridging the arts with government, private philanthropy, public agencies and industry. Lastly, it has achieved a truly global visibility and acclaim for its vision, integrity and openness.

The previous sections of this report set out in detail our vision and conclusions based on our experience in developing and running the project, as well as our recommendations for public and corporate policy – from opening up mobile data networks to interoperability and making provision for free public access to GIS data to designing for people, contexts and situations.

Perhaps Urban Tapestries' most important outcome, though, is that it has become a network of friendships and relationships bridging many different divides: social, professional, geographic, linguistic and cultural. These are the seeds of future collaborations.

LOOKING AHEAD – SOCIAL TAPESTRIES

As we ended the first trial in December 2003 and began to evaluate the feedback and our own observations of the project so far, it became clear that the potential of public authoring extended way beyond the areas we had started thinking of. Giles Lane and Alice Angus began planning a new research programme that would extend the aims Urban Tapestries with a specific focus on creating collaborations with civil society partners and seeking to site projects in real communities.
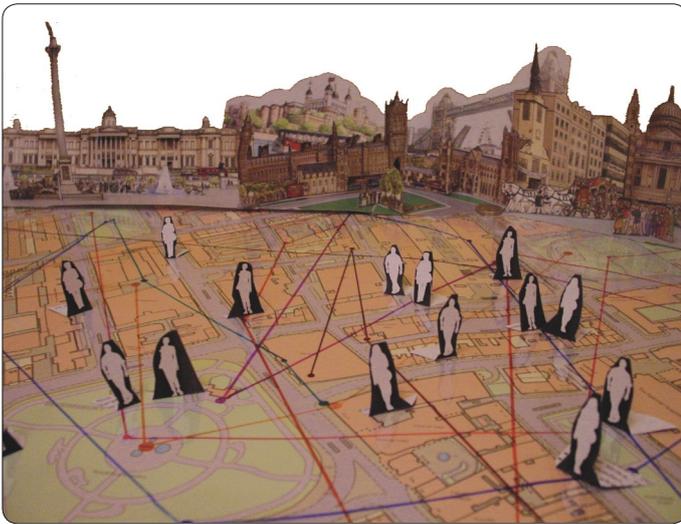
Social Tapestries

The programme would start a process of exploration and negotiation with organisations and community groups to try to understand how knowledge, experience and information are communicated within specific communities and how they might realise emergent benefits from mapping and sharing those processes.

Some seed funding was awarded by the Social Policy section of the Calouste Gulbenkian Foundation and matched with new funds from Arts Council England. In Spring 2004 Proboscis applied for and was awarded a grant to host a Visiting Fellow in Engineering – Natalie Jeremijenko – from the Engineering and Physical Sciences Research Council (EPSRC). This is the first time that an independent arts organisation (i.e. not a university) had been awarded such a grant. The Fellowship will explore the potential to bridge the public authoring and knowledge mapping technologies developed by Proboscis with Natalie Jeremijenko's experimental robotics to bring fun and low cost environmental sensing to local communities, investigating new forms of social activism.

During 2004 Proboscis was also invited to work with a secondary school in Bransholme, near Hull, by the local Creative Partnerships office. An exciting opportunity, in a few short months Proboscis created an associative learning programme of activities and designed a tool kit to be used by 11-12 year olds to map and share local knowledge.

In developing our vision for Social Tapestries we have engaged in conversations and tentative collaborations with the following organisations: Community Development Foundation; Citizens Online, Swiss Federal Institute of Technology, Lausanne (EPFL); Birkbeck College & Institute of Education (London Knowledge Lab); Kingswood School, Jenny Hammond School; Havelock Estate Resident Group; Space Media Arts, The Public and the Stanhope Centre for Communications Policy Research. We have also continued to work with some of the original partners in Urban Tapestries: London School of Economics, France Telecom R&D UK Ltd and the Ordnance Survey.

Key to the development of Social Tapestries has been a complete re-engineering of the UT system architecture from the ground up and the creation of new clients for web, mobile devices and embedded systems. These new clients will be used in the projects and experiments and will also form an ongoing public trial starting in mid 2005.

http://socialtapestries.net

PROJECT OUTCOMES

Events

Exhibition at Archilab 2004, Orleans France
Urban Tapestries was exhibited at the biannual festival of architecture in Orlèans which in 2004 was centred on the theme of 'the naked city'. Three large panels illustrated the concepts, research methods and trials. The *Urban Tapestries: Contexts* film was displayed and a bilingual DIFFUSION eBook designed for visitors to make and keep.

Bodystorming Experiences
Proboscis devised and ran a series of bodystorming experiences for diverse groups of participants and settings. Events were held at London School of Economics, Trinity College Dublin, Hewlett-Packard Research Labs Bristol and Marchmont Community Centre Bloomsbury during 2003. A further bodystorming experience was run in New York USA during Glowlab's *PsyGeoConflux* festival in May 2004.

Trials
Proboscis ran two trials of different versions of the Urban Tapestries system. The first trial was open to the public to participate and had 100 people take part over 9 days in December 2003. For the second trial Proboscis selected a small group of 11 participants and provided them with devices over a 4 week period during June/July 2004.

Creative Lab & Public Forum
In May 2003 Proboscis ran a two-day Creative Lab and Public Forum to present and explore our ideas with peers from the arts, academia, government and industry. Almost 100 people took part over the two days and it was a crucial event in bringing many of the ideas of public authoring and social knowledge through mobile and wireless technologies to a broad audience not only of peers but in the wider public through traditional media exposure and coverage in emerging grassroots media such as blogs.

Research Methods

Transdisciplinary Collaboration
Collaboration is at the core of Proboscis' creative practice and ethic – Urban Tapestries gave us a unique opportunity to expand the scope of our collaborations to include disciplines we hadn't previously worked with. Rather than follow a traditional multidisciplinary method of collaboration which keeps skills separated, we chose to blend our skills and expertise by involving all the core team in each of the main areas of research and development activity. Thus we cross-fertilised our own skills with the perspective and insights offered by other disciplines – adding depth and challenging conventions to the way we approached the tasks at hand.

Bodystorming Experiences
Bodystorming is a technique used in product design teams (notably by IDEO) as a physical counterpart to brainstorming and itself is based on improvisation techniques used in 'devised theatre'. Proboscis adapted the technique as we had encountered it to take it out of the studio and lab and give it to a more performative role, engaging its participants with new concepts in a direct, fun and physical way that created a tangible experience. The emergent patterns it reveals offer a dynamic and iterative means of modelling behaviours and adapting concepts and design solutions to suit.

Experimental Ethnography
Professor Roger Silverstone with Zoe Sujon from the Department of Media and Communications at the London School of Economics developed 'experimental ethnography' as a set of methodological tools for looking at emergent technologies involving a methodological triangulation of participant observation, phase interviews and experimentation. This resulted in a formal academic paper published in March 2005.

Policy Initiative
GIS Public Access License for Non-commercial Use
Based on our collaboration with the Ordnance Survey (OS) between July 2003 and March 2005, Giles Lane wrote a draft license for free (no cost) access to GIS data on a Non-Profit, Non-commercial basis. The license was adapted from the UK-harmonised version of the Creative Commons' *Attribution, Non-commercial, Share-Alike* license. Giles was advised in writing the license by the Programme in Comparative Law at the University of Oxford who were responsible for the harmonisation of Creative Commons licenses with UK law. This license was formally proposed for consideration by the Ordnance Survey in April 2005, a week before the launch of the comparable Creative Archive license developed out of Creative Commons by the BBC, Channel 4 and the British Film Institute. This fortunate coincidence added considerable weight to the validity of the proposal to the OS's licensing department, by putting it into a similar category as these other publicly owned organisations. The draft license is available to download from: http://research.urbantapestries.net/pdfs/NatMapAgency_draft_CC_license.rtf

Software
Urban Tapestries Platform
A Java system using XML-RPC as the client-server protocol. Version 1.1 continues to run as a live and working prototype for the clients created during the project. The system also support RSS feeds from content and locations associated with it. Its location data covers around thirty-six square kilometres of Central London.

Urban Tapestries Clients:
FlashBrowser
A web interface allowing the public to access the Urban Tapestries content database was completed in October 2004. The client allows users to navigate across the thirty-six square kilometres of London covered in the trials by scrolling across a map, as well as by selecting content by author, pocket and thread.

Symbian Native Client
Proboscis and France Telecom R&D collaborated on creating a native C++ client to run on SonyEricsson P800/P900 mobile phones. This client included an experimental Cell-ID location positioning system working off internal servers at FTRD, which was used during the Field Trial of June/July 2004. This client remains stable and in use as a live working prototype (although no longer with Cell-ID).

Flash Client for PocketPC
The initial software client for HP iPAQ devices used in the Public Trial in December 2003 was created in Flash for the PocketPC operating system. This was rendered non-functioning by changes to the core system for the Symbian prototype.

Films & Animations
The films listed below are available to download from:
http://research.urbantapestries.net/films.html

Urban Tapestries: public authoring in the wireless city (Summer 2005)
An animated film by Alice Angus weaving together the key ideas, motifs and issues at the heart of the project.

Flash Animations (September 2004)
Two animations exploring scenarios of use for Urban Tapestries were devised by Giles Lane and Michael Golembewski and animated by Michael.

Geo-Jogging (February 2004)
An animation by Rachel Murphy exploring a concept from the Catalogue of Ideas.

Public Trial Interviews (December 2003)
A selection of excerpts from interviews conducted with participants during the public trial. [This film is not publicly available for participant privacy reasons]

Urban Tapestries: Contexts (October 2003)
A film by Alice Angus exploring the contexts from which the project emerged and along which it has developed.

Urban Tapestries: Research Process (July 2003)
A description and documentation of the research process and methods adopted by the project team.

Urban Tapestries: Bodystorming (May 2003)
A film documenting the first Bodystorming Experience run by Proboscis for Urban Tapestries at the Creative Lab in May 2003, shot and edited during the event by Alice Angus and Katrina Jungnickel and first shown during the Public Forum in May 2003.

Experience Concept Scenario (December 2002)
A short animation describing the initial concept sketches and scenarios of using an Urban Tapestries system created at the very outset of the project.

System Concept Scenario (December 2002)
A short animation describing the initial concept sketches and scenarios for an Urban Tapestries system created at the very outset of the project.

Publications
The publications listed below are available to download from:
http://research.urbantapestries.net/articles.html

Summer 2005	*Urban Tapestries: Box*, a limited edition artists' multiple inspired by the project will be published by Proboscis during summer.
June 2005	*Urban Tapestries: Public Authoring, Place and Mobility,* a white paper by Giles Lane & Sarah Thelwall.
	Urban Tapestries: Project Report, a report by Giles Lane & Sarah Thelwall

	Urban Tapestries: Observations and Analysis, a report by Giles Lane, Alice Angus, Victoria Peckett & Nick West
February 2005	*Urban Tapestries: Experimental Ethnography, Technological Identities and Place*, an LSE Electronic Working Paper by Roger Silverstone & Zoetanya Sujon
January 2005	*Urban Tapestries: The Spatial and the Social on your Mobile*, a Cultural Snapshot by Nick West
October 2004	*Social Tapestries: September 2004 Creative Lab Documentation*, a DIFFUSION eBook by Giles Lane & Sarah Thelwall
	Archilab 2004: La ville à nu / The naked city, exhibition catalogue edited by Bart Loosma, published by Editions Hyx, Orléans, France.
	Urban Tapestries: a brief introduction for Archilab 2004: the naked city, an English/French DIFFUSION eBook by Giles Lane & Nick West
July 2004	*Social Tapestries: public authoring and civil society*, a Cultural Snapshot by Giles Lane
	Urban Tapestries: sensing the city and other stories, a Cultural Snapshot by Katrina Jungnickel
April 2004	*Bodystorming Experience: April 2004* , a DIFFUSION eBook
March 2004	*Urban Tapestries: a brief introduction*, a DIFFUSION eBook by Giles Lane
December 2003	Catalogue of Ideas: Concept Designs by Rachel Murphy
November 2003	*Dimensions of Information: Location-Specific Information and Public Authoring in the Museum*, a Paper for CHArt Conference by Giles Lane & Rachel Murphy
September 2003	*Urban Tapestries: an experiment in location-based wireless co-creativity*, by Katrina Jungnickel, Giles Lane, Rachel Murphy & Nick West
	Where History Comes Alive, article for DigitalEveNow by Katrina Jungnickel
July 2003	*Urban Tapestries*, a paper for 4th Wireless World Conference by Giles Lane
	Urban Tapestries: public authoring & social knowledge, a paper for 1AD Appliance Design Conference by Giles Lane
February 2003	*Visual Concept Scenario*, Giles Lane, Alice Angus & Katrina Jungnickel

Press & Media Coverage

November 2004	Giles Lane interviewed for ORF, Austrian National Radio.
October 2004	*Proboscis Probes Urban Public Authoring*, Howard Rheingold (The Feature)
September 2004	Giles Lane interviewed for NPR Radio: *The World Handheld Report*
	UT featured in icon magazine issue 16
July 2004	UT featured in E-Government Bulletin focus on wireless networks
	UT featured in Bill Thompson's BBC Online column
June 2004	UT featured in Society section of Le Temps, Geneva
	UT featured in Nature Science Update
	UT Field Trial covered in Howard Rheingold's SmartMobs Weblog
March 2004	*Location Services Change from Concept to Reality*, by Eric Lin in The Feature
	Smart Places by Jack Schofield in The Guardian
January 2004	*The Semantic Earth* by David Weinberger in Esther Dyson's Release 1.0
	Walking Through Sound by David Toop in Vodafone Receiver
November 2003	Article in 160Characters.org by Mike Grenvile
October 2003	Digicult Technology Watch Briefing 10
May 2003	Article by Andrew Lee in The Engineer

SOME STATISTICS

Participants

Proboscis Team	12
London School of Economics	3
Orange	2
France Telecom R&D	5
Ordnance Survey	2
Locustworld	1
—	
Bodystorming Experiences	125
Public Trial December 2003	100
Field Trial June/July 2004	11
Creative Lab & Public Forum May 2003	74

Funding

Department of Trade & Industry	£84,687
Orange	£20,000
Arts Council England	£10,000
Daniel Langlois Foundation	£8,635
	£123,322

Project Expenditure

Research Team Fees	£85,420
London School of Economics	£9,987
Equipment/Software	£9,792
Events / Dissemination	£9,057
Materials	£1,050
Admin Costs	£9,440
	£124,746

In Kind Support
[Based on estimates provided by partners]

France Telecom R&D UK Ltd	£192,500	(programming team)
Ordnance Survey	£25,000	(map data & GIS support)
Proboscis Team	£15,000	(additional time donated)
Hewlett Packard Labs	£6,000	(iPaq PDAs for trial)
Orange	£6,000	(Mobile Phones & SIM cards for trial)
Apple Computer UK	£4,000	(4 iBook Laptops for trial)
GARBE UK	£1,000	(venue for public trial HQ)
Locustworld	£1,000	(Mesh WiFi support)
Sony Europe	£500	(PDA for research)
	£251,000	

Estimated Total Cost	**£375,746**

OBSERVATIONS AND ANALYSIS

This section presents the observations and qualitative evaluation of participant activity and feedback from the bodystorming experiences, the public trial of December 2003 and the field trial of June/July 2004.

We have attempted to draw out the most meaningful, insightful and incisive comments made by participants in the trials, and to elucidate some of the benefits gained from the bodystorming experiences.

At all levels this project pointed to taking an ever deeper people-centred approach to investigating public authoring and the social knowledge we imagined it would annotate to place and spaces.

Each time we developed scenarios, our imaginations would be trumped by the participants in our bodystorms and trials – we came to understand that the best way to do this kind of research was to address the essential issues at the heart of everyday life first.

Only by rooting our research in the daily practicalities of communicating are we likely to understand the complex, fragmented and disparate nature of our relationships to people, places and things. We believe that this document presents a strong basis for future research in this field to follow this path and ground itself in real lives, real communities, situations and contexts.

BODYSTORMING EXPERIENCES

Bodystorming experiences are a key research technique employed by Proboscis – an adaptation of the bodystorming techniques used in product design (notably by IDEO), which are themselves based on improvised theatre techniques.

Bodystorming experiences offer a swift means of testing out ideas and contexts with people by creating situations and contexts in which they can play and explore their limits. Fun and tactile, this approach allows us to investigate different qualities that an idea may have when applied in a physical setting – like a game it reveals the tensions and pleasures of limits and rules and reveals the kinds of relationships that occur through social and cultural interactions between people. Using props and take-home materials generated by the participants, everyone shares ownership of their experience.

Each time we encountered new interpretations of how people engaged with the city and were consistently inspiredby the new possibilities for public authoring were dreamed up by the participants. The analogue nature of the bodystorming experiences unfettered their imaginations from the limitations of networks and devices.

Visualisation of bodystorming by Katrina Jungnickel
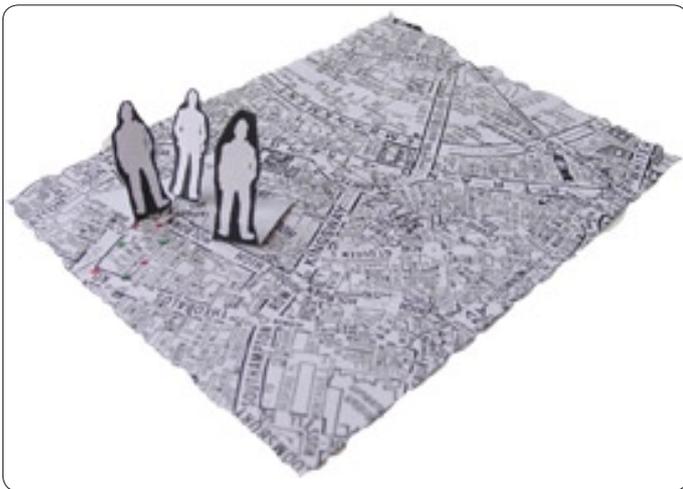
London School of Economics
Proboscis ran several bodystorming experiences hosted at the London School of Economics – the first as part of the Creative Lab in early May 2003. These events were used to introduce people from a wide range of backgrounds to the concepts and practices of public authoring without the distractions of experimental electronic technologies and unfamiliar devices, as in turn generated a wealth of raw material about the relationships people make to places. We were presented with a wide range of issues that were not immediately obvious in the context of 'location based services' and were able to develop our concepts and framework for the Urban Tapestries software platform accordingly.

Ethnographic Bodystorming
As part of the experimental ethnographic research conducted as part of Urban Tapestries, social researcher Zoe Sujon took the participants in the study on a bodystorm through Bloomsbury. The participants were introduced to the concept of public authoring and mapping via the printed floor maps and encouraged to map the area using post-it notes. They were also introduced to a non-functional mock-up of the Urban Tapestries software client running on a PDA.

After this deep dive into the concepts, practices and tools of public authoring, the participants were accompanied by Zoe Sujon on a walk around Bloomsbury. They were equipped with note pads, hand held maps and disposable cameras to capture and annotate places, thoughts, experiences and memories – which Zoe later transcribed into annotated maps for inclusion in the research paper published by the London School of Economics in Spring 2005.

Urban Tapestries: Experimental Ethnography, Technological Identities and Place by Professor Roger Silverstone and Zoetanya Sujon, London School of Economics and Political Science, UK
http://www.lse.ac.uk/collections/media@lse/pdf/EWP7.pdf

Hewlett Packard Research Labs, Bristol
The Urban Tapestries team conducted an away-day bodystorming experience at the HP Labs building in Bristol as part of our contribution to the City & Buildings Virtual Research Centre. The aim of the event was to share techniques and methods of research with our colleagues in HP Labs, Bristol University and Appliance Studio working on the Mobile Bristol Project. A result of this was the adoption of the technique by the Mobile Bristol group (as 'modelstorming'), who used it in their *A New Sense of Place** project with children at Ashton Gate Primary School.

Marchmont Community Centre
Of all the bodystorming experiences we ran as part of the project, the most valuable in terms of insights into the social and cultural impact of public authoring was the series of events with the Marchmont Community Centre. Initial contact was made with the Centre manager and discussions settled on working with the intergenerational worker to do bodystorming with older residents and young people. The intention was to make the event into a self contained intergenerational oral history project that contributed to both the aims of the community centre and the research for Urban Tapestries. The intergenerational worker was a key element in the delivery of the bodystorming. Our initial plan was to run one bodystorming experience, but it was so well received we were invited do another one and for a couple of social occasions where we could bring a copy of the material generated in the bodystorms.

For the first session we worked with older people and for the second session with the same group and a group of young people from the local Bangladeshi community. We created a large table map so that people could sit around it and this was important in cross table discussions that happened during the afternoon.

We introduced the initial Urban Tapestries technological concept but mainly we focused on asking people to annotate the map with their stories and things they would like to share. We used the event not to explore the technology explicitly but to look at the kinds of knowledge people naturally share when thinking about their local area. We focused on the local history aspect and the sessions allowed us to think about how local history can be revealed and shared via an

Urban Tapestries system. The very informal sessions encouraged people to relax and chat and revealed the richness that anecdotal knowledge can bring to chronological history. Because several people did not read well or had problems writing we ended up working as a group, people writing for each other and stimulating each others memories. It was a shared experience, a social encounter of different groups bound by a shared desire to exchange stories and memories.

We used a five foot square enlargement of a 1930s map which shows many now demolished buildings – and this itself stirred many conversations. Coloured Post-it notes were used for participants to annotate the map as well as pop up cut outs of buildings and props of various kinds designed to spark memories (from a ration book to a pair of glasses to a plastic banana).

Sessions lasted approximately one and a half to two hours of annotating followed by an informal group discussion. The sessions were set up in the afternoon after lunch and followed with tea and biscuits, they were very relaxed, people came and went and there was ongoing conversations and chat.

Observations
The participants – both seniors and teenagers – enjoyed themselves. They reacted positively to the map and the telling of stories. Sitting around the map – like a table encouraged exchange of stories and reminiscences, which was very important. The intergenerational worker helped to make the Urban Tapestries team members feel very welcome and she acted as a bridge between us and the group. The fact that we went on to do two sessions followed by two follow up visits indicates how positively it was received by the participants themselves.

The intergenerational worker was very positive and observed that of all the oral history projects run by the Centre this one had stayed in the minds of the participants and they had enjoyed it hugely.
She talked of the importance of projects like this for encouraging people to talk about, remember and share their experiences, how it helps people to realise their experience is valued and how it helps others to feel a sense of belonging and welcome.

The bodystorming experience was also valuable for the participants in thinking about the Bloomsbury beyond

the blue plaques, the 'Bloomsbury set' and the publisher – the mainstream and official histories. It helped confirm that one of the important uses for Urban Tapestries would be as a tool for local people and communities to reveal and highlight the richness of everyday local history and culture that is often hidden by tourist and popular perceptions of a place.

Outcomes
Based on the stories and memories shared and mapped by the participants, Proboscis created two large wall posters, a laminated document of the stories and a big map for the centre. This had typewritten notes of all the stories and memories attached to the places they were related to by the participants.

The team felt that this particular collaboration was highly successful for thew project on several levels –
• as a mini project in its own right where people came together to share history and knowledge
• as research for Urban Tapestries in terms of how the bodystorming tool can be adapted for different situations and towards different ends
• as research into the type of content that Urban Tapestries might be used for
• as research into real-life contexts and situations of use for an Urban Tapestries system of public authoring

Some Samples of the Memories
I was born in Wild Street and lived in a Peabody flat till it was bombed in 1941. We had nothing – not even a pair of knickers and we stayed at night in the shelter in the Masonic Hall. We went for food to our uncles, and for a wash. Eventually we got a room in a Peabody flat, it was one room for Mum and the whole family, our father had died, and we had to share a bathroom with all the other families on the floor. I'm glad we lived this long, things are better now and we can enjoy them.

Before the war firms didn't employ married women, there was no union for women so if you were sick you didn't get any pay. The unions changed that. The woman's union in the Carreras Cigarette factory on Hampstead road began in 1942.

Lill's Sweet Memories
Near British Museum, Boswell and Millman Street There were sweet shops all around selling such

delights as:
Pontefract Cakes (Gave you the runs)
Liquorice Allsorts
Peardrops
Sherbert Lemons
Monkey Nuts
Tiger Nuts
Humbugs
Sherbert Dips and lollipops
Nougat
Jelly Babies
Dolly Mixtures
Choc Drops
Cough Drops
Lemon Dips
Lemonade Powder (to make your own drink)
Tizer

Bodystorming in New York
In May 2004 Nick West conducted a bodystorming session at the *PsychoGeographical Conflux* held by Glowlab in New York City*. For the physical set-up of the bodystorming, we used very similar procedures to those that were used for earlier London-based bodystormings. We printed a 10-foot square vinyl map of a well-known portion of the city (in this case, a central segment of New York's Lower East Side, where the conference was being held). We invited a collection of participants that included artists, technologists and those interested in urbanism more generally (although in this case, the ratio of artists to technologists and others was higher than in our London bodystormings). Finally, the activity was the same; we invited all participants to use a stack of coloured Post-it notes to create annotations about points in the mapped neighbourhood, imagining that those annotations would remain up for others passing through the neighbourhood to see, through some unspecified mechanism.

Our results, however, were quite different. The first difference was in the way that the participants acted during the bodystorming session. People "played" with the activity for a while, but didn't seem to take much interest in the internal logic or quality of their own annotations; it was almost as if the most important thing for the participants was their behaviour vis-à-vis the other participants rather than the actual content what it was that they were doing.

* http://glowlab.blogs.com/psygeocon/

As for the quality of the annotations, there were many fewer words on each annotation than in the London bodystormings, with several annotations being single words (like "EAT"), and some annotations being only symbols (such as arrows or stars). Perhaps related to this was the fact that almost no "threads' of annotations emerged. Some people did serial strings of one-off annotations, but only a few people created actual threads, where the content in one annotation was related to the content in others.

Other Conclusions from New York
- New York's urban plan gave the activity a very different feel,
– grid rather than individual/unique areas.
– grid allows transparency for city dwellers.
– transparency allows relation to the whole rather than relation to the individual nodes within the grid.

- A different attitude of engagement by participants,
– pragmatists, not theorists.
– this is true for artists as well as tech experimenters (although we also had a bigger ratio of artists to experimenters than in the London bodystormings)
– for both groups the "things" being constructed in their world exist without (obvious) relation to not only the other things they've built, but also the things others have built (unless, of course, the links exist for pragmatic reasons).

- overall result: isolated productions, only loosely connected to their place of origin.

- this overall result applies to personal stories as well, and applies to the spatial annotations that people were invited to make about a section of New York's Lower East Side.
– the activity was judged (by the participants) as a production in itself, rather than as an opportunity to link (and see the links to) the annotations of others. This was true in the level of self-consciousness and irony of the annotations – it seemed that people were more interested in how they were perceived as playing the game rather than playing it. Thus a lot of the annotations were one-off jokes. Others were very graffiti-like, including several symbols. It seemed almost a way that some people used to keep the experience at arms-length (but still be cool) by being inscrutable.

PUBLIC TRIAL – DECEMBER 2003

Introduction

To demonstrate a prototype of the Urban Tapestries public authoring platform, Proboscis ran a nine day public trial in the Bloomsbury area of London in December 2003. One hundred participants in the trial were able to borrow a wireless device (an HP iPAQ PDA) running the Urban Tapestries client software to drift around London's Bloomsbury district authoring and accessing local content for a two hour session. A temporary network of 802.11b nodes created a street level wireless 'mesh' providing internet access to the devices.

Map of Pockets & Threads created during the December 2003 Public Trial

The aim of the trial was to help introduce and explore the social and cultural possibilities of public authoring. Participants were invited to take part in an experiment to explore what the future for pervasive mobile networking might be like. To give a sense of context for this Proboscis devised a series of task-based activities for participants to embed their own content in geo-specific locations, weaving their own threads to create an organic, accretive tapestry.

As part of our exploration of new models and methodologies we used an innovative feedback technique, combining post-experience video interviews with online blogging of the participants' experiences. This allowed participants to review each other's comments and to return after their experience to add further feedback. Being a publicly accessible blog, it immediately became a research resource and has become widely cited for its unique source material.

Participant Feedback

100 participants took part in the trial between 6th and 14th December 2003. Each participant was introduced to the project, given some training in how to use the PDA and Urban Tapestries software, and given some context into the concept of public authoring. Some key observations from the trial feedback follow:

- although we had problems with connections and the iPaqs slowing down as more and more information gathered on the system, the majority of the participants were patient and took the time to work with the limitations of the prototype.

- we find that when people went off in twos and threes, they often found the process of creating threads and content much easier – becoming part of a social activity rather than a private one.

- almost nobody commented on privacy and security issues of the information being shared by the participants or future users.

- Many people were unfamiliar with the PDA as a personal device and felt awkward or vulnerable using it on the street – conscious of its 'value'. A number commented that they would feel much more comfortable using a mobile phone form factor as they are already familiar with it and unselfconscious when 'texting' in the street.

- The map was also unfamiliar to participants – not having street names proved challenging for wayfinding, but many ignored this and enjoyed exploring the city displayed in a new way.

- Many participants lamented the lack of automatic location sensing, wanting the device to 'follow' them rather the having to locate themselves.

- Many participants revealed that taking part and using the devices on the street caused them to reconsider their environment, to look anew at their surroundings – not to take the city and its structures for granted.

- Openness of the system gave people the freedom to create threads on whatever themes suited them. Some stuck to the obvious (favourite cafes etc), whilst others began to use it to construct games, narratives, histories etc.

- The ability to record sound/navigate by sound threads was also sorely lamented (and the picture capture not working). Reading text on a screen had appeal to some, but not all.

- Filtering and advanced searching was also high on participant's wish lists: as the map became crowded with content, participants began to want to filter in and out the kinds of information they wanted to have displayed.

Some of our own observations:

- In creating an 11 node wireless mesh to cover key public spaces in Bloomsbury, we discovered that 802.11 has some serious deficiencies for devices that are not just wireless, but mobile too. The fluctuating signal strength and high contention when more than one device are within a base station's vicinity make it an extremely unreliable solution for truly mobile applications, but fine for more sedentary activity. Weather also had a significant impact on the reliability of 802.11 radio signal – rain seemed to 'soak up' the signal and render the area of coverage almost to zero.

- People were getting to grips with the technology and ideas and creating their own threads after a very short time (15-20 minutes). Time limitations on this trial suggested many would be willing to come back, spend longer, or work with it over time.

- Size of the device will be a key factor – people want a device that combines the processing power of a laptop and broadband wireless internet connection with GPS, SMS, a camera, sound recording, handwriting recognition and detailed maps – all within the form factor of a mobile phone!

- In general the participants understood that as a first prototype much of the functionality was missing, and many of them suggested what they thought would improve the software. Interestingly, no one suggested anything that hadn't already been explored and planned into our complete functionality map of an 'ideal' system. This seems to vindicate our approach in rapid creative and social research driving the technological design, rather than the other way round, and the thoroughness with which we have explored as many possible uses and functions required to make public authoring a dynamic and compelling everyday activity.

All of the participants' feedback is available via the project weblog:
http://urbantapestries.net/weblog/archives/cat_trial_feedback.html

Emergent Themes

'Mobile privatization' vs collective use

There seemed to be fundamental tension in the way people talked through their experience of using the devices, between recognising the intimately private nature of 'cocooning' oneself in a personalized, absorbing technology, and the hope that this could also lead to a shared use, fostering new forms of sociability. With regard to personal use, this was evaluated in both positive and negative terms, with many participants stressing the freedom that the technology would give them as individuals, on the move and between destinations, to call up information tailored to their needs, or to engage in spontaneous acts of creativity. However, this was tempered by a fear of, in Raymond Williams' term, 'mobile privatization', whereby individuals become so absorbed in their own technological world that they become closed off, both from their immediate surroundings, and from interaction with others. For example, Rachel Baker argued that the device was not responsive to the normal 'meanderings' of a shared conversation. Others also questioned how the device would fit into their existing patterns of social interaction.

These fears of a loss of sociability are similar to those that were voiced with the emergence of other types of 'private' technology, such as Walkmans/iPods and mobile phones, whereby the private sphere is essentially brought into public life. However, research on mobile phone use amongst Finnish and Swedish teenagers has found that their primary use was of a social nature – texts were composed in groups, and responses were shared round. This could also be the case with public authoring devices; some of the participants mentioned using the device with a friend, or interacting with other trial participants who were also out and about. They also wanted to see more interactivity features built into the next prototype stage, such as the ability to scan to see what other users of the system were close by, and the ability to chat to friends/flirt with strangers. This points to a desire to see the technology diffused across the community, rather than for certain 'wired up' individuals to participate in an elite group of users. This also ties in to issues of access and inclusivity (discussed below).

Fear of crime

The fears expressed by some participants that they would become 'too absorbed' in the task of authoring and reading content on the street are also linked into fears of crime and social unease. Many expressed awareness that the PDA devices are – as yet – an unusual sight, and felt uncomfortable standing around for too long with them openly in use. Some reported 'strange looks' from passers-by, whilst others took this further in the acknowledgement of the potential theft value of the devices, and felt they may have left themselves open to potential muggers. A number of strategies seemed to have been developed by participants to overcome the fear of crime, including concealed use, use in doorways or other secluded spots, not remaining stationary with the device for any length of time, using them in groups, and creating a makeshift 'cover' for the device. This indicates that the everyday response to these types of problems would follow much the same trajectory as that of mobile phones, whereby many of these strategies are already in use. Indeed, some participants explicitly made the connection between the initial unease of using a mobile and the unease of using an iPaq. It would also be interesting to see if the type or density of authoring would vary between different areas of a city or at different times of day. Some expressed the opinion that authoring in an area such as Bloomsbury would create different levels of unease to somewhere like Hackney. Others, notably female, would feel uncomfortable authoring at night.

Usability

The issue of usability covered both physical and interface aspects of the device, and how the device would fit into the existing context of everyday life. With regard the physicality of the device, one participant expressed surprise at the ease with which it fitted into her existing array of personal effects. This she attributed to its size and relative lightness – she could imagine carrying it around in her bag on a daily basis. Others, however, asked how the device would work with the existing pieces of technology, which for many people are now ubiquitous, such as mobile phones and Walkmans/iPods. If the device was integrated into a mobile phone format, there would be a question of which application would take priority – for example, if the user wanted to take a call or send a text, would the Urban Tapestries map remain on the screen and would it still be usable? Another question raised by some participants related to their own pre-existing 'hierarchy' of technologies, and whether the claim of a public authoring device would upset this, or whether it would struggle to find a use against other technologies that are more 'immediate' and more familiar.

Another aspect of practical usability relates to the problem of trying to author on the device whilst engaged in other tasks, such as walking to a destination, talking to others (as mentioned previously), crossing the road and so on. To some extent, this is a similar problem to that of sending texts whilst on the move, which many people have now adapted to. However, the stylus input of the iPaq amplifies this problem, and many participants expressed dissatisfaction with the experience of constantly having to look down at the screen and then up at the 'real world' it represented. They also felt that this type of inputting system hampered the 'mobility' of the device, which presents a disjuncture between the expectations the device fosters and what it actually offers. A few participants explicitly divided use of the device into two types: mobile/active and static/passive. There was a clear downgrading of the latter in relation to the former, which will be discussed below). Suggestions as to how the authoring could be made to fit more 'naturally' into the way people move around the city – and the way they think – centred around the addition of sound and image capturing, which would foster a more spontaneous, effortless use.

Responsiveness of interface
This was discussed by participants largely in terms of the frustrations they had experienced in being 'constrained', or at least configured, by the rules of use already built into the system and the interface it presented. There was a sense that users would like to be presented with more options and a greater level of responsiveness, so that they could 'tailor' the device to their own preferences. A number of participants, for example, talked about the disjuncture between the way the avatar moves around the on-screen map, and ones' own personal conceptualisations of space and place. It was suggested that a wider spatial vocabulary would need to be included, so that each individual's way of navigating the city could be accommodated. Linked to this, another participant made the point that the avatar does not accurately represent the way people move through a space. In fact, the physical labour of walking from one place to another, whether in a direct, utilitarian or a more meandering fashion, was erased from the experience of authoring. This encouraged a sense of 'staticness' whilst authoring which was at odds with the experience of exploring an area, and, moreover, did not fit in with most peoples' perceptions of how much time the average individual would have to stop and consult their device in a day-to-day context.

Active versus passive use
This links into the evaluations, made above, about the desire felt by participants for a device that would be less 'intrusive', in the sense of demanding less alterations to their existing routines and patterns of technology use. This would mean a device that could be used on the move, possibly with voice activation and sound and picture recording, and a screen that could be taken in 'at a glance' rather than needing to be gazed at intensively. Furthermore, there seemed to be an implicit downgrading of 'passive' use of the device in favour of higher levels of interactivity, both with the content of the system and also other users.
One participant said that he would like to be able to ask the device specific questions and receive answers. Others pointed to potential use in educational/ entertainment contexts, such as live interactive treasure hunts and stories where users could move through the 'set' as they followed them.

Filtering
Present in most of the participants' comments was a strong sense that the system, as conceived for the December 2003 trial, presented the problem of 'information overload'. This is similar to worries that have surfaced in light of the proliferation of electronic communications – especially the internet – and some made this link. However, there was a more general sense in which it was felt that there was too much content already on the system, and that this was not structured enough to enable participants
to find what they are after. Although the 'serendipity' effect of stumbling upon a random pocket or following a thread for pure interest was evaluated positively, this also created problems in that it could detract from ones' initial purpose or lead to a sense of frustration at having to scan through a lot of information that was not relevant. A significant proportion of the participants identified some level of filtering as being the solution to these problems. For some, this would be a simple case of making a distinction between two layers of information: 'practical' or 'useful' information about the area, and 'subjective' or 'creative' threads. There seemed to be a sense of uncertainty or unease, however, about which of these types of content represented the 'correct' use of the device, and the 'use' that most new users would respond to best. It was certainly felt that, for example, tourists would have a greater need for more 'practical' information such as opening hours of tube stations and museums. At the same time, it was also recognised that

tourists would have more time to take in the 'flavour' of an area, as opposed to local residents who would be more concerned with getting from A to B.

The major concern with filtering would be that it imposes an evaluation, however implicit, on the content, in which case users may feel constrained as to what it is 'appropriate' for them to author. This constraint was already felt by some in the sense of an obligation to leave content that would be considered 'valuable' and 'interesting' by future users. Although the expressed aim of Urban Tapestries is to leave the notion of 'use' open, it seems that many users themselves would feel more comfortable with some level of filtering and regulation. Another suggestion was to order the content according to particular 'themes', such as architecture, food and drink, and stories. Again, however, this could be problematic in the sense of being a somewhat arbitrary imposition, which may not adequately take account of the fact that many threads will contain a mixture of subjective and 'objective' content. Despite this, participants felt that moderation was essential in order to ensure the accountability and accessibility of the system. This would be especially important if the device was used in educational or community contexts.

Access/inclusion
This was a worry for many participants, in that they felt the idea of public authoring would only work if it were 'truly' public. How to ensure that this was the case, and how to overcome existing barriers to access, was a theme picked up on by some. Many of those taking part in the trial acknowledged that they had come with an existing interest and/or ability to use this type of technology, as well as an understanding of the idea of public authoring (through weblogs etc). However, there were some who had not come across iPaqs before, and for these participants, the problem of confidence did seem to come to the fore. Another worry expressed was that public authoring devices would be monopolised by a community of 'techies' who had a lot to say and knew how to go about it. This raised the further problem of whether the system should be pre-populated with content before it is made available to its target community, or whether this would put certain groups of people off. On the other hand, one suggestion of how to overcome problems of access was precisely that it would have to be the potential content, rather than the technology itself, which was stressed to people if they were to take it up in significant numbers.

Provision
This was also linked to the theme of access, in that the purchase and control of the relevant technology and the WiFi network capacity would have huge significance for how it was used and by whom. One participant pointed out that 'access' could mean either local council provision for community-based usage, or commercial service provider for individual usage by those who could afford it. The underlying feeling seemed to be that some degree of public provision would be the only way to ensure that every social group had equal access.

Commercialisation
Finally, there was a theme of 'commercialisation', which emerged in relation to access and also to the filtering of content, whereby participants stressed that they did not wish to be bombarded with marketing information from or about local shops or coffee chains. Whilst in one sense, this type of information was recognised as being useful at particular times, it seemed to be important to participants that this information could either be filtered (thus becoming optional) or screened from the system entirely. This seems to relate to whether users feel they are able to develop a sense of 'ownership' over the system, which again links to access. Some participants, for example, stressed the role that public authoring devices might play in 'grassroots activism', as an alternative to the 'official' conduits of big business and government.

FIELD TRIAL – JUNE/JULY 2004

Introduction
During June and July 2004 Proboscis ran a second trial – this time with a smaller sample of participants (eleven), but with a longer period of duration. Each participant was provided with a SonyEricsson P800 mobile phone for four weeks, pre–loaded with the Urban Tapestries client software and using the Orange GPRS network. The Urban Tapestries system was extended to cover 36 square kilometres of Central London – 9 times the size of the area covered in the original trial – and a rudimentary form of location sensing ('Cell ID') was implemented to help participants navigate to the right bit of the map according to where they were in physical space. Additional functions such as search and filters were also implemented to enhance the experience of using the software over time.

Map of Pockets & Threads created during the June/July 2004 Field Trial

Overview of Key Findings
The key findings of the trial are all explained in more detail in the chapters which follow, which are broken down thematically around key areas that feedback was solicited on, as well as main concerns raised by the participants themselves. These fall around issues such as functionality, the type of use participants engaged in, the extent to which Urban Tapestries fitted into their everyday lives, the concepts of mobile, location–based and public authoring, filtering, and imagining ahead to future use.

The key findings of the trial were as follows:

• The majority of participants (10) viewed using Urban Tapestries as primarily an individual activity

• A significant proportion of the participants (8 out of a total 11) shared access to the Urban Tapestries with others

• The participants did not generally experience any major technological problems and the trial ran smoothly

• The general trend for participants was to find the SonyEricsson P800 and the Urban Tapestries interface progressively easier and more intuitive to use as the trial progressed

• Most of the participants experimented fully with the functionality on offer, and authored a significant amount of content

• The preferred type of content was dichotomised around 'factual' or 'expressive' information, although the majority of the participants recognised the value of both types

• Filtering was an important issue for all of the participants, yet they did not make significant use of the simple filters on offer with this prototype, suggesting that it will need to become more sophisticated and flexible for future users

Functionality

At this stage of prototype development, the functionality of the device and the Urban Tapestries system both have a direct bearing on how Urban Tapestries is used and perceived. Around one third of the participants who completed feedback questionnaires were familiar with the concept of location–based systems and/or had previous experience of using 'smart' mobile phones like the Sony Ericsson P800/900. For the rest of the participants, both the technology and the system were new to them. In this early stage of adoption and familiarisation with Urban Tapestries, any difficulties associated with use can have a negative impact on the degree to which individuals attempt to engage with the system and integrate it into their everyday lives. It can also produce a sense of frustration that they are not able to use the device as seamlessly as they wish, nor to carry out the tasks they has imagined being able to achieve. This is manifested most strongly in the comments of PM, who, by week three of the trial had commented that he,

> *"couldn't get handset to work and got very frustrated made me lose interest. Felt like too much hassle for not much interest coming back."*

Nonetheless, most participants, despite the frustrations they experienced, were able to recognize that future iterations of the device and system will be able to overcome many of the problems experienced during the trial stage, and used this to project their likely future reaction to Urban Tapestries based on the assumption of perfect or near–perfect functionality. Most participants did stress, however, that ease of use was absolutely essential if Urban Tapestries was to become ubiquitous in the future. To support this, comparisons were made with the extent to which mobile phones, MP3 players, and the Internet, have now become a taken–for–granted part of many people's everyday lives, due in large part to the growing familiarity of the concepts and technology behind them.

Functionality of Device

Overall, participants found the Sony Ericsson P800/900 relatively easy/unremarkable to use, and did not experience major technological difficulties. The main issues mentioned in relation to the device itself were the size of the phone and the screen, the stylus and/or handwriting recognition facilities, and the battery life of the phone. With regard to size, it was felt that the phone was somewhat 'bulky' in comparison to what participants were used to. This did not present a major

problem in itself, but participants did comment that the device effectively had to 'compete' against their existing technologies (such as mobile phones, PDAs, laptops etc) simply in terms of how much they could carry around with them at any one time. To a large extent, this trend mirrors that of the introduction of any new portable technology, which struggles to find a place for itself until it becomes ubiquitous or 'indispensable', at which point people either adapt to the extra device, or use it instead of an older technology. Another problem with the size and shape of the device was highlighted by CL, who walks with crutches, and found it difficult to hold both the phone and the stylus whilst on the move. Her suggestion was to develop some means of 'wearing' the device such that the users' hands could be kept free in between bouts of use. It is important to take this issue into account if Urban Tapestries is to be accessible not just to able–bodied, active members of the community, but also those are immobile, and for whom access to community services and information would not otherwise be possible. In this respect the experiences of CL, who is highly active, are useful in highlighting those aspects of urban life that make it difficult or even impossible for others with reduced mobility to get around.

Still on the issue of size, the size of the screen and the buttons were both commented on as being too small 'for adult hands'. However, this is not a problem which is particular to Urban Tapestries, as successive mobile phone models have demonstrated. Ultimately, there has to be a compromise between the desire for a small, neat phone and the desire for a large screen and easy–to–use buttons. Again, this issue is likely to be made irrelevant in the future with the integration of multiple functions into a single PDA/'smart' phone hybrid.

This also relates to the issue of text input, which was achieved with a combination of a stylus and either an on–screen key pad or the handwriting recognition facility. Neither combination appeared to feel 'intuitive' or easy for the participants, and the majority of them commented that the input was inefficient. The stylus itself was seen as 'fiddly' and easy to lose when in use. Furthermore, using the key pad was felt to be too slow, since it does not correspond to the way most people tend to enter text on a conventional keyboard, where touch–typing gives a much faster speed. The stylus can only enter one letter at a time, and this can be frustrating if ones' thoughts run faster than the text entry speed. Similar problems occurred with the handwriting

recognition facility, which is still quite basic at present, although some participants reported changing their handwriting style in order to achieve a higher degree of recognition. It is interesting to note that few of the participants who expressed frustration with text entry made much use of the sound recording facility. This may have been because they did not explore this function, or because of the greater degree of editing/re–writing ability afforded by text, which allows users to take more time and care over the content they author than sound, which may be more suited to very immediate, 'on the fly' authoring. Participants also mentioned that they would like to be able to input text via SMS, perhaps because this form of text entry is now very familiar to them, and is thus considered faster and more reliable than stylus input. Most people are also now adept at using SMS while on the move, unlike using a PDA or a system as complex as Urban Tapestries, which seems to demand a greater level of concentration.

Finally, most of the participants experienced some problems with the screen crashing or 'freezing' at various points, and with the short battery life of the phone, which prevented them from leaving Urban Tapestries logged on when it was not in use. Both of these problems led to varying degrees of frustration, although it was generally recognised that they were to be expected at the trial stage, and they did not have a drastic effect on participants' engagement with the trial. Two exceptions to this were PM, whose comments have already been mentioned, and JH, whose problems in the second week led her to comment that,

> *"I have used the service – although I don't believe it has worked – I will try again as I want it to work – a customer might not bother though!"*

It is interesting to note that this participant works in Product Design, which might lead us to expect that she would have a more favourable attitude towards new technologies. However, she describes her attitude in the pre–trial questionnaire as 'wait and see' rather than 'keen'.

A further comparison can be made when we look at the amount of time participants spent familiarizing themselves with the device. The average time was less than a day. Compared to this, JB took 'max a week'; this was the longest time of any of the participants, except GJ, who also experienced difficulties and did not manage to use Urban Tapestries with a great degree of success. Indeed he described himself as the 'failure

scenario', although the reasons for this seem more related to external problems beyond the control of Urban Tapestries than any technical problems as such. Had he been able to engage with Urban Tapestries in a more concentrated way, it is likely that he would have been able to use the device with the same degree of ease as the other participants.

Functionality of Urban Tapestries System

Overall participants found the Urban Tapestries system and interface relatively easy or unremarkable to use, and did not experience any major difficulties. The issues that cropped up in relation to the user interface were the map and the associated issues of scrolling and navigating oneself around it, following threads and opening pockets, and the metaphors that were chosen to describe the various elements of the system e.g. 'pocket', 'thread', 'drift' and so on.

Firstly, the map itself was deemed to be problematic in its present form, although there was not much agreement amongst participants as to what would be necessary to make the map interface easier to use. For example, in answer to the question 'How did you find the scale range of the map?', participants were fairly evenly split between finding it 'too small', and 'too large', with a minority finding it 'just right'. This indicates that the participants had different expectations about what they would like to be able to do with the map, corresponding to other factors such as the degree of interest they expressed in viewing other participants' content (discussed later) and the extent to which precise location–sensing was important to them. However, an oft–repeated comment was that the scale of the map – in combination with the size of the screen – made it difficult to follow the longer threads, as they would disappear once the user tried to scroll around the map. This problem can largely be attributed to the users not using the correct functionality, or not knowing that it was possible to change the map views to follow specific threads. This was a clear cause of frustration for those participants who were particularly interested in certain threads but were unable to view them in their entirety. The issue of scrolling was also problematic in the more general sense of it not yet being a 'smooth' operation – often participants found that they were trying to scroll too quickly for the system to update itself, resulting in slowness and the failure of some threads to load properly. This gave the impression that there were fewer

threads than there actually were. Many participants also commented that they would have liked to have been able to view a map of the trial area as a whole, both so that they could see which areas were particularly concentrated with pockets/threads, and so that they felt more 'engaged' with the trial and the other participants. This seems to be a question of being able to place themselves in relation to others, which would be likely to have the effect of making use seem more like a 'group' rather than an individual activity, and suggests that the zoom abilities should have allowed for greater zooming out than on this prototype.

The issue of navigation also cropped up (mainly in relation to authoring), although it was not attached the same degree of importance by all participants. Some were content to author on an approximate basis, locating pockets roughly in the right area rather than worrying about finding the exact position. Others, however, found this lack of precision frustrating, although the problem is largely related to their own lack of familiarity with the map interface, since Urban Tapestries supports three distinct types of navigation:

1] Positioning via the Cell ID system;
2] User defined positioning via street address or complete postcode;
3] Manually scrolling across the map.

The problem seems to be the users general impatience with the limitations of current phones and network data speeds. One participant even commented that his problems with navigation had led him to stop viewing Urban Tapestries as related to geography and instead treat it more as a 'fanzine' (other participants also made similar comparisons between Urban Tapestries and weblogs). Another commented that,

> "I think Urban Tapestries didn't feel part of the city enough for me, there was very little location specific about the stories, possibly because others found it hard to localize themselves too".

Yet in spite of these problems, the majority of the participants strongly identified with the concept of location–based authoring, and were able to see themselves using it in the future, both in conjunction with their existing social networks, and with the intention of engaging with new communities of users. This will be discussed in more detail later.

Related to navigation is the issue of the metaphors/terminology used within the Urban Tapestries system. A significant number of participants found these difficult to understand. Although, again, this may simply be related to the phenomenon of newness and the short space of time available for participants to familiarise themselves with the concepts, there was some suggestion that, even over the course of four weeks, the metaphors did not become intuitive or particularly easy to understand. A range of participants' comments is given below:

> "I found the metaphors of pockets, threads etc. not quite right for what *I'm* interested in (historical layer, basic info about local amenities etc.)..."

> "Metaphors. I personally feel that there is a risk in using too many metaphors. Pockets, Threads, Drift and Centre are very different and distinct. I like the ideas that you are exploring I just feel that they not quite there yet as a vocabulary that describes the system. I conceptually understand the idea of Pockets and Threads, however there is something in the way that the two metaphors are applied force me as a user have to think hard about the logic of the system. However, these metaphors are well explained (via the booklet, online help etc). Terminology. The term 'Drift', does not always apply to the situation I may be in. 'Drift' assumes that the user is walking the streets, where in reality the user may be in a stationary situation (home, work, eating etc)."

> "Like all the terminology but "Drifting" doesn't make sense or seems to contain a value judgment in it."

In particular, these last comments about 'drift' indicates the difficulties faced by users in coming to terms with the disjunction between preferred or expected usage and actual usage. This is also related to the issue of how participants perceived Urban Tapestries – for example as primarily a 'leisure' device or a 'work–related' device, and which times of day they used Urban Tapestries the most. Even with regard to authoring in the street, there may be a disjuncture between the relatively hurried, direct routes people take between locations in the course of a busy day, and the term 'drift', which does imply more of a leisurely, aimless pursuit, akin to the Situationist concept of the 'derive', as one participant mentioned. Furthermore, as is clear from the above comments, the different metaphors were not perceived as being particularly well related to each other, leading perhaps to some degree of confusion over the overall 'purpose' of Urban Tapestries and the ends to which it is designed to be put. Intriguingly, CL suggested that 'pockets' would

be better referred to as 'buckets', although she did not elaborate on this argument. Perhaps because of the difficulties in coming to terms with the metaphors, the participants by and large began to develop their own mental schema for understanding the system, relating it to other devices/applications such as weblogs in order to situate Urban Tapestries within their existing web of technological understanding and social capital.

In terms of authoring and browsing content, as we have seen from the charts above, most participants found the user interface relatively easy to master. One particular issue which was noted by the majority of participants, however, was the desire for greater flexibility and the ability to be able to customize ones' use to suit particular situations or areas of interest. This came up in relation to a number of different factors, such as the presentation of the interface itself, the filtering options, the map view options, the editing and publishing options, and the order in which content is authored. The latter was particularly important for participants when they were attempting to author 'on the fly', or to grab a particular moment or scene before it disappeared. In such instances, the ability to be able to take a photo or add some content without first having to find and fix the location would have been welcomed. Perhaps surprisingly, the majority of participants were not concerned about having to 'publish' unfinished content and place it automatically in the public eye, although one exception to this was MW, who commented that

> *I think when it's published publicly, I think of it as being frozen then.*"

It is possible that other participants were not concerned about this issue because they tended to disregard the 'public' nature of the system (particularly as the trial went on and they became more familiar with authoring) and treat the content they authored as more of a personal record, as CL did. Alternatively, it could be that the immediacy of content authored spontaneously was valued more highly than the 'polish' associated with authoring remotely and taking time to collect content. Most participants stated that they did prefer to author content 'on the fly', although they were hampered in their ability to do this in practice by the factors we have just discussed. This issue of 'static' vs 'mobile' content will be discussed in more detail later on.

Preferred Type of Usage

Participants were asked a range of questions to determine their preferred type of usage of Urban Tapestries and why this was the case. This preference was also recorded over the course of the trial period, as illustrated by the above chart. The main trend was for participants to become more interested in authoring as the trial went on, following an initial period of interest in browsing the content of others (such as that from the previous public trial). There may be a number of reasons for this trend. Firstly, the participants were looking for some kind of guidance or verification as to what type of content was 'suitable', therefore looking to see what others had authored before they authored their own content. This chimes in with a number of comments made by participants, such as that by DH that he was only 'playing' with Urban Tapestries in the first week, rather than using it for any particular purpose. This sentiment was also echoed by DH and CL amongst others. In all of these cases, an initial period of experimentation led to a subsequent period of more active engagement, similar to the way in which other new technologies are received (for example, see the work of Elaine Lally on the reception of a new PC into a household)*.

However, another trend was also witnessed, where participants were engaged in an initial flurry of browsing activity, which then tailed off quite rapidly, and did not lead to much engagement with authoring. In these cases, it seems that the initial interest in browsing was frustrated when participants did not find the kind of content that they desired/expected. For example, some of the comments below:

> "*Still haven't had urge to use it more often. Struggling with mixture of potential utility and idle browsing pleasure.*"
> "*Didn't find any other interesting pockets by others there – which has been generally my experience. Perhaps the interface discourages this i.e. don't know what I'm getting when I click, so I don't.*"
> "*Given that the initial curiosity didn't lead me to find things that I really wanted to do with it, it's been difficult to maintain enthusiasm for the technology.*"

There are two related issues highlighted here – that of failure to find the type of content they were specifically looking for, and that of not knowing what type of content would be inside a pocket before it is opened, or the 'lucky

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* E. Lally (2002), *At Home With Computers*, Oxford and New York: Berg.

dip' effect. Both of these issues point to the need for a greater depth of filtering (customisable for each user) and a greater 'author identity' or 'theme identity' for each thread, so that users have a clearer idea of whether they will be interested in the content before they browse. This would prevent the feeling of frustration and 'wasted effort' that some participants mentioned when they continuously came across content they were not interested in, or mistakenly viewed the same pocket more than once. The issue of filtering will be dealt with in more detail later.

It is interesting to note the split between those for whom early disappointment with the content available on Urban Tapestries (the feeling that the 'novelty' had worn off) led to a subsequent disengagement with the Urban Tapestries as a whole, and those for whom it led to a greater degree of engagement with the authoring process and increased confidence in their own content – for example, CL, whose discovery of the lack of information available for disabled people trying to get around London led her to author a wealth of content on this subject. As she said,

> *"it made me realize I had information that other people might find useful – much more than I had at first realized."*

This may be partly related to demographic information such as the participants' profession. For those who already work in areas related to the research and/or design of new technological devices and systems, there was a tendency towards higher initial expectations, which, if not met, was coupled with a more heightened sense of disappointment and disengagement as use progressed. By contrast, those who had little or no familiarity with this type of location–based service perhaps did not come to it with the same level of assumptions or expectations about what they would find.

In the post–trial feedback, most participants stated that they had no preference between authoring and browsing, thus indicating firstly that use is not static but evolves as attitudes and perceptions evolve, and secondly that an adequate degree of experimentation time is necessary before participants are able fully to explore the implications of each type of functionality. This presents a problem for a trial of such a short period, since ideally it would be more advantageous to track patterns of use over a much longer period, in order to provide comparisons with the kind of timescale in which people typically purchase and familiarise themselves

with other new technologies such as mobile phones. However, even over the course of four weeks it is clear that the participants were beginning to integrate Urban Tapestries into their daily lives, as a 'personal organiser', a journal, a creative outlet, a blog, a bulletin board and myriad other functions.

It is also important to relate the preferred type of usage to other factors such as the locations and contexts in which use actually took place. Trial feedback and data from the server log both indicate that context is very important in determining how Urban Tapestries is used. For example, for those participants who worked in the trial area, their use was more restricted to moments of free time in between appointments or en route from one location to the next. This in turn had a decisive impact on whether authoring or browsing was the main activity, with browsing being the favoured activity for short bursts of 'idle time', much as participants might similarly 'play' with their mobile phone to read text messages or play games. Authoring was thought to require more concentration, hence – paradoxically – being used more in contexts where the participant was 'static' – either on a journey, or in a café or pub. Some participants commented that they would have preferred to author content rather than browse, but found they were hampered in doing so during the context of a particular working day, due to factors such as time constraints, or simply the physical difficulty – and perceived danger – of stopping to author on a busy London street.

For those participants who did not live or work in the trial area, their use was to some extent restricted to the amount of time they were able to spend visiting the area. This had more of an impact on authoring than browsing, leading to a tendency to browse from home as a kind of 'leisure activity', and then use this browsing as a spur to go out and author content or visit locations they had read about when time allowed. This is an encouraging level of engagement and has important implications in terms of future use for those who are not necessarily able to get out into the local community very often – such as the elderly, those at home looking after children, the disabled and so on. If they are able to browse content about specific locations of interest before they visit, this may have a number of beneficial implications such as enabling them to use their time more efficiently and to gain greater confidence. In relation to this last point, CL posted a number of pockets seeking advice from other users as to

what facilities there were for disabled people in Regent's Park. Although did not receive any comments in reply during the course of the trial, she discussed the potential benefits of being able to discover whether a place is geared up to disabled visitors before a visit.

Preferred Type of Content

In part this replicates some of the themes discussed above in relation to whether participants preferred to author content or browse content. For instance, those who found that their initial interest in other participants' content diminished over the course of the trial also tended to have quite strong ideas about what kind of content they were interested and what was, for them, 'trivia', and of no interest.

In the general, the two main types of content that participants deemed suitable for Urban Tapestries – which were often discussed as being at odds with each other – were 'pragmatic' and 'aesthetic' content. These terms are intended to be an approximate way of understanding the key dichotomy, rather than specific descriptions of content type – and as such, are not exhaustive. Yet in the feedback of nearly every participant, there was a distinction drawn between more 'personal' or 'creative' pockets/threads (such as narratives, photographs, and journal–style entries) and more 'factual' or 'practical' content (such as events information, reviews, and factual information about particular locations or areas). Of course, in practice both types of content are intertwined within the same threads and even the same pockets. But it is clear that the distinction did matter to participants, whether they valued both types of content or stated a clear preference for one over the other. These evaluations were clearly subjective and it is difficult to relate them to other factors without entering the realm of speculation. Furthermore, as with preferred type of usage, preferred type of content changed for some participants over the course of the trial, and contains a strong chance element of what type of content they actually came across.

Nonetheless, one possible trend seems to be that those participants who struggled to maintain a degree of engagement with Urban Tapestries over the course of the trial had stronger views on what type of content was 'useful' or 'appropriate' than those who were simply happy to browse content idly without any prior purpose in mind. Again, this may relate back to factors such as

time constraints and so on. This can be illustrated by the comments of DH, which were also echoed by others:

> *"This time it's struck me how generally un–compelling other people's threads are."*

Thus, the more 'personal' content tended to be negatively associated by this group of participants with 'trivia', 'vagueness' and so on. Extrapolating from this, we might speculate that the perception of what type of content is most useful/suitable for Urban Tapestries tells us a great deal about how the participants' ideas concerning social capital. The type of knowledge they place value on for each is likely to be very similar. Therefore we can see a divide in perceptions about social capital between those for whom 'factual' information is most important and those for whom 'expressive' information is most important. Crucially, however, there is room within Urban Tapestries for both, and both are essential to the functioning of a cohesive community. One can easily imagine situations in which both types of social capital are valuable. Again, we can also relate this back to what participants viewed as being the main 'function' of Urban Tapestries – whether it was primarily a 'toy' for leisure activities, or a device to integrate into ones' working life and practical concerns. With the former, expressive content becomes more important, whereas with the latter, factual content about events and venues is more important.

Notably, however, there were participants, such as CL, who were able to experience benefits from all types of content, and expressly differentiated these according to the situation they were in at the time:

> *"I think I was surprised at how useful I find Urban Tapestries. I found an amazing number of users, from the incredibly practical to the revealing and curious to the utterly pointless."*

She did, however, comment that there were some situations in which using Urban Tapestries seemed almost 'inappropriate', such as particular social gatherings, where such technology may be viewed as 'intrusive'. This mirrors the common conception that it is inappropriate to use mobile phones in certain public places, such as restaurants and public transport. The sense of intrusion may be even greater with Urban Tapestries, which requires more concentration to use. Yet, as mobile phones have become increasingly commonplace, the 'social rules' governing their use have been relaxed, and this would be a likely trend for Urban Tapestries as well.

'Who' and 'What' is Urban Tapestries For?
The question of what and whom Urban Tapestries is for – who it is aimed at and what its main function is or should be – featured prominently in the comments of all participants. In part this is a reflection of their attempts to determine what type of content they preferred and whether or not they expressed an interest in the content of other participants. Those who did not seemed to have less interest in imagining who they were authoring their own content for, but strong views on what they felt should be the purpose of Urban Tapestries, the use to which it ought to be put.

When asked who they imagined they were creating content for, most participants commented that they found it difficult to address themselves to an abstract audience of 'others' without being able to directly contact them. Many of the answers to this question were therefore of the 'don't know'/'not sure' variety, although this changed over the course of the trial, with participants gaining a stronger sense of their audience as they engaged more with Urban Tapestries and viewed the content that was being created by others. Some kept their answers to this question very general, preferring simply to imagine that they were authoring content for 'others like me', whereas others were more specific in orienting their content to 'tourists', 'local residents', 'people who want to explore hidden parts of London' and so on. CL was the broadest in terms of listing those who she imagined her audience to consist of:

> *"For my relatives and friends to share*
> *For strangers who might want to know more about the area*
> *For artists and psychogeographers who want to better understand how people view and interact with this location*
> *For disabled people trying to survive in London!*
> *For Giles*
> *For mobile researchers and mobile services companies"*

This indicates that CL had clearly thought about the different threads she had created and was directing specific content to specific audiences. However, as an illustration of how much perceptions changed over the course of the trial, she later commented that she was creating much more 'personal' content, and had begun to treat Urban Tapestries more like a personal journal/planner than a public authoring platform. This change in orientation was such that she found she had created

very 'confessional' comments before realizing that these would be publicly accessible. BG was similarly broad in his assessment of his likely future (if not present) audience:

> *"Everyday people: from housewives to bankers."*

This chimes in well with the desire on the part of Urban Tapestries to fulfil a community–based function, aimed at the fostering of a sense of 'neighbourliness' in transient, high–density urban areas.

Other participants commented on the similarities between Urban Tapestries and weblogs, where – at least initially – one does not know whether one has an audience, and who they are. However, as with Urban Tapestries, once the network of bloggers builds up and individuals start linking to each other and commenting on each other's posts, a stronger sense of community and engagement develops. The problem during this trial, of course, was that the system has not yet reached this level of saturation, yet most participants expressed a strong desire either to contact the other trial participants or to use the device within the context their existing social networks. This lack of direct communication – other than posting a pocket in response to another one and hoping that the original author viewed this response – had a strong bearing on the extent to which participants saw Urban Tapestries as an individual or a group activity, which will be discussed in more detail below. In terms of future usage, however, the majority of participants stressed that they could see themselves using Urban Tapestries once it has become ubiquitous – in other words, once their friends and peers were also using the device.

Within this context, there was a marked preference for being able to 'subscribe' to the threads of personal contacts, and also for all threads to be much more strongly identified with their author, such that the user would be able to make a note of a particular author for future reference, or view all threads by the authors they developed an interest in. BG made some interesting points in this regard when he commented that

> *"This [his awareness of other users] led me to start thinking of Urban Tapestries's future – where there might evolve 'accidental stars' – people whose life is so mad/amazing/interesting/deviant etc, that they become the subject of huge attention from other users!".*

This same phenomenon has already occurred with weblogs, although usually in conjunction with the

attention of national or international media, rather than being specifically tied to particular locations (Salam Pax, whose blog from inside war–torn Iraq became known across the world, is one exception to this).

Despite the elementary forms of community which began to emerge during the trial, however, it is clear that the majority of participants viewed the activity in its present form as an individual activity. This was an issue which prompted respondents to think more deeply about the nature of urban community and to imagine what the system would require in future if a deeper sense of connection with others is to be fostered. As we have seen, most of the participants limited their conception of 'community' to the other trial participants and their existing social networks. This desire to share Urban Tapestries with friends and colleagues was manifested in collaborative use in some cases, such as CL encouraging her friends to experiment with the device and browse/author content, and others who demonstrated Urban Tapestries to those around them, to a mixed reception. For CL,

> *"I've found that the reception is mixed. At times, it has seemed a little intrusive. For instance taking pictures at the party and recording sound just seemed a bit over flashy – it looked like I was showing off. It also made a bit of an artificial hole in the conversation".*

Other respondents reported interest and enthusiasm in Urban Tapestries on the part of their friends and colleagues, but some wariness to actually engage with the device. It seems that some degree of familiarization is required before the user feels comfortable experimenting with the device, and this would not have been possible in the context of a brief demonstration of Urban Tapestries. Additionally, the concept of public authoring and the terminology and metaphors involved may be difficult to grasp without actually putting them to use in practice.

Furthermore, the reluctance on the part of some friends and colleagues to experiment with the device may also be related to the problem of imagining what the device is 'for' – in other words, what aspect or problem associated with urban life it is specifically aimed at addressing. A significant number of the participants addressed this issue directly; for example, the comments below:

> *"It needs a social tipping point. It also needs a problem to solve – what is it about contemporary urban life which makes Urban Tapestries necessary?"*

The idea of a 'social tipping point' is a very useful way of thinking about what would be the one 'killer application' which would take Urban Tapestries from being a 'niche' platform for technologically–aware people into something more widely used. Again, the problem largely seems to be related to the relative newness of the concepts associated with Urban Tapestries and the issues surrounding public authoring. This has been discussed earlier, in terms of participants' discussion of the type of content they preferred and their perceptions of how Urban Tapestries would fit into their lives. Essentially, without a specific, identifiable 'incentive' to use Urban Tapestries, participants are reluctant to commit themselves to anything other than infrequent, 'novelty' use. It is interesting to note how this chimes in with the oft–repeated observation that, as working individuals, we are increasingly 'information rich, time poor', and are unwilling to invest what little time we do have unless we can see an immediate benefit. As some participants commented, they felt little incentive to open pockets since they could not guarantee that they would find something that interested them inside.

> *"The barrier for people will be that they kind see why they should go to extra effort to read what other people are saying. The trick is to turn it into them wanting to go to extra effort so they can talk back."*

This observation can be generalized to Urban Tapestries as a whole, as for example, in these comments:

> *"What is the motivator for people to use it – is it around a community – do I need to meet other people first – why would I not get bored of it unless it served some utilitarian purpose – i.e. notice boards, lost pets etc."*

This is, of course, an open question, since Urban Tapestries has explicitly not set out to position itself as a platform for a particular kind of content, as this would contradict its aim to be driven by the requirements of users themselves – whether they are community associations, schools, museums or other cultural/arts establishments, or any other type of user. The question of whether Urban Tapestries could be used within communities to foster a sense of (asynchronous) 'neighbourliness' is still open at this stage of development, although all the indications are that it is well suited to this type of use.

We have already seen that there is ample opportunity for Urban Tapestries to strengthen communities via the

incorporation and expansion of existing social networks in a public authoring context. Users could 'subscribe' to their friends' threads and be notified when these are updated, or perhaps form joint bulletin board–style threads updating them on common–interest events, plans (such as the party–planning thread CL created for her friends to view) and conversations. Most participants also mentioned that they were interested in being able to contact new users, either for asynchronous communication, or to meet up in 'real time' with users who happened to be in the same area. These types of communities correspond to the real–life communities of many people living in urban areas – particularly young people and people who move areas relatively frequently – in that their social networks are likely to be scattered around the city, rather than concentrated in one place. There is, of course, a danger that moving these communities onto Urban Tapestries could result in a further degree of 'enclosure' creating barriers rather than opening up communities to outsiders. This is a concern mentioned by a majority of the participants, and something that Urban Tapestries needs to address, although it is important to recognise that a certain degree of boundary–reinforcement is inevitable and even beneficial when communities seek to actively manage their reputation using a system such as Urban Tapestries. This was also one of the findings to come out of the Social Tapestries Bodystorming event held at LSE in April. Paradoxically, by redressing some of the negative stereotypes they face, communities can strengthen their own unique sense of identity whilst also opening their borders to visitors who may previously have been put off by a bad reputation. This opens the way to greater inter–community dialogue as well as intra–community.

Mobile and Location–Based Authoring

It is worth looking in more detail at how the concept of mobile authoring was received by the trial participants, since it is so central to the genesis of Urban Tapestries as a whole. At present, of course, the technological difficulties encountered by some participants, and the fact that the system is not at full functioning capacity, meant that participants were limited in the extent to which they were able to author 'on the fly'. Most of them did experiment with mobile authoring at various points over the course of the trial, particularly those who worked in or frequently visited the trial area,

since they would have had more time and opportunity to do so than those for whom mobile authoring would have required a dedicated trip. CL, in particular, made mobile authoring a part of her daily routine, and GR annotated his everyday journeys around central London. Despite the difficulties experienced, nearly all of the participants responded favourably to the concept of mobile authoring, and expressed a strong desire to engage with it further in the future, once the UI is more sophisticated and the authoring process is made simpler. Particularly with the addition to this trial of sound and picture authoring, participants were able to 'grab' events and locations 'on the fly' in a less cumbersome manner. Indeed, in comparison with the December public trial, this trial has shown a marked rise in instances of truly mobile (as opposed to remote or static – in a café or bar – authoring). This can be directly attributed to the addition of these features, and there is every indication that future users would make full use of a more flexible, integrated authoring process, particularly if features such as simple authoring via SMS were included. The sound and picture authoring facilities are also particularly useful for users such as CL, who have a disability, and may find the stylus input too awkward to use on the move.

There is also every indication that the participants quickly became familiar with the related concept of location–based authoring, and were able to highlight the key similarities and differences between such a concept and related systems. A number of the participants explicitly sought to locate their perception of Urban Tapestries within the constellation of existing devices and networks they were familiar with, such as the Internet. All of the participants were regular Internet users, and the average time they had been online for was 9.27 years. As such, they may be somewhat unrepresentative of the typical future Urban Tapestries user, particularly if it is used in a community context such as a school project or community centre outreach programme. Most of the trial participants also had some connection with social research and/or technological design, which again would predispose them towards familiarity, or at least adaptability, to the ideas surrounding mobile and location–based authoring. Nonetheless, the trial period of four weeks is long enough to highlight a clear pattern of increasing familiarity with the concepts amongst all the participants, as they began to reflect on their experiences and project these into the future.

The one key barrier to understanding is the apparent contradiction between the ideas of mobile authoring and location–based authoring – which some participants began to articulate. Urban Tapestries as an 'on the fly' authoring system has the potential to mirror the way people actually move around the city, whereas the idea of 'location–based' authoring tends towards a more static view, where locations and the memories and stories that are associated with them become 'fixed' in individual and collective memory. These two aspects of Urban Tapestries are not mutually exclusive, if they can be presented as part of a continuous process of revision and addition, whereby both the original author and numerous subsequent authors can collectively build up a sense of shared history, whilst maintaining the unique contributions of each individual participant. One participant described this process as building 'layers' over the city. These layers have as much to do with the individuals who inhabit the city as the built environment itself, meaning that Urban Tapestries has the potential to make our experience of the city much 'richer' – to enable us to identify more strongly with those around us, and even obtain an insight into different ways of life and different cultures. BG and JB's comments were very insightful on this point. For example, JB commented on the fact that Urban Tapestries helped to enlarge her sense of community beyond her immediate social network:

> *"It expanded my sense of who was out and about in London and made me feel more connected to different kinds of people... Kids and people with kids aren't part of my immediate circle in London right now since I mostly interact with other students who are generally childless. I liked the insight into different experiences of London, the living–in–London–with–kids experience vs. my living–in–London–as–a–student experience."*

BG articulated this sentiment even more strongly:
> *"It really brought home to me the reality of day to day life for myself and others... So, from that perspective, I guess Urban Tapestries gave me a greater sense of empathy for my fellow human – a heightened recognition of the fact that we are all the same, but all unique with our own view of the world. So 'yes' my sense of community was affected in this way and I think its left me more likely to listen to others. I certainly also feel like I know London more: its people and streets."*

For BG, therefore, London's people and London's streets are inextricably bound, both contributing to his sense of involvement with his own lived environment, and also the lived environment of others, with whom Urban Tapestries enabled him to empathise more strongly. There are a number of links to be made here between the effect Urban Tapestries had on users' sense of their environment and their interaction with the city, and the concept of 'psychogeography', which is the study of the effects of geographical settings on the mood and behaviour of the individual. Its methods are those of the 'derive' and the aimless drift, although there is scope for suggesting that Urban Tapestries may be able to foster an altered sense of ones' environment in an asynchronous fashion – thus enabling a greater sense of exploration and creativity even when the individual is simply travelling from A to B.

Filtering Issues
The issue of filtering is one that has come up consistently throughout the genesis of Urban Tapestries, from the initial public trial through to the more recent Bodystorming event around the concepts of 'social capital' and 'community', and this trial itself. It has always been recognised by Urban Tapestries that some degree of filtering capability is essential to the smooth functioning of the system, if only because the amount of content has rapidly become such that it is difficult for users to search for what they want without becoming overwhelmed. Even when idly browsing, it is useful and instructive to be able to browse around particular themes, such as architecture, personal narratives, local history, and so on. Indeed, most participants mentioned that they considered filtering to be amongst the most important of Urban Tapestries's features, expressing the opinion that more sophisticated filtering in the future would go some way to creating the 'social tipping point' necessary to enable Urban Tapestries to become ubiquitous. The sense of 'information overload' was powerful for some, even to the extent that, as we have seen, they lost interest in browsing the pockets created by other participants, since they could not determine what type of content they would encounter beforehand. Yet, in spite of this evident desire to be able to filter content to suit their own requirements, most participants made little use of the simple filtering that was provided, raising some interesting questions. These include the extent to which the full functionality of the system was

actually explored, and – more broadly – whether the 'serendipity' effect of leaving all the threads on still outweighs the potential downsides associated with being distracted by unwanted content.

Although a large proportion of the participants implied that their future engagement with Urban Tapestries would be dependent upon the extent to which sophisticated and flexible filtering was in place, there appears to be a disjunction between this and their actual use. There could be a number of reasons for this, not least that the participants did not have long enough to explore the filtering that was available, or that they felt they should attempt to engage with all the content to gain a more 'rounded' understanding of what Urban Tapestries is about. Either of these reasons could lead to a tendency to opt for the simple 'all on' approach rather than experimenting with only leaving certain threads on. Or, as JH's comments implied, it might simply have been the case that, once a certain level of familiarity has been reached with a new piece of technology, users reach a 'comfort zone' beyond which they are reluctant to go. They are satisfied with the simple processes they have been able to master, and do not wish to complicate this with too many additional features, which could slow down use. Since 'ease of use' was mentioned by the majority of the participants as being particularly important to them, this conclusion seems to bear fruit. It is interesting to note that only one of the participants answered 'yes' when asked, in the pre–trial questionnaire, whether they customized the features of their existing mobile phone. This is all the more startling coming from a group of participants who were nearly all in some way involved with either the technology or the concepts associated with location–based mobile phone services. It would appear that there was a preference for practicality which overrode that of sophistication.

This contradicts what most of the participants themselves said – but bearing in mind the short period of the trial, this is perhaps to be expected. Users were looking to familiarise themselves with the system as quickly as possible, in order to actually be able to author content in the short amount of time available to them. In such a situation, it is likely that features such as filtering, which are still rudimentary at present, would be overlooked in favour of those features that were already developed to the point that they functioned smoothly and efficiently. Therefore, it is likely that, assuming the filtering options available become more sophisticated,

future users would engage with them more frequently, perhaps setting different levels of filtering according to different social situations, or customising their filtering to their own default 'standard', which would then become an integral part of their use. The types of filtering that participants would like to see are based around two general categories – those which group content around specific themes, such as shopping, restaurants, events, architecture, and so on, and those which identify the author of the content, so that users can filter for authors who have particularly caught their interest, or perhaps their friends. As the system becomes more sophisticated, it could then be possible to develop filters which specify commands such as 'Show me all threads by this author', 'Show me similar threads', 'Show me all new threads', 'Remember/Save this thread', 'Tell me when this thread is updated' and so on. Perhaps users could also custom–build their own filtering categories, or lists of their favourite threads/authors. This would also have the benefit of avoiding too much top–down determination of how users engage with the system, which could be a problem if the only filtering categories available are those defined by Urban Tapestries's creators or regulators.

Regulation also touches upon the issue of filtering in the sense that, with the content on the system constantly being added to and updated, there would have to be some degree of intervention to determine how new pockets/threads should be classified. This has the potential to be an issue of contention, for example if the content contains a number of different types of information, such as 'creative' content mixed with factual content. In addition, the problem is made more complex by the fact that the filtering has to be responsive to the content itself, meaning that, until there is a substantial body of content on the system, it is very difficult to decide what types of filtering are applicable, and to anticipate how what might be authored in the future. There is no 'solution' to this problem except to use the trial feedback and subsequent Bodystorming and other collaborative events to elicit responses from potential future users as to which types of filtering would be most important to them, and which types they would use in practice. The appendix includes a list of potential filtering categories, based on the existing filters and a 'wish–list' of desired filters, either explicitly mentioned by participants or implicit in their discussions of the types of content they were interested in.

Imagining The Future

Finally, it is worth dealing at some length with the comments made by participants with regard to how they imagined Urban Tapestries would develop in the future, and their part in this development – either as consumers or interested parties. Specifically, in seeking to understand how users might 'weigh up' the potential benefits and disadvantages of engaging with a system such as Urban Tapestries, the post–trial feedback questionnaire concentrated on asking participants whether they personally had experienced any benefits or drawbacks from using the system, and also whether they could imagine more general benefits of use or barriers to use for other individuals and social groups.

Concerns

There were a number of concerns raised by participants as to potential barriers either to themselves and their immediate social networks using the device in the future, or certain other groups of people who – for example – might not be as familiar or comfortable with new technology, or as mobile, or able to easily get hold of the system. Of course, the intention of Urban Tapestries is to be available for collective purchase for communities or other social groups, so that individuals do not have to shoulder the cost of prohibitively expensive devices and wireless mesh technology. This has the potential to open up Urban Tapestries to economically and socially deprived communities – these being the very communities who are often isolated, transient, and subject to the ill effects of negative stereotyping. Nonetheless, as we have seen, it was felt that a number of issues needed to be overcome before Urban Tapestries would reach the necessary 'social tipping point' required to make it a success. Chief among these issues was that of the perceived invasion of privacy engendered not just by Urban Tapestries but by increasingly sophisticated mobile devices in general. This is entwined with a whole host of other issues, such as 'spam' and commercialisation, and it is difficult to draw them out separately. However, it is clear from the participants' comments that there was a real concern that, although systems such as Urban Tapestries are beneficial in many ways, this could be obscured or even outweighed if they become too pervasive. This is a problem we have already come across in relation to the mobile phone, the implicit rules governing the behaviour of which have become increasingly relaxed, to the point that there are now few public spaces where talking on a mobile is unacceptable.

Urban Tapestries is much more sophisticated and attention–consuming than a basic mobile phone – many participants seemed to think of it as a mobile, location–specific version of the Internet – and as such, has the potential to lead to the problem of 'mobile privatisation', as identified by Raymond Williams*. This is the phenomenon of 'absent presence', whereby city dwellers are increasingly withdrawing into their own private communication bubbles even as they pass through ostensibly public space. However, to the extent that Urban Tapestries is used in the future as a collective activity, it has the potential to foster the opposite trend, whereby individuals are drawn out of their private worlds and encouraged to engage with their local community, and collaboratively author and share content.

Yet on a very basic level, there is the problem of the concentration needed to use Urban Tapestries in a busy public space, which – as CL and others commented – leaves the user vulnerable to danger, such as failing to notice what is going on around them, or even crime. Fear of theft/mugging was mentioned by some of the participants, although the proportion was much smaller than during the December public trial. This indicates that, as users became more familiar with Urban Tapestries, and gained confidence in their ability to handle the device, their unease about using it in public receded. This process of familiarisation was not possible during the limited time scale of the public trial.

Concerns about the possibility of an invasion of privacy also came to light in another sense, in the comments made by a significant number of participants concerning the potential for Urban Tapestries to become 'commercialised'. By this, they meant the possibility that Urban Tapestries would become a vehicle primarily for location–based marketing, rather than location–based authoring. Although this directly contradicts the aims of Urban Tapestries, which are to position the user as an author rather than a passive consumer of commercial content, the concerns are clearly still salient for some. Ironically, other participants also commented that they would welcome a certain degree of commercial information being 'pushed' at them, if it was a service which was targeted and which essentially operated on an opt–in basis. For example, GJ commented, when discussing whether he could imagine Urban Tapestries fitting into his daily life in the future, that

* R. Williams (1974), *Television: Technology and Cultural Form*, London: Routledge.

"Perhaps I was walking past an organic food shop and I detected a offer of an organic box delivered to my front door – if I point and click? I could do so and personal information would flow in order to trigger the order. Perhaps there was some information about a book I saw in a shop window – I could immediately access further internet related information on my PDA just by pointing at the shop window."

This vision of commercialized content is clearly different from the standard 'push'/'pull' dichotomy, in that the user would be asking for the information, yet presumably would then be opening themselves up to receiving similar information either from the same retailer or others when they passed the same area. This is also how other participants imagined commercialization proceeding. Yet although it would be welcomed in specific instances, there was a general feeling that it could ultimately damage users' trust in the system and lead to a tail–off in engagement on a level other than that of consumption and tourist information.

Related to the concerns surrounding commercialization are concerns about 'spam' – the potential to be inundated with unwanted content and/or messages, whether this came from businesses or simply from over–zealous users. To some extent, this would depend on whether Urban Tapestries enables users to directly contact other users in the future, or whether, as now, the principle means of reply is to create a pocket on top of an existing pocket. Direct, as opposed to asynchronous, contact is something that all of the participants were interested in, but the downside of this could be unsolicited content being sent to users, or even abuse of the anonymity of the system to post abusive or offensive comments. Even if pockets and treads are tied in more strongly with a unique user identity in the future, the anonymity built into the system might make it difficult to trace a user's Urban Tapestries identity to a 'real' person. This is precisely the kind of problem which plagued the Internet and created a rash of moral panics, particularly in the early days. Bulletin board subscribers could 'flame' other subscribers with misleading and abusive information. Coupled with the location–based nature of Urban Tapestries, it is clear that there could be a real danger for a user's reputation within a particular community to be defamed, or for other types of misinformation to be spread.

Some form of moderation or regulation is one way to solve this problem, although this in itself is a contentious issue, with some participants commenting that they were concerned about the possibility of censorship. However, it is necessary to strike a balance between allowing users the freedom to create the content they desire, and allowing abuses of the system to get out of hand. One form of moderation which may be more acceptable to users is community–based moderation – for example, users could 'rate' other users according to the veracity of the information they provided. This avoids the problem of Urban Tapestries being moderated centrally, which would lead to claims of censorship and could also practically difficult to effect, as the number of participants on the system grows. Community–based, or collective, moderation, was something that was also discussed at the April Bodystorming event, held at LSE. The consensus to emerge from this event was similar – that informal regulation was likely to be more effective and more in keeping with the community–centred spirit of Urban Tapestries.

Potential Benefits

Despite mentioning their concerns in some detail, all of the participants also took time to imagine the potential benefits of Urban Tapestries, either for themselves or for others, and their comments indicate that they were undertaking sophisticated 'cost–benefit' analyses in order to weigh up the relative features. All of them agreed that they could see themselves using Urban Tapestries in the future, although this was usually qualified with a number of conditions which had to be met before they would engage with the system. The most common of these, as we have seen, is a sufficient degree of ubiquity, such that their friends, peers and family could also subscribe to the system. Assuming that these qualifications are to be met, we can begin to understand the potential uses to which Urban Tapestries would be put by future users. These are very broad, ranging from communicating with friends and strangers, creating a personal journal, reference/information services, mapping different themes or interests across the city, sharing plans and details of events with others, as a way of building confidence and increasing ones' awareness of ones' neighbourhood, and so on. CL's comments were detailed and instructive:

"[I experienced] increased confidence in getting around London although also a greater awareness of exactly what a pain it could be to navigate on crutches. Much greater sense of belonging. Provided an excuse to wander, take time, very relaxing. Helped me to record events very clearly. Memories are

often tied to locations. Useful planning tool. Enjoyed using it as a diversion when I was bored. Increased my awareness of location. Sitting at home in front of TV, in a car in traffic jam, could still feel mobile by watching what other people had been doing in other places. Helped me to remember many past experiences in London that I had forgotten about. I think it would be a wonderful thing to play with when ill – reminisce, allow you to live vicariously … I think it's probably improved my memory! When I try to remember what I've been up to for the last few weeks, I just start to think about the map."

Other useful comments regarding the benefits of Urban Tapestries, both personal and more general, included:

"Helping communities imprint themselves on the city, but primarily for the benefit of themselves."

"It may make crime detection easier via the living trail that people might leave behind them. Many people feel powerless – by allowing them to express there opinions on Urban Tapestries, it may reduce this sense of uselessness."

"Increased local knowledge, greater sense of community, more immediate information available if anyone at anytime can record an event on the spot as they stand there, the opportunity to get may more perspectives on an event, about a location, mind–broadening? Encourages people to think more about their environment, what they value, what's significant, how the environment appears to others. The fact that everyone can get involved, however little, whatever their interest, all embracing is a massive benefit."

All of these suggestions echo suggestions that were raised at the April Bodystorming event, and it is encouraging to see them occurring spontaneously amongst individuals who had the opportunity to engage with Urban Tapestries over a longer period of time, and to build up a mental check–list of potential 'pros' and 'cons' against which to measure their experiences. The indication is that participants were, in the main, able to set aside the teething problems they experienced with the trial prototype in order to positively evaluate Urban Tapestries at a more general level, recognising that many of the difficulties they had encountered were part of the experimental nature of the Urban Tapestries development process rather than an

endemic barrier to potential users. Furthermore, Urban Tapestries was compared favourably against the other location–based and/or mobile authoring services that some of the participants had experienced, with the general consensus being that Urban Tapestries's very experimentality was a major asset. Compared to the 'top–down' approach of other systems, which are largely aimed at users as consumers or tourists, the participants of this trial recognised the value of being able to give detailed feedback on those aspects of Urban Tapestries work and those which require further attention. In effect, they are directly shaping the direction in Urban Tapestries heads, with the aim being to leave the system as open as possible so that it retains a high degree of flexibility and the potential to be customised according to the unique context in which it is put to use.

This evaluation report has concentrated largely on the concerns and problems experienced by the participants during the course of the trial, in order to highlight the extent to which Urban Tapestries is committed to working with members of the public on increasing awareness of the ideas surrounding public and location–based authoring, and also the extent to which the design process is an ongoing evolution, determined by the desire to meet the needs of active, informed users rather than the abstract 'user' of the typical R&D process. In taking on board the criticisms and the suggestions of trial participants, Urban Tapestries is able continually to broaden the scope of its appeal and its usability. The feedback of CL was particularly useful in highlighting some of the specific problems faced by disabled users, not just of Urban Tapestries, but of other mobile devices, and of the urban environment in general. Yet CL, out of all the participants, authored the most threads and pockets, and was highly successful in integrating Urban Tapestries into her everyday life, indicating that simply stereotyping users according to different demographic profiles is not enough. CL's feedback was also the clearest in terms of highlighting the fact that Urban Tapestries will not evolve to become one type of public authoring platform, but multiple platforms, according to the context, environment, and community or individual needs in which it is situated. Each participant expected different things from Urban Tapestries and used it to author different types of content. Despite – or because of – this, their enjoyment was evident when reflecting on their experiences of the trial as a whole.

Appendix

List of filtering categories suggested by Trial Participants:

Local amenities
- Parks
- Toilets
- Parking
- Disabled access
- Public services
- What's on/events
- Cafes/pubs/bars/restaurants
- Community forums
- Transport
- Hotels

Tourist information
- Transport
- Sightseeing
- Opening hours
- Places to eat
- Museums/galleries/exhibitions/events

Entertainment
- What's on/events
- Pubs
- Bars
- Restaurants
- Clubs
- Gigs
- Films/cinemas
- Theatres
- Museums/galleries/exhibitions

Search by area
- Bloomsbury
- Islington
- Camden (… etc.)

Recommendations
- Shops
- Pubs/bars
- Restaurants
- Galleries/museums
- London on a budget
- Venues
- Events

Historical/factual information
- Architecture
- Blue plaques
- Famous people (past and present)
- Local streets
- Local communities
- Local history
- Hidden gems
- Places of interest
- Art and design
- Guided tours
- London trivia

Shopping
- Type of shop
- Price range
- Recommendations

Personal information and stories
- About me/my life
- A tour of my area
- My friends
- Recommendations
- Observations

Interactive forums
- Queries
- Contacts
- Who's nearby?
- Message facility

Type of content
- Text
- Pictures
- Sound

Author
- View all threads by this author
- Search for an author
- List of all authors
- Tell me when this author posts new content
- Respond to this author's thread/pocket
- Recommendations by this author
- Save this author to 'my favourites'

Recency
- Threads/pockets posted today
- Threads/pockets posted in the past week
- Threads/pockets posted in the past month
- Upcoming events
    - Today
    - This week
    - This month
- Recently viewed threads/pockets

Remember this
- Pocket
- Thread
- Location
- Building
- Shop
- Service
- Author
- Event
- Address

PROJECT CREDITS

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