Overview
Martin Rieser

"Locative media emerged over the last half decade as a response to the de-corporealized, screen-based experience of net art, claiming the world beyond either gallery or computer screen as its territory. Initially coined as a title for a workshop hosted by RIXC, an electronic art and media center in Latvia during 2002, the term is derived from the "locative" noun case in the Latvian language, which indicates location and vaguely corresponds to the English prepositions "in", "on", "at" and, "by"." [1]

This is a book based on primary field research, its principal aims being to interrogate and explain the visual languages and critical discourses growing up around the new art and narrative forms which are adapting to mobile technologies, in particular through examining audience response. The book forms a study of these emergent uses of mobile, wearable and wire-free technologies, which have moved the audience for screen-based work out of the gallery and cinema into public spaces and geographies, with a particular focus on forms of experimental art works using narrative in its new spatialised or "locative" incarnations. This continues arguments on reception rehearsed in *Rieser, M, Zapp, A, New Screen Media: Cinema/Art/ Narrative (BFI, London, 2002)*, but examines and contextualizes more recent and developing work founded on mobile technologies.

Contexts

Screen cultures today are dominated by narrative and by its modes of framing. Dispersed forms of interaction raise a whole new series of intriguing questions on the nature of narrative and communication, particularly in relation to an audience's modes of participation and reception. The convergence of mobile technologies and ubiquitous computing are creating a world where information-rich environments may be mapped directly onto urban topologies. This creates an opportunity to pose a series of questions around changing concepts of *space and place* for a wide range of traditional disciplines ranging from Anthropology, Art and Architecture to Cultural and Media Studies, Fashion and Graphic design.

Over the past few years, current developments in ubiquitous computing technologies have been explored in parallel by organisations in Britain and Europe such as the *Mixed Reality Lab at Nottingham University* and the *Mobile Bristol*

[1] Tuters, Marc and Varnelis, Kazys, Beyond Locative Media http://networkedpublics.org/locative_media/beyond_locative_media (accessed 12/03/08)

Project, (jointly between Bristol University and Hewlett Packard European Research Labs, Bristol). The author negotiated collaborative engagement with many of the case study subjects. This book examines industry futures at the leading edge of technology and aesthetics, where environments of production and reception currently lack definition. This new and experimental work, which has so far been undertaken in the arena of interactive public art or in spatialised interaction through mobile technologies, is in pressing need of exploration, definition and documentation for the benefit of a wider audience.

Dispersal, Narrative and Technological Convergence

The essays in this volume ask in what ways can the new modes of audience engagement and participation in dispersed or mobile interactive art works, be evaluated? Emergent technologies of interaction and the changing nature of public interactive engagement present a radical challenge to Western narrative and its vehicles and traditions. Boundaries between established forms (i.e. games and cinema) are thrown into question and the very concept of creative authorship becomes problematic. In this context, the book explores the creative potential of interactive art and narrative forms in a public and dispersed environments. Whilst other emerging technologies are already redefining existing forms of screen-based exhibition and reception (interactive television and digital cinema), they still tie down the audience in relation to the screen. Locative technology blurs the borders between physical and virtual space, leading to the redefinition of the concept of the virtual from that of *simulation* to that of *augmentation*. While the book focuses on new forms of public and mobile art, where interaction has become spatialised, it evaluates new the modes of audience engagement and participation in such works. through both subjective and objective strategies.

Participatory Media and Form

The texts also question if there are other ways that these ubiquitous interaction technologies can satisfy the demand for participation and create viable art forms, which move beyond the merely sensational? The nature of audience interaction responds to a socio-cultural dynamic that, although far from being quantified, demonstrates a desire for a greater degree of 'participation', evidenced in popular broadcast television e.g. *Big Brother* and its interactive outlets and in the meteoric expansion of social networking on sites such as MySpace and Facebook. Such examples, however, fall far short of the requirements of serious art.

What then is the potential for the emergence new visual and auditory languages and strategies of narration? The book analyses and redefines the languages required to enable the realisation of effective interactive narratised art forms in urban and site-specific environments. Through understanding these new and radical forms of experiment, it attempts to map changes in sociability and communication

patterns and new forms of collaboration.

How can this extension of interactive technology from the fixed installation to real urban geographies radically alter the modes of audience participation and reception? If the physical space overlaps the space of diegesis, can this emergent space for art and performance create new perceptions of space and place in an audience? We appear to need a redefinition of the concept of physical space (including hybrid environments): where through such technologies, a new perception of urban space is emerging which is not simply visual, but is both conceptually driven and nascent with multiple embodied potentials.

Much reflection on Locative media art has been premature, for as Drew Hemment observes:

"It is too early to offer a topology of locative media arts, however, or to tie the field down with strict definitions or borders. While artists such as Masaki Fujihata (JP), Teri Rueb (CN) and Stefan Schemat (DE) have been producing work in this area for many years, more widely there have been only a handful of fully realised locative art works, with many projects remaining in the beta-stage, if not still on the drawing board. We have not yet reached the point at which the technology disappears - all too often the tendency is to focus on the technology and tools rather than the art or content".[2]

The waters have been further muddied by the convenient way in which artist's projects have often aligned with the consumer research interests of the mobile phone companies, where yesterday's locative project becomes tomorrow's "killer app". While the tagging of urban space is a process enabled by the commercial concerns of big software players such as Microsoft and Google, it will probably only be when that process meets the next generation of GPS 'smartphone' mobiles that the really interesting art works will begin to emerge:

"Mike Liebhold of the Institute for the Future (IFF) regards "geohackers, locative media artists, and psychogeographers" as key players in developing the "geospatial web," in where the web becomes tagged with geospatial information, a development that he sees as having "enormous unharvested business opportunities". and believes that this context-aware computing will emerge as the "third great wave of modern digital technology". [3]

An early example based on individual issues of sustainable lifestyles, was Katherine Moriwaki's *Inside Outside* pollution-sensing handbag.[4] Social uses of technology are

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[2] see http://www.drewhemment.com/2004/locative_arts.html (accessed 12/03/08)

[3] Quoted in Beyond Locative Media by Marc Tuters and Kazys Varnelis. See also The Geospatial Web: A Call to Action- What We Still Need to Build for an Insanely Cool Open Geospatial Web by Mike Liebhold, Senior Researcher, The Institute for the Future < http://lists.burri.to/pipermail/geowanking/2005-May/001536.html> (accessed 12/03/08)

[4] see http://www.kakirine.com/ (accessed 12/03/08)

always beyond prediction. Christian Nold, for example, has definitely found a new way to exploit the personal context of the technology with his emotion mapping and bio-sensing in relation to location.[5] I too am sure such affective hybridity combined with the collective construction and augmentation of site-specific knowledge through wiki-like interfaces gives an evolving future for locative art.

Which brings me to a further question relating to the art itself. Much of what is named 'Locative Art' is not really art, but rather games or spatial documentary or simply demonstrators of advanced toolsets that happen to use this technology. The potential is clearly there, but art has a different function to these uses- and when it is truly present you can smell and see it from afar, altering us through its reinvention of the world. This brings us back to my earlier question about the pleasures and modes of user experience and how we can distinguish these from other media art forms or genres of work.

Mobile devices already appear performative in their nature, with public space interpenetrating our private concerns, so that any conversation has its willing or unwilling eavesdroppers. Add to this the potential for social interaction, crudely demonstrated by *Flashmobs* and in more sophisticated ways by mobile gaming, and you have a case of new technology creating adaptive social behaviours, which contain strong performative elements.

"The mobile games industry has long been the poor relation of the PC and console markets, but a combination of new technology, services and investment is fuelling optimism that mainstream adoption is not too far off. Ask anyone to name a mobile phone game and the most common response will be Snake or Tetris. And while the classic Russian puzzler is the world's most played and downloaded mobile game it is not an accurate reflection of the industry".[6]

Far more demanding games are already being played using mobile technologies such as *Catchbob*[7] and Blast Theory's *Uncle Roy All Around You,* (explored in several places in this volume), which combine internet and mobile technologies, where the City and the Internet were regarded as related stages on which we play, regardless of the specific context. Steve Benford of Nottingham University now talks of "seamful" media where players have learnt to exploit GPS "shadows" (where tall buildings block satellite triangulation) to their own advantage during game play, describing how such unforeseen effects of the technology encouraged new kinds of movement through the city.[8]

The failure of such works is often in terms of misapplied contextual practice: I once

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[5] see http://www.biomapping.net/ (accessed 12/03/08)

[6] Waters, Darren, "How mobile got its game on" Technology editor, BBC News website, San Francisco, http://news.bbc.co.uk/1/hi/technology/7254123.stm (accessed 12/03/08)

[7] see http://www.epfl.ch/research/catchbob/ (accessed 12/03/08)

[8] Performing Space - Arts and Humanities Research Council Seminar at Nottingham Trent University, (February 2008)

tested Valentina Nisi's *Media Portrait of the Liberties* in Dublin before the demise of MIT's MediaLabEurope.[9] We had gone about a block when the local youths began stoning us. The technology was certainly impressive, but this new form of public art was alien even to the children of the collective contributors to the artwork. When participating in Blast Theory's *Uncle Roy All Around You*, I reflected on how the game's format had reduced the richness of the city to a few textual clues and a dangerous process of frantic searching, with users crossing roads with even less awareness than the average iPod listener. This emotional distancing through the mapped interface seems in direct contradiction to the affective engagement sought by artists- and remains a circle to be squared.

Spatial annotation has emerged in the last three years as a major Internet phenomenon, particularly with the growth of Google Maps and social photosharing sites such as Flickr. In spatial annotation projects like *Yellow Arrow* [10] and *Neighbornode,* [11] cities are increasingly being treated as surfaces on which individuals can inscribe annotation, and which will ultimately become repositories of collective memory. While such story-telling projects give new social and cultural readings of space, allowing private narratives to become public and subject to reinterpretation, they rely heavily on commercial mapping models and their associated biases.

Satnav systems tend to reduce our world to roads between A and B. The specific tagging potential of the locative can certainly overlay this reductive idea of space with all the richness of personal experience, but that depends on the framework provided and the context set by the artist, and in many projects this is so loosely drawn that we simply achieve a kind of public palimpsest.

Mark Tuters has perceptively identified how such annotation and tracing fits into the legacy of Situationism, which Locative Media has claimed as a philosophical base from its inception.

"Roughly, these two types of locative media' Annotative and Tracing' correspond to two archetypal poles winding their way through late 20th century art, critical art and phenomenology, perhaps otherwise figured as the twin Situationist practices of détournment and the derive". [12]

Situationism in Locative media resists easy definition, but may best be represented says Tuters, by one of Deleuze and Guattari's maps which distinguish between annotation and tracing:

"Maps can be torn, reversed, adapted to montages of every kind, taken in hand by an individual, a group or a social formation. It can be drawn on a wall, conceived of

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[9] see http://www.valentinanisi.com/liberties.html (accessed 12/03/08)

[10] see http://yellowarrow.net/index2.php (accessed 12/03/08)

[11] see http://www.neighbornode.net/ (accessed 12/03/08)

[12] ibid Tuters, Marc and Varnelis, Kazys, Beyond Locative Media

as a work of art, constructed as a political action or as a meditation... Contrary to a tracing, which always returns to the 'same', a map has multiple entrances". [Deleuze and Guattari, 25-26]

The increasing importance of maps in defining space within these projects should not blind us to the fact that mapping is not a neutral process, but always has been a highly selective and subjective one, in which can be embedded various (invisible) ideological assumptions. Many GPS mapping projects tend to forget this and even revel in the act of remapping without context.

Media artist, Coco Fusco, also launched a headlong attack on new media practices associated with networks and mapping, declaring:

"It is as if more than four decades of postmodern critique of the Cartesian subject had suddenly evaporated…In the name of a politics of global connectedness, artists and activists too often substitute an abstract 'connectedness' for any real engagement with people in other places or even in their own locale "[13]

A Taxonomy of Mobile Media Art

Locative and Mobile Media Art remains an emergent field for both practice and associated theory. This book attempts to map this new diversity from its roots through to its many genres and modes of interaction. While it is possible to create taxonomies of the field (and several people have already done so), it seems fated to remain merely an interesting exercise, a net where rare specimens continue to flutter and evade definition.

[13] Fusco, Coco, Questioning the Frame: Thoughts about maps and spatial logic in the global present < http://www.inthesetimes.com/article/1750/> (accessed 12/03/08)

Conceptual Models:	Situated: Close fit to actual environment	Mapped/Geographic: Seeming fit to represented environment	Linear: Single pathway between points	Omnipresent/ Ubiquitous: Distributed and constant	Arbitary Triggered by specific user conditions
Sensory interaction:	Textual	Predominantly Audio	Mixed Reality	Predominantly Visual	Embodied
Modes of interaction:	Individual	Group Present - Collaborative	Group Present - Competitive	Group distributed- Collaborative/ collective intelligence	Group distributed- Competitive
Genres:	Singular Directed Journey	Serendipitous Individual Discovery	Individual Game	Group Game	Individuals Interacting
Spatial Concepts:	Hertzian/ Invisible Space	Space Annotation/ Geographical	Layered Space/ Landscape as Interface	Distributed Spatialised Narrative	Social Spaces
Effects of Interaction: (Dovey/Fleuriot)	Pleasurable Discomfort	'Magic moments'	Synaesthetic Confusion	Response Enhancement	Deep Immersion/ concentration

A Taxonomy of Locative Media Art

Accuracy is resisted by complexity, as can be seen in the table above, drawn from a variety of sources and reading across the page. It can be permutated to fit most cases, depending on primary and secondary emphasis, but of course categories elide and blur in many works. An example might be "Drift" by Teri Reub, which is explored later in this volume (See Section 2.2). Clearly an "individual" *mode of interaction,* and in *genre* a mix of "singular directed journey" mixed with "serendipitous individual discovery". But is it based on a "situated", "arbitrary" or "ubiquitous" *conceptual model*? The *sensory interaction* is predominantly "audio', but "embodied interaction" (sense of orientation) is vital to its meaning. It also based on a mixture of *spatial concepts*, being a "distributed narrative" using "landscape as interface"; but can we define its effects of interaction using the definitions established by Dovey and Fleuriot? (See Section 2.1) We could probably map all of those definitions across a temporal graph of user experience during the work, so that all conditions would at some point be true of some aspect of the project.

Research Methods

These took account of the contextualisation and interpretation of work samples from the specificity of the audience's views and interacting behaviours. Research visits to other case studies, specifically in Bristol, London, Nottingham and East England, Dublin (MIT), Oslo and Helsinki (UIAH) and North America (Funded through RAE monies) were used to produce detailed documentation. The interrogation of case studies through interviews with makers and their audience was made directly or through questionnaires. The analysis of audience reaction through subjective testimony and its positioning against theoretical positions drawn from an interdisciplinary approach has be the guiding spirit of this work.

Structure

The book is divided into four sections:

Section 1 Towards Hybridity, A Critical History, examines the genesis and development of audience mobility and digital artefacts and art works. In **Section 2 Critical Issues** in contemporary understandings of mobile forms of work are unpacked from a variety of viewpoints: through definitions of language and practice, through spatial understanding and through the role of the 'Creative User'. These categories are revisited in **Section 3 Case Studies** which also interrogates and places the works into three main categories: *Spatial or Locative Works*, where location awareness or geographic proximity dominates; *The Creative User and Play and Improvisation*, where collaborative, ludic, telematic and social works are examined: and *Wearables*, where the body itself becomes platform and vehicle of expression. **Section 4: Artist Interviews** records interviews with some of the pioneers of mobile and wearable art, covering issues as diverse as new media politics, surveillance, new concepts of public space and the role of technology in art.

Content in Detail

Examining the sections in more detail- **Section 1: A Critical history of Audience Mobility** traces the origins of current mobile art practices, covering the story of early media experimentation and artists' use of screen interfaces using various wire-free technologies. These range from sensor -based interactive video installations and Expanded Cinema in the 70s, 80s and 90s, through the public art and interactive architecture of artists such as Christian Moeller, Toshio Iwai, Diller and Scofidio and Rafael Lozano-Hemmer, to the present maturing of mobile and wearable devices and the use of such new media in emergent practice.

In **Pockets of Plenty,** Errki Huhtamo creates a history of the precursors of mobile devices by examining older technologies, their social uses and their meanings, ranging from Nadar's balloon photography to the Gameboy. Huhtamo argues that, so far, media histories have been based on the idea of media as "fixed coordinate systems", equally in public or private spaces, where traditionally the user

was locked into a fixed location before beginning the communication. This is illustrated by "the telegraph office; the phone booth; the cinema theatre; the television set in the living room corner; and the desktop computer on the office desk or on the bedroom table". Even Marshall McLuhan, "whose prophetic insights about the new extensions of man anticipated many future developments", had little to say about mobile media. In this paper Huhtamo attempts to redress this imbalance in the media discourse, by identifying the astonishing diversity of mobile technologies preceding the ones of the present day.

In **Interactive Space: Precursors in the Gallery** Dr Susanne Jaschko examines the temporal and spatial cinematic installations and video installations of the late 1960s and early 1970s. The starting point is the seminal installation work of the Vasulkas, which are put into context against installation works of their contemporaries. Essential characteristics of this first decade of spatial work in video and film are demonstrated, especially with regard to the role of the recipients in the overall conception of the artistic works. The unique integration of the recipients in the artwork is also examined in relation to the participatory and performance aspects of contemporary media works.

My **Forgotten Histories of Interactive Space** is a critical framing of the history of interactive public art, including pioneers such as Ichnatowicz, EAT, Myron Krueger and their inheritors. In its applications as public art, interactive work has frequently attempted to gain critical purchase by exploiting the tension created in an audience between the virtual electronic space and the physical location. Consistent themes and uses for electronic art in public contexts were established early in the 20th century, where threads of similar practice may be traced through from Dada, Futurism and Constructivism and the Bauhaus to the present day. Tatlin was playing with motorised architecture in his Monument to the Third International in 1920. The distant relationship between artist and architect has also created problems in the proper integration of public art in cities, a problem compounded in mobile digital art into public spaces. It is no accident that some of the early successful examples of actual or potential public art works using new technologies have frequently been produced by architecturally trained artists, most notably Shaw, Moeller and Diller and Scofidio.

Adriana de Souza e Silva's Art by Telephone: From Static to Mobile Interfaces investigates art works that use telephones as interfaces. Considering telephones as *telepresent* technology, it focuses on the point of transition from the fixed to the mobile telephone, exploring how artistic practices change when the component of mobility is added. She outlines how location awareness capability transforms cell phones into far more than voice-only devices. The consequences are examined in artistic experiences that bring the medium into public spaces, transforming them into ludic, and collective interfaces, pointing toward how mobile technologies can be used in the future. From a broader perspective, this study

addresses how art mediated by technology deals with the connection between physical and digital spaces.

Section 2 Critical Contexts begins with **Mobile/Audience: Thinking the Contradictions** by Sean Cubitt and Mary Griffiths. The paper tackles the questions of novelty and the democratic potential of mobility, through selected contemporary examples of aesthetic practice, moving towards an inventory of mobile user dispositions, and the social futures, which they may engender. Mobile technologies have a history, which meshes theoretically with, yet often works against, three other phenomena: the diverse *histories of the screen* in its many forms, the notion of the *public/private gallery space*, and the expectations generated by *public art* located in civic spaces.

This chapter also seeks to map some of the points of similarity in those histories and theoretical prioritisations, and make visible the points of divergence, with the following subheadings in mind: "connectivity; content; temporality; space; privacy; publics; power; consumption; distribution; visibility; desire; place; identity; and play." They argue that anyone theorising fast moving and converging technologies and their uses by artists, needs to unpack the terms *mobile* and *audience*, and think plurally and flexibly about capital, consumption and power. They ask key questions: "Is this individuated and customised technology more prone to producing user anxieties and re-inscriptions of consumption than it is the active moments of participation in, and recognition of, community? Should the construction of subjectivities take centre stage as the object of mobile research analysis? Are there ways of re conceptualising the desire for Peer-to-Peer connectivity, and community, within democratic frameworks?"

In **Taxonomies of Mobility** Jon Dovey and Constance Fleuriot document five seminar discussions at Mobile Bristol held between November and December 2004, aimed at refining the language we use to describe and understand our experience of pervasive, mobile and located media applications. The aim of the authors was to contribute to the development of a common discursive framework for description, understanding and production of mobile and locative media. This research project was prompted by the perception that (the necessary) interdisciplinarity of collaborative authoring teams lacked an agreed set of terms upon which to proceed. This definitional difficulty was additionally compounded by the blurring of previously distinct categories of media and reception which mobile media bring about e.g. spaces of reception lose their borders as media reception becomes more and more pervasive, and media genres similarly start to slip, as reception practices change.

Dr Beryl Graham, founder of CRUMB (Curatorial Resource for Upstart Media Bliss) uses **Snapshots from Curating Mobility** to outline the problems of mobile art works and their curation, drawing on the online discussion archives of CRUMB. She bases her discourse on the notion of a located third space between the audience

and the artwork, which is identified as one of the exciting potentials promised by mobile media. Illustrating ways in which what these potentials, which need substantial experience and skill, can be fulfilled; she discusses the nature of engagement as a complex area, attained mostly by the content of the artwork, but also by the characteristic of interaction and cites Rafael Lozano Hemmer's *relational architecture*, Nicolas Bourriaud's *relational aesthetics* and a longer history of participative works including live art, community art, art activism, and Situationism.

The next part **Understanding Space** looks at the issues and languages defining space in relation the mobile artwork. It begins with **Beyond Mapping: New strategies for Meaning in Locative Art Works**, in which I propose an approach to mobile and locative structures, which goes beyond those of a simple mapped correlation between location and story. Narrative is examined in relation to mental maps, architecture and sacred and ritual spaces, revealing that the embedding of narrative in public and constructed space is an ancient practice. That Artists learn to understand these vocabularies of space seems essential in the development of more meaningful and engaging mobile artworks.

Anke Jacob provides a critical overview of interactive architecture and reactive physical surfaces in public spaces in **Architecture and Digital Media Technology** and tracks the transformation of the lived environment. She examines the impact of new media and digital technology by looking at transformable surfaces, the types of interactivity connected to architecture, and new display technologies.

In **Urban Screens: Public Space in the Digital Age**, Mirjam Struppek sees the emergence of Urban Screens as the *visualization zone* of the city's invisible communication sphere and as a unique arena for exchange of rituals and communication. Struppek contends that such media facades challenge traditional ideas of development in our urban society, which is now in a constant process of renewal. Citing a variety of contemporary examples, she questions how Urban Screens can contribute both to the idea of Public space, both in moderating urban planning in a city of *free players*, and in developing as a communication medium.

The next section **The Creative User** is intended to focus on aspects of audience as co-creator. It begins with **Future Physical: The Creative User and Theme of Response-ABILITY** by Debbi Lander. This critical essay explores the role of the public user/audience as a Creative User: someone who combines creativity with consumption. It adopts a user focus and draws on the research, observations, analysis and recommendations published in an Arts Council commissioned report and DVD publication, *The Creative User - the new market for interactive digital art*. Lander concludes on the reactions of audience to the ambitious collaborative art works commissioned by Future Physical / Shinkensen in mobile and wearable formats

In **Networked Narratives**, Andrea Zapp explores the role of the network in the

construction of narrative spaces for open participatory creation, transforming into "imaginary places of being." In her understanding networks are a place of relationship and co-dependency, not simply of communication, "as an open resource of a participatory order." She contends that the Net is "a comparatively unique cosmos of invented identities, partakers, and accomplices in joint forces, hidden in the endless labyrinth of homepages, chatrooms, and communities." These cinematic and performative elements of the Net offer an unceasing platform for user experimentation and innovation. By its nature the Net, (and by implication Mobile networks) provides a framing for "unforeseen content" which should be regarded warily as *works in progress*. We are now looking at the "effects of immediate *real-time* exchange", as opposed to compiled or edited information. She emphasises the transient nature of such content, resulting from textual and visual dialogue between physically remote online participants. As such she provides a valuable template by which to understand remote transactions in gaming and other mobile forms of dramatic or narrative participation.

The third major section is that of **Artist Case Studies**. These are primarily to give an in depth understanding of a broad variety of works both in terms of the taxonomy outlined in this overview and as a record of the development of seminal exemplars in the field. In **Part 1 Locative Art**, Jo Reid and Richard Hull ask "**What Makes Mediascapes Compelling?"** This joint article on the findings of the RIOT! project conducted in Queens Square Bristol in by Mobile Bristol team (Hewlett Packard/ Bristol University). The Mobile Bristol authoring environment had been used to develop a range of location-triggered mediascapes such as a Ferryboat tour, an educational game called *Savannah*, situated digital stories, a nature walk, *CitiTag* and many others. What these mediascapes shared was the same simple interaction paradigm of using movement to trigger different media depending on location. In this chapter they discuss the role of the mobile audience in these locative mediascapes by drawing on a quantative and qualitative analysis of public reaction to a rich mediascape called Riot! 1831 deployed in a public field trial lasting three weeks, using an interactive locative drama based on the Bristol riots of 1831.

Valentina Nisi and Glorianna Davenport describe two further seminal projects constructed at MIT's MediaLabEurope in Dublin, namely **Hop Story** and **Media Tales of the Liberties**. This is a joint description and evaluation of two works, exploring sound and video locative experiences. MediaLabEurope suggested itself as an ideal venue for experiments in place-based narrative. MediaLabEurope (2000-2004) occupied a renovated hopstore building that has been historically part of the Guinness brewery complex on James's street, Dublin 4. Situated in the heart of the Liberties area, the hopstore served as an historical and anecdotal reference point for the neighbourhoods. However, the everyday life of MediaLabEurope was significantly different from the traditionally brewery business of the Guinness

complex. Open 24 hours a day, the building hosted researchers exploring the potential of advanced technologies and visitors who came to the Dublin lab to taste the future. Every few months the lab would host a daylong event. On those days the researchers would demonstrate their current projects to the visitors. These situations provided the opportunity to implement and evaluate some challenging ideas about location-embedded stories.

In **Loca: Location Oriented Critical Arts** by Drew Hemment, John Evans, Mika Raento and Theo Humphries, a major public presence for Locative art is decribed. Hemment examines the genesis and development of *Loca*, a project foregrounds secondary characteristics of mobile communications, such as the ability to locate consumer mobile devices in real-time and near real-time, and the kinds of peer-to-peer pervasive surveillance that is possible as a result. Loca explored the shifting nature of surveillance as it ceased to be the preserve of governmental or commercial bureaucracies. He asks what happens when it is easy for everyone to track everyone, when surveillance can be affected by consumer level technology within peer-to-peer networks without being routed through a central point?

In describing the **Sky Ear** project, Usman Haque contends that the overlapping territories of art and architecture have developed, in large part, because of technological developments, which have upset conventional understandings of spatiality. The Mobile technology, through which we conduct our daily lives and businesses, has made us far more aware of the electromagnetic environment that envelops us. He feels that the traditional dichotomies between audiences and performers, designers and users, architects and occupants are less evident than they used to be. He writes "Wireless technologies in particular have challenged our relationship to designed space because they encourage us to think not of static silent structures that surround us, but rather of fluid dynamic fields beyond the edge of our natural perception". These are fields within which "we are all consumers and all contributors". Mobile communication has relied equally on scientific and cultural evolution and has prompted a distinct shift both in the way we relate to space and the way we relate to each other. Haque describes the evolution of Sky Ear - a major mobile artwork, which visualises these electromagnetic flows.

In **Wifi-Hog**, Jonah Brucker-Cohen's controversial agit-prop work on the ownership and provenance of publicly accessible wifi networks is described in depth. *Wifi-Hog* is a tool that enables control over a specified network by someone who is not the networks administrator and looks specifically at what happens when these seemingly open networks are made exclusive and competitive. Since these networks exist as private, public, and corporate monitored services, there is also confusion about rights ownership over networks in public spaces, thus *Wifi-Hog* is specifically reacting to the lack of an acceptable usage policy of wireless networks. As mobile technology has entered public space and brought private conversations and interactions along with it, an interesting rift was forming between what is deemed

acceptable usage. In a sense, Wifi-Hog exists as a tactical media tool for controlling and subverting this claim of ownership and regulation over free spectrum, by allowing a means of control to come from a third party.

In the second part of this section, **The Creative User** begins with Paul Sermon writing in **Puppeteers Performers or Avatars** on the displacement of related spaces and their reconnection through telematics. This enabling of collaborative narrative construction is argued for in this examination of Sermon's own visual practice. His work in the field of telematic arts explores the emergence of user-determined narrative between remote participants who are brought together within a shared telepresent environment. Through the use of live chroma-keying and videoconferencing technology these divided audience participants enter a video installation and initially suppose they entering a passive space - sitting, standing or sometimes lying within it. Their presence within the space is recorded live on video camera and mapped in real-time, via a chroma-key video mixer, with an identical camera view of another participant in an identical installation space - combining two shots of live action by replacing a blue or green back drop in one image with the image of the other. The two spaces which can be any geographical distance apart are linked via an internet videoconference connection, making it possible to combine these telematic installations and there performing audiences between almost any location in the world.

This is essentially how all his installation projects function, but what is most surprising for the intended viewer is that they form an integral part within these telematic experiments, which simply wouldn't function without their presence and forced participation within it. The audience participant rapidly becomes a performer, or at best an actor within these spaces, by observing their body within a telepresent space represented on self-view video monitors in front of them. The user/actor ascends a rapid learning curve and begins to control and choreograph their human avatar representation of themselves in a new telematic space, in combination with another physically remote role-playing user. The Narrative that unfolds here would appear to be self-determined by the user, but what is essential in such experiments is the architecture of this installation. As an artist he is both designer of the environment and director of the narrative, which the artist determines through the social and political context in which he chooses to play out these telepresent encounters.

Mobile Feelings was a mobile art project where users could send and receive body data over a wireless communication network. Christa Sommerer and Lauren Minionneau used specially designed Mobile Feelings devices to allow remote users to feel each other's heartbeat signals and breath over distance. The system explores novel forms of intuitive and non-verbal communications that go beyond the conventional transmission of voice, sounds and images used in standard mobile communication. Mobile Feelings enables intuitive bodily communication between

remote users by exploring the emotional quality of touch and breath as some of the less explored communication senses.

In the **The Living Room** Victoria Fang created the first RFID-driven narrative space. *The Living Room* was a narrative puzzle installation. Players took part by moving panels with LCD monitors in an effort to solve a 'whodunit' murder mystery. When all three panels were positioned correctly, video memories are triggered with which one is able to unravel the mystery. Through the position change of the panels, one's experience with the space changes in every scene. Ultimately, the installation functions as a giant physical puzzle that houses a narrative puzzle. *The Living Room* is a spatial movie experience - the user is in front of the movie, between the movie, around the movie, and physically shifting the movie. While the movie itself is primarily linear, players' participation to progress the fragmented narrative results in changing their surroundings, both physically and in terms of narrative. Each segment of the film forces players to interact with the space in a way that compliments the content of the scene they are watching.

Arianna Bossoli uses **tunA and the Power of Proximity** to demonstrate how new proximity-based ICTs are introducing an overlap between the virtual and the physical space where people currently interact, generating the oxymoron of mediated face-to-face communication. Short-range wireless technologies are partly responsible of this process of remediation, where socio-technical networks can be created among co-located strangers and acquaintances, sharing digital resources and communicating through mobile devices. Bluetooth and WiFi do not only increase the ubiquitousness of ICTs and give access to the World Wide Web, but they also provide a link between people who are at a relatively short distance from each other, opening up a whole range of unexplored potentialities in terms of human-human interactions. Bossili's early experiment with shared and exchanged mobile music, developed at MIT Dublin is examined in depth.

The third part of the case-studies section addresses **Play and Improvisation**, as essential aspects of the new technology. Margot Jacobs in **Engagement with the Everyday** describes a number of projects undertaken in Gotenberg in collaboration with Play Studios, using unusual game-based strategies for public engagement with mobile and locative sound works.

Cati Vaucelle in her essay "**Between improvisation and Publication**" examines how from an early age, we play, learn and exchange ideas about our identity using stories; and test our hypothesis about the world using toys, telling stories and acting in the world. She believes that with mobile technology, we are moving into a creative and collaborative world in which images and sounds can mix with local language. Her shared movie-making devices can engage people in exploring multi-dimensional approaches to expressing and exchanging point of view on their environment. She envisages a future where people can create movies about how their lives interact with everyday means of interaction such as commonly used

technological objects; for example, computer game consoles, cell phones, and video cameras, and these objects can themselves serve as vehicles for manipulating personal media to co-construct video games, movies, and songs. She asks: "How might creative people engage debates with their spectators about the technological environment we live in?"

Anthony Rowe examines four gallery-based projects by **Squidsoup** aimed at developing creative audience interaction through play, improvisation and collaboration. This paper discusses the processes of creative development in four projects by Squidsoup: *Altzero* (1999-2003), *Come Closer* (2004-5), *Freq2* (2006) and *Driftnet* (2006-7). Each piece presented users with a structured audiovisual composition that could be manipulated, probed and explored in different ways. Together they illustrate a search for novel, intuitive and subtle forms of interaction where the processes of interaction are creative, rewarding and (as far as possible) understood by those taking part. This is an investigation not only into direct user interaction, but also into the participant's interpretation of their experience; what it makes them feel and think, and what meanings they ascribe to their experience and the work.

The fourth part of this section: **Wearable Computing** is selectively examined as a distinct area of practice. It begins with **The Emotional Wardrobe** by Lisa Stead, Petar Goulev, Caroline Evans and Ebrahim Mamdani, which examines the new alliance emerging through the integration of electronic technology and smart materials on the body. This study addresses the integration of technology with clothing from a fashion perspective and examines its expressive and interactive potential. It proposes the concept of 'The Emotional Wardrobe': clothing that represents and stimulates emotional response through the interface of technology. It asks if fashion can offer a more personal and provocative definition of self, which actively involves the wearer in a mutable aesthetic identity.

In **Social Fashioning** Katherine Moriwaki describes her explorations in wearable interaction and collaborations with Jonah Brucker-Cohen. In the early days of the Internet the dematerialization of place allowed for the development of a digitally embodied aesthetic, where virtual equivalents of physical objects were believed to be capable of replacing their material counterparts. The physical world, with its spatial and temporal limitations fell out of vogue, unable to compete with the chimerical seduction of the electronic agora). However, as ubiquitous computing technologies have emerged in the third wave of the digital revolution, the importance of the physical and the local has acquired renewed relevance as emerging technologies are increasingly incorporated into the everyday environment. New communications infrastructures stress decentralized and temporary networks, which support mobile and distributed computing needs. More importantly, these emerging network communications technologies have the capability to reinforce and supplement existing social and behavioural structures allowing for deeper

resonances between the virtual and physical. This paper will present examples of socially fashioned networks, or networks which use social behaviour and human mobility as the means for establishing a network infrastructure between colocated individuals. The various projects discussed represent social fashioning at different degrees of behavioral and technical resolution. They function as lenses through which spatial-temporal constraints are focused and applied in order to create interrogative disruptions in everyday experience. Through this process individual and group relationships in public and urban space are challenged and re-imagined using everyday objects and activities.

In Wunderkammer: Wearables as an Artistic Strategy, Laura Belloff examines how hybrid space is conditioned by the use of mobile and wireless technologies. Examining various theorists and researchers who have scrutinized this space, she positions her practice. Amongst others she quotes Timo Kopomaa on the concept of a *third space*, Anthony Townsend on *phonespace,* and Adriana de Souza e Silva who has defined the more general concept of *hybrid space* which is formed from a merge of physical and virtual spaces, and is discussed elsewhere in this volume.

In **Section Four** of the book: **Artist Interviews,** I cover in depth the conceptual and technological development of the work of major global players in this new territory, from the early locative works of **Dunne and Raby** and **Teri Rueb** to the ambitious work of **Blast Theory** supported by **MediaLab at Nottingham University**. Drew Hemment examines the **Politics of Mobility**, and experiments in **Wearable Technology** and their social effects are teased out in interviews with Berzowka and Lovejoy.

The first interview **Trace, The Choreography of Everyday Movement and Drift** covers Rueb's major art works dating from *Trace* 1996 to *Drift* 2004. It examines her interest in creating experiences of space and time that are multiple, overlapping and even sometimes contradictory as is her concept of narrative interpreted as by a sculptor through use of space. With **Flirt and Mset** Fiona Raby discussing the genesis and developmental problems of the pioneering mobile works of Dunne and Raby. It focuses on their early Finnish trials looking at future technologies using WAP such as Flirt and Stampede, through later experiments for MSET such as *Pixel Kissing* and *The Garden in your Pocket* concluding with *Lazy Crow*-an early use of Landsat data.

Blast Theory is an interview with **Matt Adams** examining all the major works by Blast Theory, their evolution, execution and the various types of public engagement anticipated and observed. It raises a number of issues, which are to do with the ludic aspects of relationships between real and virtual worlds, and how a group, they came to the decision that this was the area of discourse in which they were most interested. The central challenge of works like *Uncle Roy All Around You* and *I like Frank* is how to combine two spaces-the online world and the space of the

street player out there in the city and how to deal with the very divergent sets of expectation and experience that those two spaces engender.

Mixed Reality Lab Nottingham is a detailed interview with **Professor Steve Benford** on the collaboration with Blast Theory by the Mixed Reality Labs at Nottingham University and the lessons in development of meaning and interaction in locative works. It examines the full range of work developed by Blast Theory. The nature of the social interaction and necessary refinement of technologies as the partnership progressed.

The Politics of Mobility is an interview **Drew Hemment**, which rehearses the major arguments around emergent technologies of mobility and the freedom of the individual, surveillance and its ethical and moral dilemmas. He argues that in many ways we are seeing a fundamental shift: that we ourselves have become the drivers of the surveillance society because it is a secondary effect of so many things we otherwise value. The basis of the Panopticon was that we would not know when we were being observed or not, and so would come to act as if we were being observed at all times. With network technologies comse a whole new set of variables that govern this same scenario. We now leave data trails behind us that will last potentially forever.

In **Wearables: Heart on your Sleeve**, Annie Lovejoy covers her early experiments in locative sound with Mobile Bristol and her subsequent use of wearable technology in collaboration with the Bristol University Wearables group. She believes that the aesthetic visualisation of data has potential for wider shared experience. Locative media can move beyond cartographic documentary style narrative. Her work is generated through interactions with sites or situations; technological tools are party to this, but not central. She is currently attempting to articulate a non-media specific overview of this approach for a web space. "Interfaces of location and memory" is a helpful phrase: interface - as a point of connection between things, location - the site, situation, context or position of something and memory - as experiential, collective, associative, knowledge base, data and archiving.

Memory Rich Garments and Social Interaction with **Joey Berzowska** focuses on her own researches in wearable computing from XS Labs and later Concordia University. In this 2005 interview she describes the social drivers for her uses of interaction. On the one hand portable technologies are changing behaviour, but on the other current portable technologies are developed in a vacuum for the consumer electronics industry. She emphasises that the body is a more appropriate space for these intimate conversations and communications. She wants to force people to consider how we are redefining intimacy and to bring this back to the body and locations on the body through her experimental works, which are cited in detail.

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