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LOCATIVE MEDIA

A special volume edited by Tristan Thielmann

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aether

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Locative Media and Mediated Localities:

An Introduction to Media Geography

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ABSTRACT

At present, nearly every media-related subject field appears to be “locative”, or with the prefix “geo” attached, be it the discussion on geoart, geosurveillance, or geocaching. Within this context, recent geographical and phenomenological studies on mobile media practices, in particular, reveal a trend toward a revaluation of place and placiality. While social sciences, media and cultural studies label this re-materialization of place “spatial turn,” a cultural, humanistic and media turn is acknowledged in geography. Currently, the two converging developments are still marked by differing conceptual formations: locative media and mediated localities. This paper as well as this issue are concerned with both sides—the spatial turn in media studies and the media turn in geographical studies—and provides a sketch of the subject area “geomedia” from a phenomenological perspective and the field of “media geography” from a disciplinary perspective.

As a theoretical framework for media geography in general and geomedia in particular, this article favors the actor-network theory for three reasons: a) The actor-network theory tends to conceptualize places prior to the network of heterogeneous agents; b) it reveals itself to be a suitable heuristic for locative media as through the geotagging of objects instead of people, the actor-media theory permits a manifestation of what Bruno Latour means by the “Internet of Things” and, c) on the other hand, the actor-network theory puts us in a position whereby mediated localities can be described as if there is nothing more in the territory than what is in the map. Based on this argument, the conclusion can be drawn that media geography therefore also constitutes a new discipline for overcoming the very distinction between physical and human geography.

"Everything is related to everything else, but closer things are more closely related."

(Waldo Tobler's First Law of Geography, 1970)

INTRODUCTION

NOWADAYS EVERYTHING IN THE MEDIA WORLD gets tracked, tagged, and mapped. Cell phones have become location-aware, computer games have moved outside, the Web is tagged with geospatial information, and geobrowsers like Google Earth are regarded as an entirely new genre of media (Parks 2009). Spatial representations have been inflected by electronic technologies (radar, sonar, gps, Wi-Fi, Bluetooth, rfid, etc.) traditionally used in mapping, navigation, wayfinding, or location and proximity sensing. We are seeing the rise of a new, location-aware generation. "This generation is becoming familiar with the fact that wherever we are on the planet corresponds with a latitude/longitude coordinate" (Varco 2004).

The term "locative media," initially coined by Karlis Kalnins in 2003 (see Hemment 2006b; Tuters and Varnelis 2006), seems to be appropriate for digital media applying to real places, for communication media bound to a location and thus triggering real social interactions (Varnelis and Friedberg 2008). Locative media works on locations and yet many of its applications are still location-independent in a technical sense. As in the case of digital media, where the medium itself is not digital but the content is digital, with locative media, the medium itself might not be location-oriented, but the content is location-oriented.

The unusual location-based nature of communication in the electronic media, in particular, is currently leading to a renaissance of cartographic representations, as maps are often indispensable to "locative media" in producing an index for the illustration of spatial relationships. Mapping as the process of creating maps and the transformation of geographical data opens new perspectives for local search operations on the Internet, as well as the physical exploration of space. The superpositioning of virtual and real space in "augmented reality" (Crang and Graham 2007) or trend games like "geocaching" (Willis 2010) serve as an example of this.

Can we say that the numerous distributed geotagging platforms and applications like Flickr or Google Latitude unleashed by this trend have given rise to a new genre of collaborative "geocommunities," or what Crampton (2009) calls "Maps 2.0"? The increasing quality and clarity of visualizations of the Earth can be seen to be the common attribute shared by the rise of mobile communities using ubiquitous geolocation methodologies, on the one hand, and the rise of less-mobile geocommunities who are sharing mapped information and taking layered visualization to new heights.

This issue of *Aether* has therefore been split into two sections, one on "locative media" and one on "mediated localities." The reason for this is that the subject area can be categorized into two types of mapping: annotative (virtually tagging the world) and phenomenological (tracing the action of the subject in the world). Where annotative

projects seek to demystify (see all the Google Earth hacks), tracing-based projects typically seek to use high-tech methods to revalue dying everyday practices, such as walking and occupying public space, or to make mediation and globalization processes transparent. The Japanese mobile phone culture, in particular, embraces location-dependent information and context-awareness (Ito, Okabe, and Matsuda 2005). In this culture, GPS technologies appear in mobile, location-aware computing games such as “Mogi,” which utilize GPS to enable players to see each other’s locations (see Drakopoulou 2010). Most of the location-based games nowadays seem to emphasize collecting, trading, and meeting over combat. Does this indicate a social trend in mobile entertainment? This issue will attempt to give an overview of actual research on this topic, focusing especially on the ways in which locative media and mediated localities tackle social and political contexts of production by focusing on social networking, access, and participatory media content, including storytelling and spatial annotation.

MEDIA GEOGRAPHY: MORE THAN JUST ANOTHER DISCIPLINE

In the past, stock market crashes like the Asian economic crisis of 1997 appear to have led to frequent predictions by media theoreticians of “the end of geography,” whether by Jean Baudrillard (cited in Smith 1997)¹, Vilém Flusser (cited in Werlen 1997, 218)², or Paul Virilio (2000 [1998])³; however, it is ironic that this phrase is used more frequently by geographers who use the apocalyptic “end of geography” to describe the threat (to their own discipline) posed by media technologies (Graham 1998; Dicken 2000) and media studies (Smith 1997; Miggelbrink 2009).

To date, the current crises, whether the “economic crisis” or the “climate catastrophe,” have resulted in a contrasting effect—in a renaissance, or, more accurately, a remediation of geography in the form of media geography (Graham 2004, 2005). Prime examples of this are the Internet platforms **Google Maps** and **Google Earth**. While fictional propositions like Google Lively (a Second Life clone) are being discontinued, “virtual globes” (Dodge, McDerby, and Turner 2008), “digital earths” (Roush 2007; Goodchild 2008), and “geobrowsers” (Peuquet/Kraak 2002), which are bound to territoriality based in reality, are experiencing an unprecedented boom.⁴ For example, based on Google’s data, the number of medially annotated georeferenced locations on the World Wide Web more than tripled during the year from May 2007 to May 2008 (Hanke 2008), which is why one can already refer to a **www** as the successor to the **www**—in other words, an expansion of the Web-based question, “who, what, when?” to “who, what, when, and where?”

From a historical perspective, the appearance of new media applications has always initially resulted in “individual media ontologies,” which have then been extended to “general media ontologies” through the synopsis of several media and the formation of an independent mediality (Leschke 2003). It is exactly this genealogy that can now also be applied to media geography, which, since the millennium (Thrift 2000), has

formed from the individual media geographies of “art geography” (DaCosta Kaufmann 2004), “literary geography” (Moretti 1998; Crang 2008; Piatti et al. 2009), “music geography” (Krimms 2007; Johansson and Bell 2009), “psychogeography” (Coverley 2006; Self 2007), “film geography” (Lukinbeal 1995; Bruno 2002; Aitken and Dixon 2006), “television geography” (Morley 1996; Rain and Brooker-Gross 2004; Bollhöfer 2007), “telegeography” (Staple 1997; TeleGeography 1992 et seq.), “cybergeography” (Dodge and Kitchin 2001a, 2001b), “Internet geography” (Budke, Kanwischer, and Pott 2004), and, finally, “Wi-Fi geography” (Torrens 2008).

To date, however, media geography has become established not as a “general media ontology,” but as a subdiscipline of human and cultural geography, with a media geography session at the *Annual Conference of American Geographers* (AAG) and, since 2007, through its own publication, *Aether. The Journal of Media Geography*. In this case “media geography” acts as a relatively broad term for a “geography of [...] cinema, television, the Internet, music, art, advertising, newspapers and magazines, video and animation”; however, media geography can be understood as an overall term that not only includes different individual media geographies, but also simultaneously characterizes media studies that is changing through the “spatial turn,” which is rediscovering spatial- and location-related questions (Döring and Thielmann 2009).

The foundations for such media geography go back a long way. In addition to “media geography,” the term “communication geography” has existed for some time (Abler 1974; Hillis 1998; Jansson 2007). Communication geography is also to be understood not only as a subdiscipline of geography, but also as a residual category within communication studies (Thielmann 2006). The aims of gathering knowledge in communication geography are to create an inventory of communication infrastructures and spatial and social disparities. Given this transport-scientific tradition, the geography of communication can therefore be traced back as far as Friedrich Ratzel (1899, 169 et seq.), according to Abler (1974, 328); however, closer inspection reveals that media geographical considerations have an even longer tradition, dating back to 1833. They go as far back as the founding father of scientific geography, Carl Ritter, who was already thinking about the spatial effects of telegraphy very early on:

It is not only the distances from below to above, but also the spatial differences in all directions that are transformed by [...] advances in a universal telegraphy; whether these are newly discovered organs [...], or scientific advances, or cultural developments, through which peoples learn to migrate to other areas [...]. What did not appear to exist at an early point in time, thus comes into being; what used to be at a great distance and was not accessible, now comes closer, even moving into the realms of daily travel. (Ritter (1852 [1833], 160, own translation)

Ritter derives from this, among other things, the requirement for medial changes to cartographic spatial descriptions, “for example, through several transparent globular

disks that slide across each other and can be moved back and forth" (ibid., 180, own translation). Media geography, such as it is more than 150 years later, seems to have moved substantially closer to this research aim. The time is certainly ripe for a disciplinary programmatic approach to a media geographical research agenda and not just a general theoretical locational and spatial observational approach, even though the subject of research—and this characterizes all the individual media geographies—is distinguished by a "renewal of the significance of place" (Hardy 2000).

LOCATIVE MEDIA + MEDIATED LOCALITIES = GEOMEDIA

Pursuant to a critical understanding of media technology, new media have been associated with a growing sense of dislocation over a long period of time; however, contrary to the assumption of an erosion of a "sense of place" (Massey 1993), more recent geographical and phenomenological studies on mobile media practices show a trend toward "re-enacting the importance of place and home as both a geo-imaginary and socio-cultural precept. Thus, to talk about global mobile media today necessitates the discussion of locality" (Hjorth 2007; see also Yoon 2003; Butt, Bywater, and Paul 2008; Varnelis and Friedberg 2008).

While social sciences, media and cultural studies label this re-materialization of place "spatial turn," a cultural, humanistic and media turn is acknowledged in geography (see Jansson 2007; Monmonier 2007). Currently, the two converging developments are still marked by differing conceptual formations: while geography tries to characterize the mixing of code, data, and physical place as "DigiPlace" (Zook and Graham 2007a, 2007b) or "cyber place" (Wellman 2001), cultural and media studies refer to "location-based media" or "locative media" (Hemment 2006a; Tuters and Varnelis 2006); however, the interweaving of both "location-based/locative media" and "cyber/digital places" is underway—unfortunately often in such a manner that the geographical contributions to the understanding of these keywords are no longer noticed. Thus, this issue concerns both sides—the spatial turn in media studies and the media turn in geographical studies. A suitable umbrella term for both areas—locative media and mediated localities—is "geomedia" (Thielmann 2007; Manovich and Thielmann 2009). This gives due consideration to the now broad differentiation into individual media phenomena to which the prefix "geo" has been attached, be it *geoart*, *geoads*, *geoweb*, *geosurveillance* (Sui 2007), *geocaching*, or *geotainment*.

These parallel developments of a spatial turn in media studies and a media turn in geography are exemplified, amongst others, in the discussion on Geographic Information Systems (GIS) in general (Knowles 2000), and historical, temporal and collaborative GIS in particular (Gregory and Healey 2007; Dunn 2007). Is GIS returning geography to its roots in mapping, description, and empirical science, or are the effects of geovisualizations and the mass mediatization of online mapping tools and mobile navigation systems turning geography and media studies into media geography? The

following papers try to answer this question by positioning geography and media as mutually constituted, as has been formulated as the aim of a media geography by Lukinbeal, Craine, and Dittmer (2007, 2).

During this process, both sections—one on “locative media” and the other on “mediated localities”—demonstrate that media geography is characterized by a revaluation of “placality” (Casey 2001): “In short, the global telecommunications network has not led to the end of geography as much as to the rebirth of place” (Staple 1997, 219). Furthermore, “we are moving into a new ‘a-where-ness,’” in the words of the British geographer Nigel Thrift (2008a, 166).

This is demonstrated, in particular, by the essays under the umbrella term “locative media” in Section 1. Through the options of tagging and tracking with GPS, Wi-Fi, and RFID (see Rosol 2010), media become independent from an “absolute co-ordinate grid” (Thrift 2008a, 164), with the result that geomedia sociotechnically reorganize our handling of space and place (see Drakopoulou 2010; Galloway 2010; Salmond 2010; Willis 2010; Yoshida 2010).

In the process, as the essays in Section 2 on “mediated localities” attempt to show, the methodological and theoretical interest in “re-animating the place of thought” (Thrift 2008b) can be attributed essentially to three developments:

1. The mass spread of mapping and geocoding in all areas, from local drawing work (Lommel 2010) to geotagged messages (Bedö 2010).
2. The rise of “locative harnessed networks” (Elmer 2010) and geographic information systems, which not only represent sociospatial statistical distributions through their geodemographic classifications, but also are means by which people sort themselves and thus contribute towards pushing forward a new class system (Burrows and Gane 2006), a “class of amateurs” (Crampton 2010).
3. Places themselves have changed their characters (Shepard 2010). Instead of a set of fixed points, we are now dealing with places in form of a network of relations and connections. Places are subject to more and more logistical modeling concepts, which, for example, establish an understanding of “City as Stage, City as Process” or describe urban places in the tension between “control space and ludic space” (McQuire 2010).

Geomedia seeks to marry the interests of the online community networking “geotaggers” with those of the psychogeographer. The separation between locative media and mediated localities, between annotative and phenomenological geomedia, will therefore presumably be almost impossible to maintain in the future. This will certainly be the case when objects of all types fitted with RFID radio tags are incorporated into the Internet. “RFID forms part of the Google strategy,” pronounced Google’s “Chief Internet Evangelist” Vint Cerf, who simultaneously introduced one of his favorite topics: IPv6, the Next Generation Internet Protocol (Boulton 2008). The main feature of IPv6

driving adoption today is the larger address space that allows any object to be given an Internet address. Will geomedia therefore emerge in the near future as the next great wave of modern digital technology? There are several indications that this is happening:

1. Free data

Like the early Internet, which relied on public funding and open standards to foster innovation, there exists a vast untapped reservoir of geo-located content referring to every part of the world that has been publicly funded through taxation, in the form of GIS data. Geomedia that function on the basis of these data therefore appear to be a harbinger of the next Internet development: Web 3.0.

2. Scarcity of information

The second argument in favor of this, is the scarcity of information that only appears to contradict—at least on paper—the free availability of geodata. Just as the music economy only blossomed once music was available as a “thing” to be bought on records, an image economy might blossom once images can be allocated to temporal and locally limited spatial resources and events. Scarcity plays a very central role in this, as is the case with all economic processes. Even if digital data can themselves never be scarce, which is the basis of the current crisis in the media economy, the spatial and temporal coordinates still create a region of scarcity within digital information.

3. Geosemantics

Linking geo-references with images creates the possibility of accessing the ever-increasing quantities of visual information. It is obvious that an increasing number of images are being produced, transmitted, and stored on the Internet. This results in a situation known from the earliest days of the Web, even though at that point it was text-based data at the fore. When information is present in excess, accessing it determines whether it actually becomes available. The history of protocols and formats on the Internet demonstrates how a series of different types of orders were drafted to this end, before the www standard finally became established (Haigh 2008). In the next step in development, these vast quantities of data were made available by text-based search engines. Metadata fulfill an important task in the search for images and in the indexing of visual information, as the so-called “content” of the image is limited in its ability to aid in a search through large numbers of images in a constructive manner—it’s a problem of the “semantic gap” (Smeulders et al. 2000). This is where location coordinates can help in the archiving and sourcing of images; after all, increasing numbers of appliances are now capable of linking image data with GPS coordinates. Image formats, such as the EXIF standard used by most digital cameras, already contain corresponding metadata fields. At present, more and more cameras utilize GPS technology to automatically geotag digital images, recording the latitude and longitude of the location where each

photo was taken. Photo-sharing Web sites such as Picasa provide options for **sharing images on a map of the world** and can utilize the information stored in the image's EXIF file to pinpoint the spot where the photo was taken.

Dan Catt, senior engineer for Flickr, who says about himself that he introduced geotagging into the Web sphere in March 2005, announced at the 2008 *Where 2.0 Conference* that Flickr will georeference their complete image stock (a sample is visualized in **Crandell et al. 2009**); thus in the near future one will probably not find any picture and any video on the Web that is not georeferenced. At the same year, Google announced a fundamental change in their product policy: the change from "Google and Maps" to "Google on Maps" (Ron 2008), which means that Google Maps and Google Earth are to become the platform or basic layer for any kind of information we are looking for. Maps may thus become a dominant way of interacting with networks. This may, however, constitute only a first step toward the vision that one day it might be possible to establish 3-D spaces as a medial interface (Manovich and Thielmann 2009). "Physical space, when rendered a tool, becomes a metaphor for the network" (Gordon 2009, 397). While such a tool continues to provide instructions for navigating physical reality, at the same time, it also always provides a platform on which all data can be plotted.

The combination of mobile devices with positioning technologies is opening manifold ways in which geographical space can be encountered and drawn. It thereby represents a frame through which a wide range of spatial practices that have emerged since Walter Benjamin's urban flâneur may be looked upon anew (Kingsbury and Jones 2009). Or are locative media and mediated localities only a new site for old discussions about the relationship of consciousness to place and other people? In the early days of sea travel, it was only the navigator who held such awareness of his exact position on Earth. What would it mean for us to have as accurate an awareness of space as we have of time? In order to answer that question, let us have a brief look at how the nature of humankind's relationship to the environment is changing with developments in technology such as geomedial.

GEOMEDIA AS CULTURAL TECHNIQUES

Media technology and apocalyptic thinking have always had a close relationship. For instance, the invention of the printing press was a key factor in the spread of the reformation. In addition, the stock market crash of 1929 was the starting point for Hollywood's Golden Years in the 1930s.

ESTABLISHMENT OF	CRISIS RESOLVED/INDUCED
PRINTING PRESS	REFORMATION
PHOTOGRAPHY, SILENT FILM	FIRST WORLD WAR
CINEMA	WALL STREET CRASH
RADIO	SECOND WORLD WAR
SATELLITE TECHNOLOGY	COLD WAR
VIDEO TECHNOLOGY	SEXUAL REVOLUTION
GEOMEDIA TECHNOLOGY	GLOBAL WARMING

Based on these interactions between media evolution and political/social/ecological revolution, one could now draw the conclusion that geomedias provide an adequate answer, a suitable media setting for climate change. Right now, it seems that locative media and mediated localities are the cultural "afterimages" of human-induced natural hazards. On one hand, in this case, the technological deterministic argumentation states that the rise of new mapping and tracking technologies provides the possibility that anyone can generate data and link it to map-making software in order to create alternative versions (countermappings) of the world. On the other hand, however, the argument can also be made that the "democratization" of GIS must be understood as a consequence of cultural requirements.

In general, the history of geographic information technologies shows that these technologies are commonly accepted for the production of knowledge of human populations only if there are fears of risks that can be "exploited" to justify deployment of mass geosurveillance and data mining (see Crampton 2008). It is therefore no coincidence that Google's entry into the realm of spatial information coincided with Hurricane Katrina in 2005 (see Crutcher and Zook 2009). This is when map mashups started appearing in vast numbers, when Google and other major Web companies offered public API, and this is what made it possible for others, for instance, to use Google Maps as part of a mashup or to create and share placemarks in Google Earth by posting them to a broader geocommunity via online message boards.

Google's strategy has been to react to such contexts by using them, incorporating them as a layer into their products, as occurred, for example, with the introduction of "My Maps" in 2006. It is interesting that the relevance of geomedias to society has gained in importance in the wake of human-induced catastrophes that are difficult to grasp. This also reveals itself in the increased focus of locative media art projects on

the cultural context of climate change (see Himmelsbach and Volkart 2007; see the *Environment 2.0 Exhibition at the Futuresonic Festival 2009*). Geomedia obviously have the potential to support us in our understanding and management of natural phenomena like climate change. Above all, this is due to the fact that geomedia, as is the case with all indexical media, function as socio-technical graphs, through

1. supporting a relativistic instead of a functionalist moral position
2. taking a local instead of a global perspective
3. conceptualizing users as individualized actors instead of mass-mediatized recipients
4. visualizing the logistics of artifacts
5. making mediation processes transparent
6. tracing the actions of actants

In the following, these points will briefly be entered into. Let me start with the first point. Whether or not climate change can be viewed as real is very much a question of graphic representation (see Womack 2006). Consider, for instance, the famous example from Al Gore's *An Inconvenient Truth* showing a **broad-scale correlation between CO₂ levels and temperature**, then compare it to a **fine-scale zoom-in of the correlation** as seen by a climate-change denier who argues, "When you look in detail, change in temperature precedes the change in carbon dioxide" (Carter 2008). Both climate change supporters and deniers use the same data, but they come to completely different conclusions depending on the scale of their mediation.

What can we learn from this? Since there is no way science and technology can tell us *a priori* which accounts are meaningful and which are meaningless, it is essential to be able to compare contradictory accounts. "It is also the only way to repair the danger of giving a functionalist account of programmes and antiprogrammes" (Latour, Mauguin, and Teil 1992, 42). Most people are doing that right now by saying, "Whatever is really going on, it cannot be wrong to support the 'good guys' who are worried about the future of our children."

What is dangerous in a functionalist argument is not the function per se, but the essentialism that goes with it, and the avoidance of controversies about what counts as a function. In other words, relativism should redeem the sins of functionalism. This is why it is so essential to be able easily to shift points of view. (ibid.)

The same moral relativism is perpetuated by the definition of the actants. "We don't know what an actant is, apart from the fact that it is mobilized in one version of one narrative viewed from the point of view of one observer" (ibid., 43). The general public is thus aware of global warming only in the form of the long tail of translation processes mediated by satellite sensors, analogue-to-digital-converters, code, paper, TV stations, etc. In contrast, geomedia put us in a position where we can say something about our

personal climate change story (see *The EcoMap Lab at PICNIC '09* and *The Jungfrau Climate Guide* application).⁵

It seems strange at first to claim that climate, or to put it in more general terms, space and time, can be constructed locally, but these are the most common of all constructions. The mapping of science as well as of GPS traces is observer-dependent. This is important for any socio-technical graph, any “logistics of immutable mobiles” (Latour 1991, 237). Tracing-based locative media suggest that we can re-embody ourselves as individuals in an anonymous world (Tuters and Varnelis 2006, 359), and media art (e.g., demonstrated at the last two International Symposia on Electronic Art) makes the abstraction process visible: how we know what we know about our changing climate, the transition of graphs from things into signs that come to represent natural objects. This is, in fact, exactly what locative media art does: tracing the action of an actant in the world. This is thus the sixth and final indication of the way indexical media function (and therefore also how geomedial function).

This interweaving of indexical and geographical media comes to the fore if you look at the cultural analytics research environment running on *HIPerWall*, currently the highest-resolution displays in the world. “If slides made possible art history, and if a movie projector and video recorder enabled film studies, what new cultural disciplines may emerge out of the use of interactive visualization and data analysis of large cultural data sets?” asks Lev Manovich. “Media geography” might be one answer, as within this discipline metadata and digital traces were used “to create dynamic (i.e., changing in time) maps of global cultural developments that reflect activities, aspirations, and cultural preferences of millions of creators” (Manovich 2009), or, to get to the point, to create visual landscapes of large areas within media culture (see Manovich and Douglass 2009).

CONCLUSION: THE TERRITORY IS THE MAP

Along the lines of Bruno Latour’s thoughts on the consequences of digital traces on social and cultural studies, mobile locating techniques are giving software artists the power to make measurements that are as precise as those in the hard sciences (Anon. 2008). Thus, GPS mapping allows us to show the irrelevance of externalist explanations of science and the relevance of internalist explanations, where a statement, like climate change or financial crisis, is said to be accepted because of its own internal value.

The actor-network theory therefore constitutes a theoretical framework for media geography (see also Döring/Thielmann 2009), as it tends to conceptualize places prior to the network of heterogeneous agents (Hetherington 1997; Law and Hetherington 2000). It reveals itself to be a suitable heuristic for this subject area (see Galloway 2010) as, on one hand, the actor-media theory permits the sketching of locative media as a kind of manifestation of what Bruno Latour means by the “Internet of Things” (Tuters and Varnelis 2006, 362): by geotagging objects instead of people and having these objects

tell us their stories, locative media create an awareness of the genealogy of actants and agencies. On the other hand, the actor-network theory puts us in a position whereby mediated localities can be described as if there were nothing more in the territory than what is on the map—or, more concisely, using the words of November, Camacho-Hübner, and Latour (2010): “The territory is the map.” This provocative title of Latour’s most recent paper, which even had to be changed for publication, nevertheless follows, as does this volume, the virulent media-geographical analysis that “digital technologies have reconfigured the experience of mapping into something else that we wish to call a *navigational platform*” (November, Camacho-Hübner, and Latour 2010). In addition, media geography also accounts for a new discipline that helps to overcome the very distinction between physical and human geographies by “taking a map navigationally (in which case there is no relevant difference between human and non-human)” (November, Camacho-Hübner, and Latour 2010). Media geography therefore faces a glorious future packed full of conflict, which may change the scientific landscape. Let us hope that this volume will contribute a first step toward promoting upheaval in the thought processes in disciplinary camps.

This volume is based on presentations and discussions at the Locative Media Conference, organized by the junior research group “Media Topographies” of the Collaborative Research Center “Media Upheavals” at the University of Siegen. The research group would like to thank the German Research Foundation (DFG) for its generous financial support of this international symposium, held September 3-5, 2007, at the Museum of Contemporary Art, Siegen, Germany. Our special thanks go to Keith McLennan for putting the necessary finishing touches to most of the papers. We are also indebted to Philipp Petzinger for completing the essential task of unifying quotations and bibliographic information. Finally, we would like to thank the Aether editors, Chris Lukinbeal, James Craine, and Jason Dittmer, for making this volume possible.

ENDNOTES

¹Smith (1997) has yet to provide a concrete reference for the Baudrillard citation.

²Instead of referring to “the end of geography,” however, Flusser (1992: 92, own translation) simply states, “We must expel geography from the center of our visual field in order to understand the ‘hermeneutic’ quality of telematics.”

³When Virilio (2000 [1998]) refers to “the end of geography,” one rarely considers that this frequently cited hypothesis was formulated within the context of satellite technology, in particular Earth observation satellites, that lead to a “loss of the horizon-line,” geographical a-perspectives, and thus a “meta-geophysical reality.” Virilio’s concept of “metageophysics” was featured in his essay “The morphological irruption” (Virilio 1991 [1984]), thus preempting the discussion on “metageography” (Gordon 2009) and Google Earth.

⁴Google Lively was a 3-D virtual world social networking site that contained numerous small spaces, in contrast to Second Life, which contains a coherent virtual world. This Google stand-alone product made no innate connection to Google Earth or Maps; however, it is interesting to note that only a few days after the launch of Lively, numerous Google Maps mashups were created to localize the Lively spaces and connect them to each other (Clarke 2008; Taylor 2008).

After only six months, the Internet portal Google Lively was shut down on 31 December 2008, probably not least because Lively did not constitute any substantial added value when compared with Google Earth: "But the surprise virtual world entry is the one that arrived before Google Lively [...] and that's Google Earth itself, which is about as comprehensive a virtual world as you can imagine" (Writer 2008).

⁵Although not yet realized on a personal basis, it seems to be the common accepted aim of geoart and ecomedia that, if locative media artists want to create effective cultural and political changes when it comes to human environmental interactions, they need to change the way evidence is gathered (Jeremijenko and Gertz 2004; Himmelsbach 2007): "Artistic explorations should not be restricted to illustrating our scientific discoveries, as is done in contemporary climate-change showcases. Art could instead help us to experience and reveal our inner participation with weather and climate, the rupture of their balance and its meaning for our inner world, in the same way that landscape artists reframed the relationship of humans to their environment." (Leonardo "Lovely Weather" call for publications 2008)

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Locative Networking: Finding and Being Found

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ABSTRACT

This paper argues that locative media studies offers much broader insights on the logic of new media than is currently espoused. Media scholars have largely restricted the analysis of locative technologies to hand-held and immersive gadgets and experiences. I argue for an expanded theorization of the “locative”, one that develops a broader understanding of the conditions of networking of new media platforms, users, and content. In addition to developing a geographical perspective on media consumption and use, it is argued that locative media studies should seek to analyze the means by which users both locate information on networks and are themselves located. A theory of the “locative”, in other words, helps us understand the means by which we find information and also seek to be found on various technological platforms and networks.

INTRODUCTION

CAN WE BEGIN WITH THE PREMISE that locative media is part and parcel of the broader phenomenon called networked media? This seems like a relatively benign and commonsensical starting point, and not a terribly radical or polemical statement. We may add that locative media and networked media are enabled through various forms of connectivity. Again, this is nothing new. The so-called “backbone” issue, however—the source of many policy debates (Zittrain 2008), theoretical musings (Galloway 2004), and empirical mappings (Dodge and Kitchin 2000)—is rarely integrated into definitions and visions of locative media, as defined by Julian Bleeker (2006):

locative media [is] made by those who create experiences that take into account the geographic locale of interest, typically by elevating that geographic locale beyond its instrumentalized status as a ‘latitude longitude coordinated point on earth’ to the level of existential, inhabited, experienced and lived place.

Locative scholars, theorists and artists offer new media studies a personal geography—a first-person, hand-held, end-user perspective on networked media. Yet in part because locative devices are typically worn or hand-held, free of obvious networked outlets and plugs, there is always a danger in displacing the technological and economic conditions of connectivity for locative producers, researchers, and artists. As telecommunications demonstrate all too well, it is the technological protocols, interfaces, and political economies of locative harnessed networks (GPS, wireless, etc.) that enable—and restrict—the possibilities for such forms of mediated interaction, consumption and production. In other words, lateral forms of interaction, communication and display co-exist with hierarchical forms of access and infrastructure. The world is indeed flat, unless one seeks to extend beyond one's own horizon.

Yet a locative media studies also provides exceptional opportunities for networked research, in large part because it does promise to bring together “first-person”¹ mediation and networking within a broader networked infrastructure that calls into question existing and emerging forms of networked connectivity, interactivity, and content/service delivery. I argue that a redefined locative media agenda is, moreover, urgently required, in large part because networked media has increasingly adopted intra-net logics—where content platforms are hosted in discrete, (semi) secure databases, with closed architectures and password-protected entrees. The tremendous growth in social networking sites such as MySpace and Facebook, for example, poses a number of problems for researchers of network culture, ICT infrastructure or “cyber-geography.” How does one understand, map, and otherwise critique emergent forms of connectivity when content, links, and users are black-boxed and cyber-gated into an enclosed 2.0 universe? I propose that one answer to the growing concern about closed intranets lies in an appropriated view of *the locative*—as a logic of networked media, rather than an object of techno-fetishization (iPhone, Blackberry, etc.), embodied computing, or other hybridization of techno-embodiments. Returning to—and reconceptualizing—locative media may provide one avenue for disaggregating and mapping the new world of networked computing.

Conceptually, locative media studies has existed at the intersection between network geographies and personal geographies, a place where individual users are hailed by—yet also “speak” to—a much larger networked communications and computer infospace. To move toward this more dynamic, geographical perspective on network mapping, though a locative perspective would have to move beyond rhetoric about the death of screens and, to a lesser extent, interfaces—a popular trope most recently hyped by some of cyberculture's most revered voices. William Gibson's *Spook Country* (2007), for instance, offers a helpful point of departure, through one of the book's protagonists, Alberto, a locative media artist in Los Angeles. While Gibson writes that Alberto's locative device contains a small screen (a cell phone with a GPS device taped to it), his description of the ensuing visual experience is more akin to an immersive environment:

She slung the duct-taped hybrid toward Sunset, seeing a crisply defined, perfectly level plane of white cruciforms, spaced as on an invisible grid, receding across the boulevard and into virtual distance. Their square white uprights, approximately level with the pavement, seemed to continue, in increasingly faint and somehow subterranean perspective, back under the rise of the Hollywood Hills.
(Gibson 2007, 22)

At first glance, Gibson's use of locative media might justifiably be explained as an extension of his much-quoted canonization of "cyberspace", yet upon further inspection there is more at play. Gibson's use of "the locative" is as much concerned with *re-locating* communication, networking, and in his example vision and art to another digitized environmental plane, as it is about *being located* in a post-9/11 world. And here I not only make reference to the important work of David Lyon (and others writing about privacy-related matters under the rubric of "surveillance studies"²), but also to somewhat of the inverse, the culture of everyday publicity, promotion, and celebrity seeking—the desire to *be located* or found (Andrejevic 2003).

In the spirit of network mapping, research that seeks to track, visualize and connect network actors, protocols, content, and platforms, this paper similarly builds upon Gibson's double articulation of locative media, *a logic of finding and being found*. Traditionally, locative media's objects are, one must presume, somehow effaced, hidden, displaced, or otherwise out of view, corporally or otherwise. However, to restrict this virtual nature of experience, affect, communication, interaction, history, etc., to locative media is also to restrict our abilities to speak to the social, political and economic ramifications of emergent forms of networked media.

Finding and being found on/through networked computing is a long-standing problem for a distributed and multi-layered communications environment that has multiple points of departure for users, be they portals, default starting pages, password protected sign-in pages, etc. For the good part of a decade search engines and default ISP registration pages have received the most visits from internet users keen to track down specific information or simply try to boil down the infinite possibilities for surfing the net. Writing in 1996, just a few short years after the introduction of the graphical web browser, Richard Seltzer, the self proclaimed "[Internet Evangelist](#)" for Digital Equipment (later Compaq), nicely summed up this phenomenon in an online essay suitably entitled "The Joy of Being Found:"

When old friends who I hadn't been in touch with for 10-30 years started sending me email—about half a dozen of them each month—at first I thought: isn't that amazing that all those people would be looking for me? And isn't it great that search engines like AltaVista make it so easy to find people on the Internet?

Then it gradually dawned on me – why should they look for me? Just like me, they probably each have a hundred or more people who they once were close

to (old roommates, business associates, etc.) who they've lost touch with. And why, out of all those others, should they actively come looking for me?

With a few quick queries I soon established that they weren't looking for me at all. They were looking for themselves. Yes, they had gone to search engines (most to AltaVista), and there they had done what most people do at those sites—they had entered their own name as the query. And since I have a lot of content at my Web site—including lots of my writing—many of my old friends are mentioned somewhere there, typically in the list of thank you's at the end of a book. Searching for themselves, they chanced upon me; and delighted at that unexpected occurrence, they sent me email.

Today however, as users—and their first-person perspectives on digital content—have become integral dimensions of networked media (particularly on mobile and Web 2.0 platforms), network geographies have become increasingly more difficult to map. This essay investigates the technologies of finding and being found—a mix of transparent and neo-panoptic technologies that litter the current networked media environment. The paper continues with an overview of cross-platform internet and network mapping—as manifest by hyperlink-centered forms of research and mapping—before moving into a more first-person/2.0 perspective focused on the use of tags and metatags, small pieces of code that provide a cross-networked index of sorts. Dating back to the earliest models of personal and networked computer (Bush 1945), hyperlinks serve today as a near-universal means of connecting users, content, and many communication and information software platforms. As such, they have served as nodes in new cybergeographies, visualizations of networks that seek to visualize connections within and across emerging information and communications technologies. Yet, as we shall see, the slow demise of geographic URL suffixes and other shifting domain name practices have slowly decoupled the information economies from their geographic/national locations, making it more difficult to geographically locate ICT users, technologies, and texts. The emergence of first-person web-based social networking platforms, including blogs, has—through the use of various tags—also transformed the geographic into a personal auto-graphic,³ making it again more difficult to trace hyperlink networks across and through such closed sites. The paper thus concludes with a discussion of how the emergence of personal identification numbers, from Facebook accounts to cell/mobile phone “PINS”, has also impacted upon the politics of finding and being found in our network age.

DISAGGREGATING CODE: FROM LINKS TO TAGS

A locative media studies that questions the nature of connectivity between users, clients, and servers is one that requires a dis-assembling of object-oriented icons and GUI inter-operability while looking to a broader plurality of web-based code comprising another layer of the internet's backbone (which would of course include the code that

enables such interfaces and images). To be more precise, I use the term “disaggregation” as a method of stripping, parsing, or ripping, the underlying code from interface-heavy programs and platforms. This code, or metadata, is disaggregated in the sense that it is not only held up as the instructional form of language that provides the contours and conditions of networking, it also signifies the need to recognize the multiplicity of functions that websites now serve—most importantly sites of editorial control, product placement, user tracking/profiling and signposting (pointing out recommended paths to follow on the web or internet)—in short information aggregators.

This call to disaggregate is in large part influenced by studies of hyperlink economies, protocols, and networks. The `HREF` or hyperlink tag is among the most analyzed techniques on the internet, and of course previously in hypertext programs, and in early hypermedia visions offered by Vannevar Bush and Ted Nelson. Foot and Schneider (2006) go so far as to claim that hyperlinks are “the essence of the Web,” since they serve as the conduit for distributed and non-linear networking through and across `HTML` pages. For theorists of network paradigms, hyperlinks play a central role in connecting together content, software, platforms, servers, and of course users (to name but a few actors in network culture). Visualizations of such links have almost become synonymous with digital or cyber-geography, in part because of their amorphous, genetic, distributed and, of course, cloud-like aesthetics. Where classic cartography details land, water and elevation, interspersed with more abstract political lines and symbols (typically borders and state capitals), network maps are more commonly associated with transportation-based cartography. They are maps that depict possible points of connectivity as traffic. Such points/techniques of connection within and across digital networks and software applications are, moreover, a central component in retrieval and ranking algorithms on the net, techniques for finding people and content on the net in other words.

Visualizations of such hyperlink networks and research have mirrored Paul Baran’s decentered computing diagram, implicitly—or explicitly—highlighting the non-linear form over physical space or geography. Decentered hyperlink research tends to highlight the direction of links, and in some instances the type of domain names included in networks, offering the possibility of mapping discourses, issues, and other content as articulated across link networks, and providing insight into the spread and dissemination of ideas across various domains. The govcomorg foundation offers a comprehensive list of domain name suffixes, those few letters that denote geographical location, or (to be more precise) country where the website domain is registered. These are in addition to the standard list of domains used worldwide (.com, .org, .net, .edu, etc.).

Critics of domain names—the system of internet addresses—have long noted and bemoaned the fact that the United States is one of the very few countries that does not have to use a country-specific suffix for its registered websites. Conversely, sub-

national communities in search of national independence around the globe have also argued that their aspirations to sovereignty be recognized through the use of specific, geographically indexical, domain name suffixes. Daniel Turp, for example, a member of the separatist Parti Québécois, recently launched a petition to have the Canadian Internet Registry Authority authorize the use of “.Qc” for Quebec-based sites (Smith 2008). In other words, while some jurisdictions have avoided geographic markers in the practical use of domain naming (*making it harder to “find” them*), others—such as Quebec—appeal for such addressing as a form of geo-national and political recognition (*want to be found*).

The overall picture of domain name registration, however, suggests an ongoing process of abstraction and anonymity with respect to geographical location. Domain names were once very easily tied to their actual geographic location—Matthew Zook (2005, 159), for instance, notes that in 2005, 84% of registered domain names in “whois” databases match their corporate registration filings (for zip or postal codes). However, recent changes in privacy policies have restricted the publication of geographic-specific forms of information, decoupling domain names from identifiable towns and cities. And this is to say nothing of the incredible growth of closed proprietorial social networking sites such as Facebook.

The Canadian Internet Registration Authority (2008) does not permit the publication of geographic information on domain name registrants:

6.1.1 Disclosure of Information Concerning Domains Registered to Individual Registrants.

The following information concerning dot-ca domains registered to Registrants who are individuals and who are Canadian citizens, permanent residents, legal representatives or aboriginal persons as they are all defined in the General Registration Rules (collectively referred to as ‘Individual Registrants’ for the purposes of this Part 6 of this Policy) shall be made accessible to interested third parties through the WHOIS: 1. domain name(s); 2. Individual Registrant’s Registrar’s name; 3. Individual Registrant’s Registrar’s number assigned by us; 4. the expiration date of each Domain Name Registration of an Individual Registrant; 5. the registration date of each Domain Name Registration; 6. the last changed date of each Domain Name Registration; 7. whether the Domain Name Registration has been suspended or is in the process of being transferred; 8. the Internet Protocol address of the primary name server and secondary name server(s) and, if applicable, the tertiary, quaternary, quinary, and senary name servers for each Domain Name Registration; and 9. the corresponding names of those name servers.

Finding others and being found geographically has historically been a question of finding addresses, postcodes, rural route numbers or other such location-based markers. Today, global positioning systems, replete with hand-held and even wearable devices,

have decreased our reliance upon exact and presumably unique *registered* addresses. The “Know Where Jacket”, a GPS wearable garment, thus once again highlights the personal in much less knowable—or again, *registered*—spaces:

Areas of application for the Know Where solution are nearly unlimited and range from luxury, entertainment and leisure applications (climbing or biking in the mountains, sailing, etc.) to safety and medical device technology, and extend to applications in traffic and logistics. (Anon. 2006)

Domain names have similarly gone “off-road”. Where once web pages ended with domain names that pointed to geographic places, namely countries, new domain-naming protocols, often working in conjunction with 2.0 platforms, have shed themselves of their geographic location. In lieu of such geographic forms of addressing, of being found, new forms of self-tagging, of seeking to be found, now proliferate.

GETTING LOCATED: USER-GENERATED TAGS

While the internet industry website searchenginewatch.com playfully insists over and over that: “Meta tags are not a magic solution. Meta tags are not a magic solution. Meta tags are not a magic solution” (Sullivan 2007), the site only serves to reaffirm the centrality of meta tags as the most important *locative* form of software code on the internet. Meta tags come in various forms, some auto-generated by software and bots, others inserted by technology-savvy users, programmers, blog and social network working site users/contributors, and designers. Prior to the Web 2.0 boom (YouTube, Facebook, Blogger.com, Flickr, etc.), web meta tags were largely hidden, in the sense that they didn’t appear on graphical user interfaces—although a quick use of a standard web browser’s “view page source” menu will render them visible. Some meta tags serve as digital versions of book titles, others relate to management of content (robot.txt), etc. Of particular interest herein, though, is the keyword meta tags, those single words inserted into a web page’s so-called “header” that serve as indexical magnets—terms that the search engines use to categorize and structure their seemingly infinite web search engine databases.

Recently, the use of tags on Web 2.0 platforms, such as MySpace and Facebook—sites designed to encourage users to be found—has moved from the backend code to front end interface profiles. While geographic tags still exist on such sites, including the institutional, regional, or city “network” that users identify as belonging to a specific location, social networking users call out to be found through their connections with friends (their friend networks), and their aggregated social, political and cultural affinities (what marketers would call their psychographics). The locative logic of social networking sites is thus more akin to a social club—one must be a member of Facebook to find others and to be found by old friends, but once in the network, affinities, tastes, likes and dislikes are easily browsed, navigated and, most importantly, located. Those

on the outside of such password-protected sites—including such power information aggregators as Google—are now finding it increasingly more difficult to locate socially networked content.

CONCLUSION: TAGS TO IDs

Moving forward, then, locative media theorists and researchers must adapt to the new economy of links and tags, broadening the focus to include not only platforms such as Facebook, first-person interfaces, or user-profiles themselves, but also to include the digital objects that such actors upload, circulate, comment upon, and repurpose (text, images, videos, etc.). This “object oriented” geography is of course not necessarily new—objects (particularly objects of value) have been tagged with IDs, bar codes, and other forms of ID for many decades now, allowing for the near real-time tracking of goods and services. Online, however, the respective IDs for individual objects and users have become one of the few remaining means of mapping relationships, technologies, and users on the internet. Due to the demise of a geographic net (where addresses are affixed to names and places), locative media projects must now turn to discrete digital objects in the hope of better mapping the growth and impact of closed/password protected platforms and networks on the internet. Locative research on the web can thus offer a new geography of sorts—a picture of where objects and users flow, where they migrate to (but never return from), where they are reshaped and re-circulated, etc. The logic of “being found” in this object oriented approach might also offer as a counterbalance to surveillant trends online, to the degree that it places more emphasis on the life and “geography” of a range of digital “objects”, as opposed to those that necessarily produce or consume them (users and user-profiles). Regardless, this reformulated theory of locative media studies at the very least offers a more flexible framework from which to understand the shifting dynamics of networks, through their content, users, and platforms—most importantly pointing to the conditions and politics of (dis)connectivity among these web actors.

ENDNOTES

¹A term that I much prefer to “ubiquitous” that all-too-often connotes a disconnection from experiences, geographies, and techno-economic networks.

²See the journal *Surveillance and Society* for a good overview of this academic tradition: <http://www.surveillance-and-society.org>.

³Thanks to Ken Werbin for this particular turn of phrase/concept.

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Locating Media Futures in the Present

Or How to Map Emergent Associations & Expectations

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ABSTRACT

Rather than attempting to predict or even imagine specific media futures, I am concerned with how to locate present associations and expectations that serve to encourage particular futures and discourage others. Drawing on relational and performative theories including actor-network theory and a sociology of expectations, researchers are encouraged to critically examine how we approach our work today, along with our very definitions of—and how we understand relations between—humans, computers, and everyday urban life. The article closes with a set of five possible questions to stimulate reflection and conversation about any futures we seek to describe or explain.

INTRODUCTION

IN CONSIDERING THE TOPIC OF EMERGENT LOCATIVE MEDIA and mediated localities, this short article takes a slightly unusual perspective in order to provoke further thinking around some taken-for-granted aspects of new media research. Beginning with the observation that many theories of urban technological innovation and related visions of locative media maintain a sense of consistency and coherency that is difficult to reconcile with their future-oriented and largely unpredictable qualities, this article seeks to identify a set of theoretical tools and preliminary questions that can help researchers better understand the people, places, practices, and ideas that are currently being mobilized to account for a future that has yet to happen. Put a bit differently, rather than attempting to predict or even imagine specific media futures, this article is concerned with how to locate present associations and expectations that serve to encourage particular futures and discourage others.

Part of the trouble we encounter when trying to understand emergent media technologies stems from the tendency for researchers across a variety of domains to discuss new media technologies as representational objects or artifacts rather than as performative “practices, arrangements and ensembles...which permit certain objects to materialize or solidify and not others” (Mackenzie 2003, 3). As information technologies, both mobile and located, become more pervasive in everyday life, the analytical usefulness of more relational concepts becomes evident, and sociological approaches to association and expectation can provide a means to focus our investigations on more performative and less representational (cf. Thrift 2007) understandings of emergent media and social and spatial practices. The primary benefit of this sort of approach is the possibility of pinpointing precise moments and locations in which we can still intervene and alter the course of events, thereby emphasizing and revitalizing the roles of social, cultural, and political agency in the development and use of new media technologies.

In order to draw out these dynamic relations, this article follows Deleuze and Guattari's (1983, 25–26) approach to mapping:

The map is open, connectable in all its dimensions, and capable of being dismantled; it is reversible, and susceptible to constant modification. It can be torn, reversed, adapted to montages of every kind, taken in hand by an individual, a group or a social formation... Contrary to a tracing, which always returns to the 'same', a map has multiple entrances.

Accordingly, the article asks more questions than it provides answers. It is my hope that readers will find their own entrances and exits from this necessarily partial and incomplete map, and in the process recognize the parts we all play in making particular mediated locations and locative media possible, and others impossible.

A SOCIOLOGY OF TRANSLATION OR ASSOCIATION

Beginning with actor-network theory, or what started as a 'sociology of translation,' Michel Callon (1986) outlines four moments of translation in scientific research that can help us understand how new technologies and media ecologies emerge: 1) problematization, or how ideas and things become indispensable; 2) *interessement*, or how allies are locked into place; 3) enrollment, or how roles are defined and coordinated; and 4) mobilization, or how issues are represented to others. The first 'moment' is a double-movement in which a research problem is identified and, more importantly, associated with particular sets of actors. Rather than being reductive, these problematizations comfortably combine humans and non-humans in complex ways (cf. Latour 1999). However, problematization involves claiming that it is in the interests of all the actors for the research to proceed, and the identities of the actors are defined in ways that make the researchers indispensable. Callon calls these material and semiotic associations “obligatory passage points” and notes that problematization depends on

“movements and detours that must be accepted as well as alliances that must be forged” (Callon 1986, 220). The second ‘moment’ involves both submission to the original plan and refusal to accept the proposed transaction. During periods of *interessement*, actors form and reform identities, orientations, and objectives, and their actions attempt to define and stabilize relationships between actors. These actions and devices can be forceful, seductive, practical, and so on, depending on the situation.

Not all problematizations result in enrollment, but if the *interessement* is successful, then the actors move to define, coordinate, and enroll themselves and each other into particular roles. “To describe enrollment is thus to describe the group of multilateral negotiations, trials of strength, and tricks that accompany the *interessement* and enable them to succeed” (Callon 1986, 222). As one might imagine, these devices and actions are of particular interest as this is how relations or associations change and remain the same. And of course, at stake in these scenarios are relations of power; assemblages of identities and objectives are often competing and contradictory. Negotiations that take place during problematization; *interessement* and enrollment invariably involve more individuals than a given assemblage claims to, and indeed is able to, represent. This question of representation, or who speaks on behalf of whom, is of clear social, political, and ethical concern, and Callon reminds us that this situation also raises the crucial question, “Will the masses follow their representatives?” (Callon 1986, 223). If ‘spokesmen’ (i.e. people, things and ideas) are designated by putting “intermediaries and equivalences” into place, then looking at these things also allows us to see who and what are silenced or denied a place on the playing field.

To reiterate, in this scenario participating humans and non-humans are continually displaced and transformed through performative practices and processes of representation. Continuing negotiations between the representatives seek to mobilize and commit absent or silent actors, and if the mobilization is successful, these relations will be accepted as ‘real’ and sometimes even ‘normal’. This mobilized reality—otherwise known as an actor-network—is “a result of the generalized negotiation about the representativity of the spokesmen. If consensus is achieved, the margins of the maneuver of each entity will then be tightly delimited...But this consensus and the alliances which it implies can be contested at any moment. Translation becomes treason” (Callon 1986, 225). If translation is a process always already involving instability, displacement, and contingent ordering, a sociology of translation might also productively be referred to as a sociology of association (cf. Latour 2005), a point to which I will return shortly. For now, my goal is to continue to draw out a processual understanding of emergent social, spatial, and technological relations, and Mackenzie (2003, 4–5) suggests the concept of transduction as one option: “Transduction provides a way of thinking about technologies processually, that is, as events rather than objects, as contingent the whole way down, rather than covering over or reducing contingency...Much of what is represented as ‘new’ is in fact the capture and containment of the processual mode of

existence in technology.” Applied to mediated locations and locative media, the concept of transduction allows us to shift our focus from networked objects or spaces to diverse procedures or performances in which social, spatial, and technological assemblages or associations take shape.

Mackenzie (2002) suggests that technicity (following Simondon) is a transductive way of understanding technology in terms of flow and movements between abstraction and concreteness, or virtuality and actuality. These and related ontological categories—the virtual, concrete, abstract and probable—have also been explored in terms of intensities and flows by Shields (2003), and the notion of technicity focuses our attention on these fluid relations and a sense of becoming. As Mackenzie further explains, “beyond technical objects, technicity inheres with the relationality of the ensembles or assemblages composed of bodies, institutions, conventions, representations, methods and practices. Read transductively, technical objects evolve over time by articulating diverse realities with each other. Technicity is a transcontextual linkage which can be objectified in context-limited ways, but also exceeds its objectification, stabilization or immutabilization” (Mackenzie 2003, 18). In other words, any given application of context-aware technology may be understood to comprise its contexts of research, development, manufacture, sale, implementation, use, and eventual disposal. Shifting socio-technical arrangements are negotiated in particular space-times, and it becomes impossible to reduce locative media to discrete (or stable) objects of computation, or to singular representations. And so, in order to begin to understand mediated locations and locative media transductively, we must seek out their intimations, or what Van Loon (2002) calls “shadows and resonances,” and begin to trace their flows.

To help us do this, we may return to Latour’s (2005, 108) claim that actor-network theory is unique in science and technology studies in part because of its methodological stance that the social is “to be explained rather than providing the explanation.” Latour’s actor-network theory, or a sociology of associations, is more properly a methodology:

[The] ‘social’ is not some glue that could fix everything including what the other glues cannot fix; it is what is glued together by many other types of connectors....[However] it is possible to remain faithful to the original intuitions of the social sciences by redefining sociology not as the ‘science of the social,’ but as the tracing of associations. (Latour 2005, 5)

Integral to these associations are non-linear movements and changes in trajectory, as well as path-dependencies and obduracies, all of which are particularly difficult to trace during the early stages of a technology’s development without also turning to research on global spaces of complexity (see for example Thrift 1999; Urry 2003). To study mediated locations and locative media at this point in time is still largely a future-oriented activity. That does not mean that they do not yet exist, but rather that they continue to act in the present as imaginings or visions of a “proximate future” (Bell and

Dourish 2007). For our purposes, then, a sociology of translation or associations must also become a sociology of expectations.

A SOCIOLOGY OF EXPECTATION

Just as actor-network theory (Law and Hassard 1999; Latour 2005) has, during the past decade or so, grown in influence both within and beyond science and technology studies, the constitutive, performative, and generative qualities of social expectations have increasingly been recognized as playing important and intriguing roles in technological innovation (Brown et al. 2000; Hedgecoe and Martin 2003; Brown and Michael 2003; Borup et al. 2006). Technosocial expectations are considered to be highly situated in the sense that they occupy particular spatial geographies and demonstrate particular temporal patternings. And yet, as Borup et al. (2006, 293) explain, “expectations play a central role in science and technology not least because they mediate across boundaries between different scales, levels, times and communities.”

A sociology of expectations looks to the affective roles of imagination and desire (i.e. the capacity to be moved) in shaping technological change. Like the complex relations hinted at earlier, expectations are generative in the sense that they:

...guide activities, provide structure and legitimation, attract interest and foster investment. They give definition to roles, clarify duties, offer some shared shape of what to expect and how to prepare for opportunities and risks. Visions drive technical and scientific activity, warranting the production of measurements, calculations, material tests, pilot projects and models... They play a central role in mobilizing resources both at the macro level, for example in national policy through regulation and research patronage, and at the meso-level of sectors and innovation networks, and at the micro-level within engineering and research groups and in the work of the single scientist or engineer. (Borup et al. 2006, 286)

And expectations are performative in the sense that they attract interest from potential allies, define roles, and “build mutually binding obligations and agendas.” As a sociology of translation would also have it, expectations are “central in brokering relationships between different actors and groups” (Borup et al. 2006, 289) and this scenario raises interesting questions about relations between imagination, materiality, and embodiment in technological innovation, as well as reconfigured socio-spatial relations. It also explicitly ties expectations to affect, as affective contagion (or lack thereof) increasingly plays a central role in processes of translation.

While context and location-aware technologies can be seen as historically embedded within complex global assemblages of military, industry, government, and public interests—including a fundamental belief in technological progress—they also currently occupy spaces that hinge on a future yet to happen, or futures that may not ever happen. Borup et al. (2006, 285) claim that “novel technologies and fundamental

changes in scientific principle do not substantively pre-exist themselves, except and only in terms of the imaginings, expectations and visions that have shaped their potential.” Or as Latour rather elegantly explains,

To say something is constructed means that it’s not a mystery that has popped out of nowhere, or that it has a more humble but also more visible and more interesting origin. Usually, the great advantage of visiting construction sites is that they offer an ideal vantage point to witness the connections between humans and non-humans. Once visitors have their feet deep in the mud, they are easily struck by the spectacle of all the participants working hard at the time of their most radical metamorphosis...Even more important, when you are guided to any construction site you are experiencing the troubling and exhilarating feeling that things could be different, or at least they could still fail—a feeling never so deep when faced with the final product, no matter how beautiful or impressive it may be (Latour 2005, 88–89).

All of this reinforces the idea that locative media and mediated locations involve persistent tensions between pasts, presents, and futures that make certain identities and objectives possible or probable, and others impossible or improbable. Expectations can be positive or negative, and especially in the case of technoscience, are often put in terms of utopian or dystopian futures. Expectations in such cases are also associated with the belief that technoscientific progress is both a requirement and a promise, where practitioners, advocates, and adversaries of locative media and related technologies assume certain inevitabilities and feel obligated to deliver the best possible product, service, or alternative solution in response.

To question such media technologies today is to visit a few ruins and a host of construction sites, as well as to follow “future abstractions [and] expectant projections that alter the now” in ways that involve “the future working back on the present” (Borup et al. 2006, 289). As these “wishful enactments of a desired future” are made real, or actualized, through a range of embodied interactions and material objects, “promissory commitments become part of a shared agenda and thus require action” (Borup et al. 2006, 289). In these ways, future-oriented visions of locative media and context-aware computing can be seen to work in the present to shape current relationships and provide particular orientations towards the past, present, and future.

As Brown (2006, 9–10) continues,

There is an emerging moral space developing here where failure to invest now may result in moral recrimination later. Futures and expectations are, by and large, shared attributes that in some circumstances can become embedded in what we might call ‘communities of promise’...Communities of promise are highly complex and multi-authored enterprises. It is rarely ever possible to ascribe responsibility for expectations to one actor rather than another... [D]ifferent participants in a community of promise ‘conspire’ or ‘collaborate’

in the authorship of a future...Agency is also complex across time as well as across present communities of promise. There are no 'first causes' but rather a long and complex prefiguring of expectations through events, practices, statements and promises stretching through time.

As discussed earlier, these prefigurings refer to particular interests invested in the present, or in present potentials: "To enable hope requires the coordination and management of the conduct of individuals and groups so that a particular future may come into being" (Novas 2006, 291). If a particular translation has been successful, certain identities and associations become irreversible or path-dependent. If truth can be loosely tied to materiality and hope to imagination, then expectations can be seen as relational objects that act as 'bids' or tenders on the future (Berkhout 2006). These bids and expectations are understood to be conditional and flexible, integral to the complex material and symbolic transformations that occur in processes of translation and bring about particular associations.

The situatedness of associations should also compel our attention to the situatedness of expectations. As Hayles (2005, 132 & 148) points out with regard to artificial intelligence research paradigms,

Whether or not the predicted future occurs as it has been envisioned, the effect is to shape how 'human being' is understood in the present...[T]he relation between humans and intelligent machines thus acts as a strange attractor, defining the phase space within which narrative pathways may be traced. What becomes difficult to imagine is a description of the human that does not take the intelligent machine as a reference point. [...]

The future echoes through our present so persistently that it is not merely a metaphor to say the future has arrived before it has begun. When we compute the human, the conclusion that the human being cannot be adequately understood without ranging it alongside the intelligent machine has already been built into the very language we use.

Returning to the case of locative media and mediated locations, such a perspective suggests that contemporary expectations around the future have more to do with present social, spatial, and technological concerns than serving as future predictions. Likewise, expectations about mediated locations and locative media shape how we approach research in these areas today, along with our very definitions of—and how we understand relations between—humans, computers, and everyday urban life.

Since this suggests that tomorrow's expectations and today's associations are bound up in rather complex (i.e. non-linear, unpredictable) ways, it may help to recall Gibbons' et al. (1994) concept of "Mode 2" knowledge regimes that depend on a surplus of producers, distributors, and audiences that create more and more heterogeneous and heterarchical knowledge claims. Along with the kind of interdisciplinarity that

historically underpins much research in networked technologies and new media formats enable associations that rely on complex inscription devices (cf. Latour and Woolgar 1986) and other attempts at material and semiotic translation across traditional boundaries. This slippage between professional and other concerns is further complicated by the multiple roles that researchers take in everyday life. This returns us to my earlier claim that a primary means by which all this complexity is managed is through affective relations, or the capacity to affect and be affected by others. Accordingly, expectation and affect must be approached from two interconnected perspectives: one of technological 'becoming' and one of 'hope' for particular technological futures. In the first sense, affect refers less to emotion than to what Massumi (2002) describes as the potential, indeterminant, and emergent, and as Clough (2000, 4) explains, "it is its participation in the virtual that gives affect its autonomy—its escape from the particular thing that embodies it."

INTO THE FUTURE: PRELIMINARY QUESTIONS

Over the past two decades, the ability to imbue physical locations and objects with networked data has emerged not only as a social vision based on consumer capitalism, as well as values of access and connectivity, but also one predicated on substantial infrastructural (i.e. physical, political, and economic) change. What it will take to actualize such futures remains to be seen, although we are already getting glimpses of several possible and partial futures. As these mediated locations and locative media futures continue to unfold and change, I wish to advocate a critical perspective that clearly situates itself in the present while also maintaining a view to the past. In other words, before we go too far in debating which future is the most likely or the most appropriate, I think it may be beneficial to slow down and reflect further on where we are coming from and what we are doing right now.

If the 'new' is indeed the "capture and containment of the processual mode" (Mackenzie 2003, 4–5) then we might begin by asking the following questions:

- ✦ How do different theoretical and methodological perspectives stand to reconfigure relations between people, places, and things—yesterday, today, and tomorrow?
- ✦ Whose interests are currently served by positioning mediated locations and locative media as 'new,' or the 'next big thing'?
- ✦ Who currently has the power to imagine and debate future scenarios, and who is excluded or absent from these activities?
- ✦ What are the primary means by which certain players attempt to affect others?
- ✦ How does predicting, promising, or envisioning particular futures create present-day alliances and obligations that help to bring about those futures and not others?

Of course, these are not the only questions and perhaps not even the most important ones. But in attempting to answer them, we stand to identify other questions and concerns that might encourage greater reflexivity and accountability within the research community and foster further collaboration with other stakeholders and publics who will undoubtedly be affected by whatever future locative media and mediated locations emerge.

AUTHOR'S NOTE

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From Radar to Reader: On the Origin of RFID

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ABSTRACT

Within the locative media discourse, Radio Frequency Identification (RFID) ranks as a primary technological component of the evolving pervasive computing infrastructure. RFID tags appear to constitute the flagship among the armada of ubiquitous computing devices that are about to create a shift in spatial and situational awareness. While this promise still needs to be fulfilled in the mundane realm of technological feasibility, this paper takes a different tack on this special technology. It does not deal with the future (of the supply chain, the data privacy, the “technological unconscious”), but rather the past. Never mentioned in the literature, though strikingly apparent, is the similarity between the promised, new-fashioned capabilities of RFID systems and the allegedly outdated vision of cybernetics in its original form shortly after World War II. Taking this historizing nexus up, this paper seeks to emphasize the intrinsic tie between World War II innovations in the technosciences and current performative infrastructures by unearthing the technological and cultural origin of RFID. By spotlighting the pivotal transfer mode of RFID systems and untangling the historical roots of that very mode, it hopes to achieve a new perspective on RFID’s role in setting the technocratic stage of data-driven visibility, granular environments, and ambient intelligence. In this interpretation, the networked environment is not invented by current trends in information technology but has rather been continued and radicalized in a kind of *longue durée* mobilization of ambient electronic architecture.

THE PAST IN THE FUTURE OF RFID

WITH RFID, IT SEEMS, A CYBERNETIC WORLD finally becomes reality. Recent studies on ambient intelligence, informational landscapes or sentient cities draw increasingly on the envisioned capacities of RFID tags to identify—and, in the long run, to enact—things, bodies, and localities by exchanging information between them. RFID-enabled

pervasive computing promises not only to augment but to “intelligize” environments, to create a physical world that is analyzed and governed by the digital substrates of local and remote information ecologies in the form of constantly and automatically fed-back datasets and algorithms. What strikes me as a historian of media technology is the strong resemblance of the original formulation of cybernetics to the subjects of these studies. Cybernetic thinking understands the world as being, in its very behavioral constituents, commanded and controlled by the constant and automatic feedback of information between servomechanical entities (including the human himself), particularly in order to anticipate the behavior of the “other” (Galison 1994). As if risen from the dead, Norbert Wiener’s original scientific vision grins, more or less incidentally, through many of the writings on the subject.

Let me give a few examples. The “hybrid ecologies” that Eric Kabisch (Kabisch 2008) sees emerging—through tagging objects with RFID, as well as other pervasive computing technologies—derive from the synthesis of digital and embodied worlds by iterative cycles of sociotechnical practices. Yet this seems to be no more than a realization of the epistemological notion of a cybernetic system in which body and technology are merged by iterative feedbacks, including feedbacks in society, as might be seen in the works of Gregory Bateson. The shift which Nigel Thrift (Thrift 2004) detects in the “technological unconscious”—the habitual and subcognitive background of our everyday knowledge formed by the ever-changing assemblage of technologies and granularization of processes—is, when it comes to the pivotal knowledge of position and juxtaposition, heavily indebted to the “perhaps... most powerful” of innovations in changing the nature of the address, namely RFID. However, this re-formation of the



Figure 1

The locality of ubiquity is still only confined to a Glasgow restaurant (photo by author).

environment “has to be understood in the same way that we understand the growth of organisms and persons, in terms of the properties of dynamical self-organization of relational fields” (Timothy Ingold cited in Thrift 2004, 176). In other words, it has to be understood in cybernetic terms. Crang and Graham’s (Crang and Graham 2007) notion of “anticipatory technologies” such as RFID systems—technologies that track and predict in the interdevicive communication process—mirrors almost exactly Wiener’s initial ideas that spun off from his famous Anti Aircraft Predictor design in World War II. The only difference is that tracking targets in the “War on Terror” is becoming a function of surveillance data instead of measuring data of surveyed trajectories. What was once envisioned as an incoupling of data into servomechanical action is now applied to the data realm itself. More than that, both are basically exemplifications of statistical pattern stabilizations.

There is also a persistent focus on the overall political ramifications of RFID in the geomedia-literature, which sees identification technologies “as key components of governmentality and capitalism” (Dodge and Kitchin 2004, 1). Ruling by excessive data mining of transitory movements, or profiting by geodemographic profiling of the population, is in fact the ability to “kybernet” (the Greek word *kybernētēs* means “governor” or “steersman”) complexities by informationizing them. For whatever reasons, however, the world that, according to Wiener, acts by the information that is being exchanged in the system, seems now effectively en route to being constructed.

Now, this bold claim that RFID is all but the continuation of cybernetic thinking laid down in the aftermath of World War II may just not feel right. Maybe I am confusing metaphorical coincidences with actual designs here. After all, RFID might indeed stratify a qualitatively new dimension of connecting nature and signature that is beyond just certain command-and-control feedback mechanisms that simply become ubiquitous. But my historical experience tells me differently. Electronic media technology is not something that is just invented from scratch and thereby alters the ecology of things and minds overnight. It is rather a hybrid assemblage of techniques and tinkering that drags a lot of historical developments with it, and on its way gradually reshapes the behaviour of human and nonhuman actants and the relationships between them.

Thus, I would like to explore further the idea of a strong continuity in the history of electronic media—a continuity based on intrinsic design features and not just shattered by the advent of—RFID and other pervasive computing techniques. In what follows, I will try to look into the “tinkered” origin of RFID, an origin that indeed appears to date back to the days when Wiener’s cybernetics was born, in the late 1940s. Moreover, I will focus on the crucial feature of RFID—namely, its wirelessness. All the expectations of RFID’s ability to form an augmented digital space are in fact bound simply to its capacity to transmit data via radio signals. Thus, instead of dealing with all of the digital futurism attached to RFID, I will undertake a historical excursion into a time when sociotechnical environments were almost exclusively set by analog radio communication. No cell

phones, no Bluetooth, no GPS, no GIS, no Google Maps, no Internet, no computers, not even television centering life in everyone's household. In doing so, I do not discount the possibility that this excursion might not tell anything about the future of RFID. But I aspire to show that there is a point in looking into the historical origins of an enabling technology when one discusses the current state of locative media. This paper is making a case for media archaeology as a means of investigating the historically built-in possibilities and restrictions of any kind of contemporary media technology.

RFID AS WE KNOW IT

Doing a little bit of research on the history of RFID, one is sure to arrive at the name "Harry Stockman." It appears at the beginning of almost every historical overview of RFID: it is on web pages and in popular magazines, TV documentaries and company booklets, yet also in scholarly journal articles or textbooks (for example: Mohd-Yasin 2006; Garfinkel 2005a, 16). How did people come up with this name? That question is easily answered. They all simply copied the Stockman "fact" from a single short paper written by Jeremy Landt (Landt 2001), a former employee of the Los Alamos Scientific Laboratory in New Mexico, who dealt with RFID earlier in his career. In collecting material for his brief historical review of RFID, Landt searched the laboratory's library for the oldest document that would resemble the conceptual framework of what we now call RFID. He finally retrieved an article from the October 1948 issue of the *Proceedings of the Institute of Radio Engineers*, entitled: "Communications by Means of Reflected Power" (Stockman 1948). Crediting this "landmark paper" as "an early, if not the first, work exploring RFID" and placing it under the subheading "Genesis of an Idea," Landt spurred the erection of a virtual monument for its author, Harry Stockman.

Stunned by the fact that almost none of all the little RFID histories that draw on Landt's conclusion ever seems to have bothered to question this finding or even to have looked into Stockman's article, I was curious to find out more about this "Reflected Power Communication." I took Stockman's paper as a starting point to figure out what this was all about. Who was this man that nobody has ever heard of? What did he do that he became the "inventor of RFID"? What does it actually mean to "invent" RFID? And therefore: What is RFID?

To answer all these questions, let me start with the last one. As is fairly well known, the term "Radio Frequency Identification" refers to many varied applications, configurations and ways of transferring data between a more-or-less tiny chip (the so-called "transponder" or "tag") and an interrogating device (the "reader"). For instance, there are contactless smartcards to exert access control, there are passports with tags embedded for electronic authentication, bold tags placed in windshields for electronic toll collection, tiny tags implanted in cows and pets, there are tags put on books in libraries, other tags used for inventory management, special tags employed for pallet tracking, a different kind of tag again employed in the aerospace industry

to fight counterfeiting, proximity-tags in cellphones to allow for so-called “Near Field Communication,” and last but not least, there are selfmade tags employed in artistic or experimental installations to show the potential of RFID as a locative medium. To sum up, there is an endless variety of applications, spin-offs, and technical realisations of RFID, all of them defined by their own special purposes and needs, as well as their particular spatial properties and their technical and physical feasibility.

What makes this fragmented conglomeration worth summing up under a single four-letter term though is its characteristic capacity to broadcast data via radio waves. A few automatic identification technologies already exist (e.g. smartcards, OCR, language recognition, biometric-scans, and, above all, barcodes), but none of these is based upon an interface that enables computers to identify tagged objects at a range of up to several meters or inside a closed box, nor do they allow an actual two-way data exchange between identifier and identified. While the digital backend, composed of algorithms, servers and databases, is already coupled with all the customary systems of automatic identification, a digital “frontend” is only assigned to RFID.

However, there is a central problem to the sophisticated capacities of RFID chips. In order to be a mass device—like barcodes, for instance—the transponder has to be designed extremely efficiently regarding its energy consumption and size (and ultimately to a cost close to that of producing simple barcodes). At the same time, it has to maintain the advantage of a relatively wide reading range. The solution to that problem is a method of transferring the data that has been dubbed “backscatter modulation.”

On a very general level, RFID systems are divided into two groups: those with active tags, and those with passive tags. While active tags come with a big and costly battery to power a signal transmission and/or more sophisticated software on the tag, passive tags are only powered by the radio waves emitted by the reader and are therefore a lot cheaper, tinier and dumber. A modulated backscatter transponder belongs to the second group, sending its data simply by modulating the carrier wave of the reader. The carrier wave is reflected by a dipole antenna attached to the tag, while the reflection properties of that dipole are controlled by the digital stream of data coming from the tiny onboard memory. In a way, the transponder engraves its information onto the echoed carrier wave. Eliminating the otherwise crucial need for a battery attached to the tag, this method delivers reliable signals up to a few meters away. Passive backscatter transponders are the one species of RFID chips that really has the potential to revolutionize supply chains or, more generally, viably to alter communication means between electronic devices.

Passive backscatter transponders are usually combined with another, more general concept to ensure a cheap chip design. Instead of putting the desired smartness into the tag, put it into the system! The typical mass transponder, one that cannot afford to host multiple functions by relying on a big memory and a complex chip architecture, simply transmits an ID number that refers to a certain dataset in a remote database, the way a license plate number links a car to its owner (and to his recorded misdemeanors). A

few years ago the Auto-ID Center, an MIT-headquartered international consortium of industrial sponsors and research institutions, designated the so-called “Electronic Product Code Network,” a fully integrated system of RFID-IDs (Leong 2004, Dodge and Kitchin 2004). It is based on a coding scheme that resembles the current barcode numbering. In fact, the Electronic Product Code (EPC) is supposed to become the successor to the Universal Product Code (UPC) symbology, the bar pattern that is nowadays printed on almost every product. From UPC to EPC: As with all new media, the drive to create new electronic devices seems to be the desire to outstrip universality.

By coupling masses of RFID transponders with databases via the Internet, we can wirelessly extend the Internet itself. However, this is not done by integrating fully functional computers, like laptops or cellphones, but rather by absorbing dumb ID reflectors that are put on objects. While this simple “addressing of things” might be far away from the original intention of the Auto-ID Center to create an “internet of things,” there is a profound quantitative momentum in this development. The “increased granularity for identifying material objects” and the “drive towards totalising spatial knowledge at finer scales” (Dodge and Kitchin 2004, 32) seem to be perfectly matched with the wireless circuitry of RFID chips and data on the Internet. The access points of the Internet tether a so-far unset space; the tentacles of the terminals stretch out into a space that up to now has not been occupied by technical communication. And they do so in order to incorporate the license plates of trillion of outspread objects. It remains to be seen what kinds of “swarm intelligence” all this will lead to.

RFID AS WE DON'T KNOW IT

Now, what does Mr. Harry Stockman have to do with all this? 1948 is not well known for being a time when digital databases were abundant or when swarm intelligence was an option for the retail industry. Instead, the high tech of those days was radar, a just-recently matured concept of “seeing” things from a distance. And this is exactly where Stockman comes in.

Harry Edmond Sigfrid Stockman, a Swedish-born radio-physicist, came to the U.S. in 1940 to escape the unfolding killing in Europe and to follow in the footsteps of his famous compatriot Ernst Alexanderson, who had made a distinguished career in the U.S. radio industry. The American radio industry was extremely well established at this time. An immense amount of research took place in companies like the Radio Corporation of America, General Electric, AT&T, and Westinghouse. Meanwhile, with American involvement in the Second World War looming, another “research enterprise” entered the field: the National Defense Research Committee (NDRC). The NDRC was established by the U.S. government and led by Vannevar Bush. One of the NDRC’s biggest projects is nowadays well known: the Manhattan Project, undertaken to control nuclear fission in order to build the A-bomb. But another science program, one that in its first few years was even bigger than the Manhattan Project, remains little known



Figure 2

War of the wizard tube: a radar tube shields the homeland in peril (Anon. 1943, 6)

in contemporary culture. It was the project to control electromagnetic radiation in the region of extremely short wavelengths, in order to ensure the reliable operation of radar (Genuth 1988).

The capability of scanning sky, sea and ground where other emissions, such as sound or visible light, were not sufficient, created a dramatic shift in warfare. The introduction of radar entirely changed the perception of the battlefield. The technical feasibility of “looking through” night and fog, and even over the horizon, turned the war into a world war in every sense. Electronic warfare, as it was soon to be named, made this war of scientific expertise into the famous “Wizard War” (Figure 2).

How does radar work? A radio pulse is emitted into the atmosphere and is scattered back by reflective objects such as airplanes or ships. The distance of the object is measured by the duration of the delay between transmitting the pulse and receiving it back again, while the object’s direction is determined by the radar’s rotating antenna. Radar is a technology that scans space and turns that space into electronically coded spatial information. It is a “localizing” medium in a double sense: a medium that traces objects in natural space, as well as one that creates a technical space.

Now, all this requires not only high-performance equipment to transmit a strong search signal, but also very sensitive receivers, because the returning signal is just a weak blip in an ocean of noise. This called forth the counterpart of radar: radar jamming. As soon as radar became mature, a great deal of effort was put into effectively interfering with the enemy’s apparatus. But radar countermeasures consisted not only of jammers (which scattered their noise-frequencies over unfriendly radar stations), but also of methods of deliberately inducing wrong information. One of these methods was the use of so-called “corner reflectors.” These were metallic bodies with very good reflection properties that deceived a radar beam by inflating the retro signal—the exact opposite of current “stealth” techniques. When corner reflectors were fitted to a tiny airplane, this plane appeared on the radarscope as a huge bomber fleet, and in this way distracted the control center from the actual bomber force, which carried out its raid somewhere else.

When put on a lake, corner reflectors simulated landmasses and therefore misguided the radar operators on board the airplanes, since they navigated by means of landmarks. This all led to an “epic of electronic warfare,” as the historian Alfred Price once put it, a continuous interaction between physicists on both sides of the front line as well as between radar and jamming operators (Price 1967). So radar, I would like to argue, is also a “locative” medium. But that is a different story.

To figure out which particular frequency worked best for detecting submarines or for navigating over foreign territory and also to tinker with the best prototypes of radar equipment, the NDRC in 1940 created, in very high secrecy, the so-called Radiation Laboratory (or Rad Lab) on the MIT campus. In order to figure out how to blind or bluff the radar-eyes—not only the enemy’s, but also their own—the NDRC in early 1942 also created another high-frequency lab in the same field: the Radio Research Lab. This second lab is much less well known even by historians, although in its time it was regarded both by the military and by civilian researchers as vital to the future war effort. The Radio Research Lab, located just a few miles down Massachusetts Avenue at Harvard University, was shrouded in an even higher degree of secrecy than the Rad Lab. In this way, electronic warfare became institutionalized in Cambridge, MA.

At this very location, our Swede Harry Stockman showed up. After spending his first few months in the U.S. visiting every commercial and academic radio research lab in New England, he decided not to have a career in the radio industry after all, but in academia. In the summer of 1941 he enrolled as a Ph.D. student at the Cruft Physics Laboratory in Harvard, just around the corner from where the Radio Research Lab was about to be established. But soon after his arrival, Stockman was detained from working on his thesis because he was overwhelmed with teaching obligations. For, besides the Radio Research Lab, Harvard also hosted an extensive training program for the three branches of the armed services. From 1942 until 1945, the campus was crowded with military personnel, all receiving instruction in the state of the art in medicine, geology, applied mathematics, electrical engineering, radio techniques and, of course, fundamental radar design. For the last of these, responsibility lay in the hands of the Cruft Laboratory staff. Harry Stockman spent most of the war giving Pre-Radar courses for young officers.

As the war ended, all these undertakings came to a halt. Both the Rad Lab at MIT and the Radio Research Lab at Harvard were shut down, the Pre-Radar school at the Cruft Lab was dissolved, and Stockman was finally freed to finish his Ph.D. His expertise in radar plus his connections to the military secured him his first job. The Army Air Force had taken over all the Rad Lab equipment, as well as tons of documents, drawings and notes of its research. The Air Technical Service Command then launched a new research facility on the periphery of the MIT campus: the Cambridge Field Station, or CFS. (Incidentally, the Field Station building was the same one that, during wartime, had accommodated the “Research Construction Company,” an MIT spin-off

that specialized in crash-producing radar equipment.) Dr. Stockman became the Head of the Cambridge Field Station's Communications Department.

In this position, Stockman devised several new communications concepts based on electromagnetic waves. One of them was the application of electromagnetic waves to stimulate the brain cells of sleeping students. Stockman seems to have worked up these traumatic experiments in the classrooms during his Pre-Radar teaching days. (Compared to the mind-control experiments of the 30s, 40s and 50s, the current debate over RFID implants and Big Brother scenarios is rather tame.)

Another of Stockman's proposals is yet of greater interest to us. Instead of a conventional communication relay line between one transmitter/receiver-station and the next one, he proposed a system where one of the stations simply modulated the carrier wave of the other: "Communications by Means of Reflected Power." With this method, Stockman aimed primarily at an economical means of point-to-point communication—a way, for example, to thin out a chain of repeater stations. The technology needed to obtain that efficiency was obvious: radar! Stockman went into the storeroom of the CFS, took the most sensitive radar apparatus he could find (an airborne radar unit developed by the MIT Rad Lab for the detection of German submarines), grabbed a couple of small corner reflectors (which particularly suitable usage on ultra-high frequencies and microwave had been studied at the Harvard Radio Research Lab), and headed towards a rural antenna station located on the Atlantic shoreline, 35 miles north of Boston.

At the antenna station, Stockman put up several experimental arrangements in order to tinker with implementing his new method. One of them deserves our full attention. In his article in *Proceedings of the IRE*, Stockman describes a so-called "Triple Turret Reflector," a self-made gadget consisting of three layers of corner reflectors, each rotating at its own speed (Figure 3). Some distance away, Stockman installed his

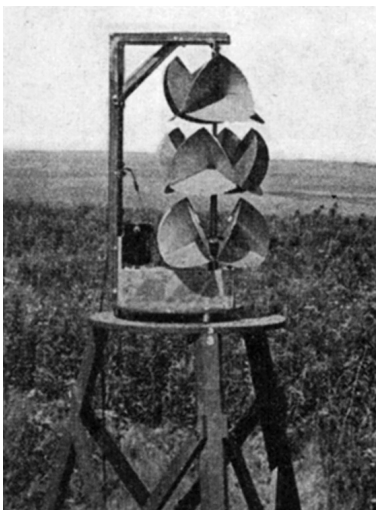


Figure 3
Stockman's Triple Turret Reflector
(Stockman. 1948, 1202)

radar device together with a frequency meter, and turned the power on. Stockman then meter-read three different signal frequencies, because each layer of reflectors modulated the carrier wave of the radar beam with its own periodic change of its cross-section (strength of backscattering). In just the same way as amplitude modulation sends signals through the ether, the radar transmitted coherent waves onto the rotating reflectors, and the reflectors in turn echoed individual frequency values that were derived from their individual revolution speeds. Then the only thing left for Stockman to do was to read these three different values as a number. If layer 1 rotated with 8 rounds per second, layer 2 with 14rps, and layer 3 with 2rps, and each layer consisted of four corner reflectors side by side, he obtained an identification number for his gadget named "24 56 80." So, as Stockman himself put it, "each reflector is identified by its numberplate code number" (Stockman 1948, 1201). Instead of being duped by false bomber fleets or wrong landmarks, the corner reflectors now delivered correct information about their own identity.

With this simple experimental arrangement, the Swedish radio-physicist created no less than a crude, pre-digital form of passive backscatter modulation. By modulating numerals onto a sensitive radar beam, he devised a system of automatically identifying objects by radio waves, and along with that, he turned seeing into reading. Radar became reader.

Of course, Stockman's reflector apparatus is far from contemporary transponder design, in which signals are modulated by switching a load resistor according to binary data stored in a memory chip. We will not have rotating corner reflectors stuck on our tubes of toothpaste. But Stockman's "Number Identification Target system," as he termed his idea, demonstrated the principle of the very spectacular data transfer method that is currently celebrated (or demonized) in business meetings, PowerPoint presentations and magazine articles all over the world.

Well, Harry Stockman, at least in his lifetime, was denied any of this particular fame. Just a few months after he presented his new method at the 1948 convention of the Institute of Radio Engineers in New York City, he got into serious trouble with the Cambridge Field Station board. Eventually, he was dismissed from his post as head of the Communications Department and left Air Force research for good. A few years later, one of his former assistants filed a report about the backscatter experiments, stating: "it is hoped that the results presented herein will help to clarify some of the limiting factors present in any system of communications by means of reflected power" (Bishop 1951, 3). Stockman spent some years working for different electronics companies around Boston before returning to academia as a teacher at various Tech colleges. He kept his passion for developing new methods and apparatuses and founded a small enterprise that designed and constructed display models for classrooms. He died on 18 May 1991 at his home in Cape Cod—right where the waves of the ocean have been modulating the waves of their own sound for millions of years.

RFID AS WE SHOULD GET TO KNOW IT

That's it. No more, but also no less, is behind all of the Stockman buzz. It was a simple but ingenious experiment that "misused" military apparatus to configure a new principle of retroreflective communication. That certainly does not elevate Stockman to the heights of being the inventor of RFID. Too many physical principles, too many pieces of scientific gadgetry, too many scientists, engineers and tinkerers, too many published as well as hidden drafts, experiments, and institutional agendas had their influence on what later became the actual components of RFID systems. The development of a hybrid composition such as RFID has no single event to base itself on. Stockman is rather a piece, a storybook character, in the developing years of the electronic age. Nevertheless, his inventive demonstration of a new method of communication was indeed a "landmark." By applying the state of the art in radiation engineering to communications engineering, it sparked the very crucial transfer mode that—when the prophecy fulfills itself—we will employ in the near future when we address the multitude of things that we produce, ship, wear, use, own, and play with.

What does this little story (or legend, if you will) tell us for our purpose? It tells us that RFID, as a technology that enables locative media, carries a certain prefiguration, a kind of operant conditioning. It tells us that the very concept of backscatter RFID is created and based on an architecture of seeing and jamming. The massive research undertakings in the field of radar during the Second World War turned the electromagnetic spectrum into a controlled environment, penetrated by an armada of newly designed electronic apparatus. This led to several innovations that we still draw upon now when we talk about locative media.

Let me show how. Two days after Harry Stockman was given a mere twenty minutes to present his ideas on retroreflective communication at the convention of the IRE, a special session called "Advances Significant to Electronics" was held in the morning. Invited speakers were Norbert Wiener, Claude Shannon, John von Neumann, Isidor Rabi and Maurice Deloraine. The talks given were titled "Cybernetics," "Information Theory," "Computer Theory," "Electronics and the Atom," and "Pulse Modulation." That same morning, the session was already recognized as "destined to become known in future years as one of the more important IRE sessions ever to be held" (IRE 1948, 366). What came together there is as historical as it is intertwined with the state-of-the-art equipment that Stockman used for his identification experiments. To begin with my introductory nexus: in the same year when Stockman presented his retroreflective communication, Norbert Wiener's celebrated book on cybernetics came out, spawning that new information science which had originally started with the attempt to aim anti-aircraft fire automatically by reinserting radar measurements into the trajectory equations of an airplane. Claude Shannon's "Mathematical Theory of Communication" was also published just a few months after the convention (although it was written earlier). In many ways, the fundamental quantification of information he

presented therein resulted from his own work on the extraction of signals from noise in radar operations. 1948 was also the year when—under the consultancy of John von Neumann—the assembly of Whirlwind began. Whirlwind was the first computer capable of processing data in real time—radar data, of course! Isidor Rabi, a nuclear physicist, was associate director of the MIT Rad Lab, where he conducted basic research into the fundamental physics of radar before he went to Los Alamos. And last but not least, Maurice Deloraine's pulse-code modulation is the very basis of today's data media such as CDs, DVDs or even digital TV and radio broadcasts. Stockman's analog data transfer method was, at the very same conference, surpassed by the fully-fledged dawn of the digital. Yet the most important event might not be the talks of the protagonists of this paradigmatic shift. Instead, it might be the moment just a few weeks earlier in wintry New Jersey, when a plastic triangle wrapped in gold foil established contact with a plate of germanium. This point contact transistor became the starting point of the famous exponential trend in miniaturization that now allows us to put tiny microchips on tubes of toothpaste.

Setting sail in the backwash of World War II, the striking concomitance of all these developments is no plain coincidence. All in a fundamental way shaped by the scientific engineering efforts to get radar working reliably—and therefore to control radio frequencies in the higher bandwidth—these developments mark the beginning of the electronic age. And RFID, in its most mass-compatible conceptualization of transponders scattering information back to an interrogating device, is right in the midst of it all. While RFID as such would never have had become an idea without radar, without radar it also would not bear its intrinsic antagonistic cultural design. It comes as no surprise when Crang and Graham notice a “war-like architecture of self/other” (Crang and Graham 2007, 814, following Louise Amoore) in the combination of technologies such as RFID to identify and track targets in the “War on Terror.”

While the Department of Defense's call for a “Manhattan Project”-like program for total surveillance, mentioned by Crang and Graham, is in fact just a hyperbolic dystopian fantasy, the first large-scale employment of RFID was indeed executed in the run-up logistics of the war in Iraq (Rosol 2008). Pervasive computing technologies are war architectures of self/other, only that the other does not need (yet) to be an insurgent but just the evil chaos of losing track of artillery shells and armored vests in unexpectedly hostile countries (Figure 4).

The “ontology of the enemy,” as Peter Galison (Galison 2004) called Wiener's cybernetical thinking, is a militarized configuration of the self/other in the process of the visualization of a remote pilot (radar) or prospective consumer/terrorist/disordered mind (RFID) by computing its transitory behaviour. According to Crang and Graham, “hybrid spaces [do] enable visibility” (Crang and Graham 2007, 791). Enabled, among others, by the itself-extremely-hybrid technology RFID, the visibility in such spaces is based on reading (signals, code, ID-numbers) that, in turn, is based on seeing by

means of electromagnetic radiation in a spectrum where visibility fails. Since RFID was forged in a time when the primary aim was to get ahead of the enemy in the continuing interaction between detecting and jamming, we ought to wonder how fragile and vulnerable an RFID-networked world and its alleged control over things, bodies and localities might eventually be. Since it was forged in a time when the outstanding goal was to connect (and to disrupt connections between) machines, rather than connecting (or disrupting connections between) people, we ought to wonder about what actually defines, or mounts, the room for social interaction when employing this locative media technology.

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Hidden Treasure: Sharing Local Information

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ABSTRACT

When we move through space, we act on a myriad of information; memories, background knowledge, and expectations, as well as external sources of information, such as analogue maps or guides, and digital satnav systems. The decisions we make as we navigate unfamiliar spaces are often influenced by the information we gain from such guidance, and regardless of whether they are paper or device-based, they present a very specific view of the world. In the following discussion, it is argued that these ways of representing spatial information neglect the quality of places that people often want to learn about and experience. This local knowledge is often the most useful and rewarding, but most of the time there are no suitable frameworks for the social exchange of this information between those who hold the knowledge and those who seek it. In order to understand how such sharing of local knowledge may be enabled, a case study of the activity of geocaching, which is a global positioning system (GPS) assisted hide and seek game, is introduced. The life of one particular 'cache' is discussed in detail; and in conclusion, a series of key practices are described that characterize the geocaching experience and may provide insights into the sharing of local place-based information.

"The map is not the territory."

Korzybski, 1933.

INTRODUCTION

WITH A MAP, WE CAN LOCATE OURSELVES and find our way in unfamiliar environments. GPS navigation systems displaying dynamic or mobile maps on handheld devices are becoming ubiquitous as an alternative to paper maps. So many people have become so accustomed to making decisions about where to go and what to do based on digital map information that they have come to 'feel lost' without it. However, it is easy to forget

that when we use a satnav system to assist us in navigating a place, we act on a specific form of information. At a recent conference of cartographers in London, Mary Spence, President of the British Cartographic Society, commented:

Corporate cartographers are demolishing thousands of years of history—not to mention Britain's remarkable geography—at a stroke, by not including them on maps, which millions of us now use every day. We're in real danger of losing what makes maps so unique, giving us a feel for a place even if we've never been there. (Spence, cited in Anon. 2008)

Ed Parsons, geospatial technologist at Google, countered this view by saying that the way people use maps is changing, with the consequence that the individual is able to construct his or her own map of the world. "Internet maps can now be personalized, allowing people to include landmarks and information that is of interest to them. Interactive maps will display precisely the information people want, when they want it" (Parsons, cited in Anon. 2008). It seems the Google vision of the future of maps lies in the individual choosing which information he or she chooses to display when navigating through space.

Yet there is often little thought given to just how maps present information about the world. We typically accept paper maps or GPS systems as the 'true' way of describing the physical world and how to navigate through it. We also tend to assume that a map represents all of the necessary information about a space, and that it is 'accurate.' The deficiency in this assumption about maps is highlighted by Luis Borges, who imagined a map as big as the space it represents:

...the Art of Cartography attained such Perfection that the map of a single Province occupied the entirety of a City, and the map of the Empire, the entirety of a Province. In time, those Unconscionable Maps no longer satisfied, and the Cartographers Guilds struck a Map of the Empire whose size was that of the Empire, and which coincided point for point with it. (Borges 1998, 325)

As Borges emphasizes, cartography is not a perfect art, since, unless the map is drawn on a one-to-one scale and has the same physical characteristics as the territory itself, it cannot be perfectly accurate.

In fact, maps deliberately exclude a great deal of information and are a highly specialized way of representing the world. One of the key uses of maps is cadastral in that maps focus on representing ownership of territory. These maps are drawn with a view from above, a perspective that suggests objectivity. However, increasingly, we rely on maps whose prime purpose is not to show territorial boundaries, but to assist navigation. These maps are also often depicted in the bird's-eye-view format, but with the advent of GPS-based navigation systems, these 'maps' are also represented in an egocentric perspective. Maps with such a viewpoint enable users to view information

about the space around them from the same perspective, as their immediate visual connection with the environment, so that the person is effectively at the 'center' of the map. This is accentuated by the fact that the user's current position on GPS maps is indicated on the map as a dot or other icon, so that, again, the user relates to the map based on his or her position in relation to the data provided. This may not directly appear to enable the personalization described by Parsons from Google, but it guides users into the mindset that the map is reflecting and representing their view of the world. In addition to this, the map itself can also be tailored to show or hide specific relevant features, but both aspects encourage a way of thinking that accepts the map information as a true representation of the world.

In the following text, we introduce an alternative approach to mapping and to guiding people in space. The approach is to propose a different format for representing and also critically acting on information about spaces. Initially, a theoretical position on how the sharing of local, rather than global, information offers a much more meaningful way of making spatial qualities transferable. It then proceeds to discuss a case study of an activity called geocaching as a way of investigating how these ideas can be integrated into a spatial experience. It concludes by outlining a series of practices that work together to create a framework for sharing local information.

REDISCOVERING THE LOCAL

Our daily experience of space is not global, but highly personalized and tightly interwoven with features of our social lives and dynamic factors such as time. Doreen Massey refers to this as the chance of space, and proposes, "Space as the closed system...presupposes (guarantees) the singular universal. But in this other spatiality different temporalities and different voices must work out means of accommodation. The chance of space must be responded to" (Massey 2005, 111). As Massey points out, space is experienced and enacted not as an abstract quality but as practiced experience.

In everyday life, this manifests itself in a number of ways. For instance, when we travel to a new or semi-familiar place, often what we really want to learn about it is local knowledge—the shortcut, the best restaurant, or the history of the neighborhood. This information resides in people as memories and knowledge, not in abstract sources of information. In order to tap into this resource of local knowledge, it is critical to understand where such knowledge about a place resides.

The Internet has become a host for much information about place, and a 2005 study showed that 25% of search engine queries sought place-related information such as "hardware stores in Manhattan" (Himmelstein 2005). But search engines cannot always identify relevant places (Ibid.), mainly because they do not have access to enough personal information about the user. Similarly, in the physical world, people also try to make distinctions about places, mainly through observation. For instance, assumptions are made based on which places are popular (Tse 2002), or on physical



Figure 1
Streetview image (Singel 2007).

appearance (Pillsbury 1987). However, there often remains a significant gap between the information about a place that resides locally and the need for information from those unfamiliar with the place. In fact, the desire to create a local and personal insight into the world of global places is demonstrated by many examples of people seeking out the incidental personal characteristics present in global phenomena; for instance, the public fascination with the range of inadvertently captured activities visible in the millions of pictures that form Google Streetview (see Figure 1).

The Streetview images essentially capture the 'chance of space,' fleeting moments when something happens that can affect how the space is viewed and acted upon. The question is how can these qualities not just be recognized but also captured so that a link is formed between those who hold local knowledge and those who seek it?

SHARING THE EXPERIENCE OF SPACE

In seeking to find and act on local information, a key aspect is that it very often involves a human-to-human contact of some form. For instance, often the best tactic to find your way in an unfamiliar place is not to access an online map, but instead, to ask someone. The act of giving and receiving directions or guidance necessitates establishing a common language between two people who may not know each other. Asking a local about the place you're in creates a sense of shared experience. It bridges the gap between the image and the lived experience. It creates a situation where knowledge, which the locals have about the place, can be shared and valued. In order to realize the value and deliverability of local information, a way of gathering or stimulating the authoring of such local information in a publicly available format is required.

Public distributed authoring is already a common way for people to share information, through formats such as blogs and photo sharing Web sites. But what is needed is to extend this approach to capturing and sharing local place information, which will require people to adjust their traditional views of spatial information as created and delivered by experts. Spaces will be seen as useful and not based on functional qualities, but instead, based on social recommendations, whether these people are friends or strangers. For instance, the old-fashioned postcard illustrates a successful format for sharing a local experience with someone not present; the photograph of the place, together with some reflections on the experience, help to convey a sense of 'being there.'

There are many ways of sharing place-based experience with others, as highlighted by Brown in his ethnographic study of a project in a city in the United Kingdom, where he points out that “tourists already put considerable effort into sharing their visit with distant others – such as through travelogues, or sending photos home from their holiday” (Brown et al. 2005).

However, in order for this experience of space to be experienced, there needs to be a structure for the giving and receiving of information, particularly in order for there to be a transfer of local knowledge. A successful format for this transfer of information is typically not cartographic or through images, but oral. The narrative as a format creates a way of making the personal, hard-learned information of one person or group accessible to another person or group. In fact, there are many formats where information about a place is woven into a narrative structure. Massey outlines how space is waiting to be enacted: “In this open interactional space there are always connections yet to be made ... space is indeed the product of relations” (Massey 2005, 11). She terms these potentials ‘trajectories,’ which suggests an inherently open-ended structure and also the possibility for multiple imagined outcomes. In order to enable the sharing of local information about places, it is therefore critical to create a framework for individuals to construct their own stories, so that they are able to shape the trajectory of the narrative.

TECHNOLOGY NARRATIVES

The narrative format also holds potential for the way in which spaces are experienced through technology. Currently, the ubiquity of GPS is not necessarily resulting in people learning more about places. Instead, it acts more as a form of knowledge off-loading, much in the way a diary or mobile phone means we do not have to remember all of the dates or phone numbers in our everyday lives. Consequently, a GPS navigation system actually causes people to ‘switch off’ so that they pay less attention to the spaces and places they are moving through. Since satnav devices essentially deliver instructions, the passive interaction paradigm does not encourage the user to map the information he or she is receiving onto the real world. Therefore, an approach to constructing meaningful interactions through technology, such as satnav devices and online maps, is required, so that they enable the user to actively engage with the place-based information.

According to David Turnbull, the narrative format creates such possibilities since “storytelling is how a particular piece of technology becomes seamlessly integrated into our cultural practices” (Aedy et al. 2002). This reflects the approach of Lave and Wenger (1990), who, in their work on learning, highlight that knowledge acquisition normally occurs as a function of the activity, context, and culture in which it occurs, and as such, is situated. They further emphasize that “social interaction is a critical component of situated learning, and it is vital that learners become involved in a ‘community of practice’ which embodies certain beliefs and behaviors to be acquired.” These communities of practice are the key structures through which technologies can become integrated with

activities in a way that the technology ceases to be external to the task, but, rather, is bound intimately to it.

In the following case study, the use of GPS technology is introduced in the context of the activity of geocaching. Although GPS is the enabling technology of the activity, we discuss how it appears to have become integrated into the social and cultural situation of the individuals who take part, so that it enables those who participate to construct their own technology narrative.

CASE STUDY: GEOCACHING

Geocaching is an outdoor treasure-hunting game in which the participants use a GPS receiver or other navigational techniques to hide and seek containers, called 'geocaches' or 'caches,' anywhere in the world. The game originated in May 2000, following the end of 'selective availability,' or the date when more accurate GPS data was made available to the general public. A GPS enthusiast, Dave Ulmer, eager to explore the possibilities of the newly available technology, hid a 'stash' in Oregon, USA, at the following co-ordinates: N 45° 17.460 W 122° 24.800. According to the geocaching Web site:

...within three days, two different readers read about his stash on the Internet, used their own GPS receivers to find the container, and shared their experiences online. Throughout the next week, others excited by the prospect of hiding and finding stashes began hiding their own containers and posting coordinates. Like many new and innovative ideas on the Internet, the concept spread quickly - but this one required leaving your computer to participate. (Geocaching.com 2008)

The activity has grown remarkably since these beginnings. Currently, there are 356,759 registered members, based all over the world. The quick take-up of the idea underlines the attraction and subsequent popularity of the activity. It also highlights the fact that people may use the Internet to gain guidance on places of interest; but the real interest is in visiting the physical location, rather than reading about it. Geocaching unites the world of digital information and that of the real terrain, since a geocacher sets out with abstract latitude and longitude coordinates and must then seek a route in the real space. The key technology used is a GPS receiver of some form, the most basic such device being the Garmin Etrex (see Figure 2).



Figure 2
A Garmin Etrex
GPS receiver.

A GPS receiver can display a range of spatial information. At the most basic, a trace of the user's movements in line format is shown. If the user has entered a 'route,' i.e., a path calculated from his or her start point to a particular chosen destination, the distance to the end point is also shown. A compass indicates the trace of the path relative to true north, and a zoom function enables the user to both magnify and reduce the scale of the information shown.

On the more sophisticated GPS devices, this data is displayed overlaid on a map representation. This map is downloaded onto the GPS system and provides detailed information about features in the surrounding environment to enable the user to orientate him or herself. Typically, geocachers will refer only to a GPS device in the search for a cache and will not use paper maps or other guides. Since the cache's location is described only in the form of latitude and longitude coordinates, a paper map is not particularly useful, as it does not display GPS data at a scale that would be useful in finding the cache close to its destination. A geocacher would need to carry a range of maps at different scales in order to navigate to the location, which is impractical.

It sounds deceptively easy to seek a cache; all that is required is to enter the coordinates of the destination into the GPS and follow it to the destination. However, while it is one thing to know where a location is on a map, it is quite another to actually attempt to arrive at that location. The main problem is that the abstract space between two coordinates hides a wealth of topographical information, which means that it is not possible to navigate directly to a cache by going straight in the direction to which a GPS receiver points. The coordinates give no indication of the relationship of the 'theoretical' point in space and the physical properties of the location.

In order to appreciate how geocaching is practiced and the way in which it can inform an understanding of the function of spatial narratives, the life of one particular cache is studied in detail. The cache was placed in a semi-rural location in January 2005, and since then, there have been over 74 visits. The cache is literally a plastic weatherproof box (e.g. see Figure 3) that contains a logbook, a throwaway camera, and a short description of geocaching for beginners.

PEOPLE

Geocachers are a mixture of individuals, pairs, and groups. However, the activity has a very social aspect, with geocachers generally acting within some form of social structure, i.e., even if they find the cache alone, they will share the find online, recommend it to another, or leave a picture on the throw-away camera (see Figure 4).



Figure 3
The 'cache'.



Figure 4
Faces of geocache visitors recorded on a throw-away camera in the cache.

Seventeen visits were logged as specifically being found by either two or three people; six identified themselves as a 'team'; and three as 'family.' When geocachers choose to identify themselves as 'team xxx' or 'family xxx,' it suggests that within the group, there is a clear division of roles and aims for the game. Typically, each member of the group writes a separate log, outlining his or her role in the search. The logs also indicate that the people who participate in geocaching form a community and recognize their membership. There is a specific language used and non-geocachers are labeled as 'muggles.' (the word is taken from the *Harry Potter* book series). Geocachers do not use their real names but instead have usernames, and some even have specially-printed stickers bearing their username, which they inscribe with the particular date and time of a cache find.

Additionally, many of the geocachers seem to undertake the game regularly, with most having over 100 caches logged. A number have registered an extremely large number of caches, with 20 of the 74 visits having collected over 1,000 caches. The highest cache number listed is 5,000, which is a large number, considering that this person has only been a member of geocaching since 2003. This illustrates that, for some people, geocaching is not just a one-time activity but has developed into a form of hobby.

Besides the actual hiding and finding activities, people arrange social gatherings to meet others who geocache. In this manner, geocaching supports a whole social structure, complete with distinct roles and hierarchies. For instance, despite the superficially flat social hierarchy, geocachers have developed sophisticated ways of distinguishing status. This is primarily achieved by the number of caches a member is listed as having found, with more caches indicating expert knowledge and therefore a higher status. Additionally, there are two or three 'gatekeepers,' or key members per county, who are responsible for checking each cache before it is authorized. It is clear that geocachers value these status 'levels' and that the social aspect of the activity is an important quality that they choose to develop over time. In this manner, the spatial aspect of geocaching provides not just a basis for the sharing of experience about places, but also supports and stimulates a rich social framework.

THE LOCATION

A fundamental aspect of a geocache is, of course, the significance of the location. It is common for geocachers to hide caches in locations that are important to them, reflecting a special interest or skill of the cache owner. The geocache 'find' then becomes a way of sharing an experience of place amongst a wider audience. However, a key aspect is that, in the process of finding the cache, the searcher also builds his or her personal experience of the cache location. The effort in finding the cache is a manner of acquiring knowledge about the surroundings and the location itself. There is also a guideline established by the organizers of geocaching to prevent 'saturation'; caches placed within .10 miles (528 feet or 161 meters) of another cache may not be published on the site. This is an arbitrary

distance and is just a guideline, but the ultimate goal is to reduce the number of caches hidden in a particular area and decrease confusion that might result when one cache is found while looking for another.

Since most geocachers hide caches as well as seek them, there is also a critical aspect of the activity that is concerned with identifying interesting places to site a cache. Often, geocachers will choose to site caches in their local area, since they tend to know it more intimately, whereas their search for caches is often undertaken in a much broader geographic area. In the hiding of caches, geocachers are creating a whole body of local knowledge.

The lengths to which geocachers go in order to seek out places with special characteristics as sites for a cache is highlighted in the particular subsection of geocaching called 'lost place caches' (last accessed 4 December 2008). These caches are specially selected locations, such as abandoned buildings or difficult-to-find places. These cache descriptions tend to be written in the form of a longer narrative with an outline of the history of the place. A key aspect of defining the location is that there is no requirement to invent directions or tell geocachers how to find the cache. The GPS coordinates identify the site of the cache, generally requiring that the person searching for the cache creates his or her own journey to the location.

HIDING AND SEARCHING

Geocaching is a two-sided activity, since it is possible to both hide and find caches. In the geocaching community, many people actively participate in hiding and seeking caches, so that they often have a recorded 'cache-find value' of over 1,000. Typically, such geocachers will also have hidden a number of caches, although this is a much lower number, generally in the region of 10 or 20. This dual nature helps to perpetuate the activity by creating an ever-changing and ever-growing number of caches.

In addition to the simple act of finding the cache, there is also the secondary aspect of the exchange or 'trade' of objects in the cache. These are trivial, playful items, such as water pistols, sparklers, and puzzles, which act as tokens to acknowledge the visit and also as a way of creating an exchange between other geocachers. A further option is to trade a 'geocoin,' which is a special coin created by individuals or groups of geocachers as a kind of signature item or calling card. Each geocoin is assigned a unique tracking ID, which allows them to travel from geocache to geocache or to be passed amongst friends, picking up stories along the way. These tokens add a further level to the hiding and seeking activities, by creating mobile, trackable objects that also allow the sharing of place-based knowledge. Since these objects are totally dependent on the individuals who move them, they add an unpredictable quality to the geocache experience. Overall, the range of activities that encompass geocaching enable a rich, multi-layered experience.

THE LOG

The log from the cache was studied to identify the way in which this format was used. The log provides a critical part of the geocaching experience and exists both online and in paper versions. Interestingly, the entry into the paper log, which is made at the cache location, is almost always directly replicated in the online version. Of the 74 individual recorded logs, seven were made only online, and two were made only in the book. This is despite the fact that the online log must be completed at a later time. The text follows a similar format for the description of the search (how long and how difficult, weather, etc.), often with some form of grade (e.g. great cache), followed by a thank-you to the owner, and also an outline of what objects have been traded (if any).

The specialized language adopted by geocachers is well used, and, in particular, the practice of thanking the owner of the cache. For example, “TFTC” means, “Thanks for the cache.” Acronyms are written by geocachers in physical cache logbooks or online when logging cache finds. “TNLN/SL” means, “Took nothing. Left nothing/signed logbook.” These are usually written in cache logbooks by geocachers who do not trade for the material contents of the cache.

The text from the logs was studied to assess to determine whether there were common responses that could be identified across the range of entries. They are summarized below.

- ♦ Sharing personal memories: “The tower is called ‘Wierterturm.’ As a child, I went walking in the woods near there many times with my granny and grandpa.” (USER: Alice, DATE: January 17, 2005.)
- ♦ Sharing current memories and making suggestions: “We had a pleasant walk. The view is great, and even better for the fact that it’s possible to enjoy a nice beer up here at the cafe.” (USER: Steinmann, DATE: April 15, 2005.)
- ♦ Demonstrating ownership for a person visiting from far away: “A trip into the past. Found the Cache fine. Greetings from a former Northeimer, now living in Munsterland.” (USER: Edewolf, DATE: May 15, 2005)
- ♦ Linking with current activities: “Found at last. I was almost too late for my tuition, as I was still up on the hill at Wieter at 12.55 and needed to be back down at 13.10 to teach my group (Corvinianum).” (USER: Jonas Voelcker, DATE: February 13, 2007)
- ♦ Reinforcing the ‘secretive’ and club-like aspect of geocaching: “Great place for a cache. We were a bit worried, when we first saw the carpark, that we would be discovered by lots of muggles, but when we got to the location, there was nobody around.” (USER: Fishtowncatcher, DATE: September 7, 2007)
- ♦ Outlining and describing the role of another person in the hunt: “After a lot of climbing around Niklas, managed to find the container.” (USER: Rpadie33, DATE: April 9, 2007)

- ♦ Acknowledging the role of another geocacher (not known to them) in the search: “Found and logged the cache today with help from the photos of my predecessor, ‘flx37.’” (USER: GeoRouter, DATE: August 30, 2008)
- ♦ Demonstrating a difficulty level – finding the cache at night: “Found this cache with Dragon1978 after a little night tour.” (USER: Lollipopformel1, DATE: May 22, 2008)

All of these entries are inherently about the sharing of an experience, and reinforce the idea that local information is best made public through a process of social exchange.

PRACTICES IN SHARING LOCAL PLACE INFORMATION

The study of a single geocache described above suggests that there are some key practices that underpin the activity. Although these practices are discussed here in the context of geocaching, it is possible that they can offer some insight into the broader issue of how to create meaningful structures for sharing spatial information:

1. *Defining and sharing of ‘valuable’ places*

The first practice that was observed is in the foundation of geocaching; the sharing of information about particular places. Generally, geocachers will choose to site their caches in places local to where they reside, with the consequence that they create a body of hard-earned local knowledge. This process of defining and exchanging knowledge is made dynamic through the written and photo log entries, which create a framework for the continual building of shared memories about the cache.

2. *Not just the destination but a journey, a discovery, and a challenge*

Critically, geocaching does not require the participants to define the route to the cache in the description, but leaves it open to the participant to define the journey they take. Those seeking the caches can construct their own experiences of the local place through the process of navigating to the site. The journey thus becomes a process of discovering local places, which is both unique to them and effortful. In this way, they are not passive consumers of someone else’s information, but are given room to construct their own memories of the place and then to share them with others.

3. *Building a technology narrative*

On the surface, the publishing of raw GPS data leaves little room for participants to construct their own narrative. However, it is the way in which this method of publishing data leaves people free to plan the way they choose to act on it in the searching or finding activities that distinguishes its application. The GPS data becomes a departure point for multiple trajectories, as Massey terms them. It may suggest a fixed outcome or goal, but actually, it simply creates a point in space to which people weave their own practice of the use of technology. They are free to choose which GPS device they use and consequently, what level of additional information with which they augment the route.

Additionally, the GPS receiver is often but one part of a selection of technology interactions available. Despite the fact that the Web site provides a key structure for geocaching, the ability to engage with a range of media formats seems to be a critical aspect of the success of the activity. The use of photography and analogue media formats, such as the paper-logging system, enables participants to negotiate their own narrative through the technology. A further critical aspect is that that media is used before, during, and after the geocache search, which means the interaction with the technology is not limited within the frame of the activity, but becomes an open-ended system.

4. Social exchange and sharing of the search

This requires negotiating social roles and terms. In order for social exchange to occur, it is important that there are frameworks for people to understand the modes of communicating. This necessitates the establishing of roles and a common language so that the sharing activities operate on some form of commonly agreed upon and understandable format. A key aspect of this social framework is that it is facilitated by commonly understood and simple rules for communicating. Yet one of the clear outcomes from the study of the geocache is that the social aspect of the activity is by no means an unimportant by-product of the experience. Instead, it is central to it, and in some ways, the key motivator for those that participate. The opportunity to share place-based experience with others seems to be very rewarding for many, and the accompanying multi-layered system of feedback before and after the activity satisfies a collective need to share the expectations and memories of the event with others.

5. Collecting

One practice that might not immediately seem key to geocaching is, in fact, very important for many geocachers; that of the challenge of 'collecting' caches. In a study of a location-based game, it was found that it is "the role of the collection of location-based content in identity work; in developing a sense of challenge and achievement; in defining a sense of group camaraderie; and in creating a playful sense of competition among group members" (O'Hara 2007). The attraction of the practice of collecting is that it encourages people to continue to take part in geocaching.

In fact, it is well known within the geocaching community that it is somewhat addictive in this aspect, with participants often going to great extremes in their collecting activities. This is sustained by the fact that there is a multi-layered hierarchy of achievement; the first ten caches, and then the first hundred, or the most difficult night cache, etc. The participant can set a goal within the framework of the activity, achieve it, and then go on to define a more complex challenge. This then occurs within the context of a social structure that can observe and interact with the participants collecting achievements, which provides the important component of external approbation.

CONCLUSION

Often, when we set out on a journey to explore a new area, we will refer to a map, as a way of gaining knowledge about how to navigate to the place we are about to visit. Despite the fact that we often rely on maps to inform us about places, they offer a very specialized viewpoint on the spatial quality of the environment. As discussed above, it is the idea that, actually, we often seek and act on an entirely different set of information when we travel to a new place. In particular, we often rely on social interaction to define our experience of place, and it is important to be able to find ways of sharing spatial information within such social settings. Our investigation of geocaching provides a new way of understanding how narratives around local knowledge are created and how geocaching practices create meaningful structures for sharing spatial information.

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A Moment of Experimentation: Spatial Practice and Representation of Space as Narrative Elements in Location-based Games

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ABSTRACT

In location-based games, the game narrative can influence the players' movement within the city. The game world is notionally superimposed onto the city's surface. The combination of technologies creates a game system that in turn creates a notional realm of social space. Maps and alerts represent real opponents and virtual objects from the game's imaginary world. Employing representations of space, these games create a social world that encompasses the vicinity of the players. The players' spatial practice forms the conditions for progress within the game narrative. Players may change their location and movement within the city to avoid or interact with other players, collect items and encounter opponents. These games recontextualize and give new meanings to the players' location, rearticulating the spatial cohesion of reality through mobile access to virtual networks.

INTRODUCTION

AT THE TIME WHEN PROJECTS IN LOCATIVE MEDIA were experimenting with cartography, location and situated interaction, location-based games were already at the forefront of research, using ideas of geo-mapping, tagging and ad hoc networks. In the period from 2001 to 2004 location-based games reached their peak of experimentation, combining technologies such as the Global Positioning System (GPS), Bluetooth (short range data exchange), Wi-Fi (wireless Internet), Short Messaging Service (SMS) and cell networks. Using the context of play, location-based games were at the forefront of experimentation by combining location-based technologies.

There was a specific moment in Locative Media when projects focused on a context of play both in the artistic sector and also commercially. In the commercial sector there

were *Botfighters* (2001) in Europe, and *Samurai Romanesque* (2001) and *Mogi-Mogi* (2004) in Japan, while in the artistic sector there were the Blast Theory projects of 2002-2004. Different approaches to game-play (using a combination of technologies) revealed elements that can be implemented in future applications of location-based technologies. In these games, the city is seen as a backdrop to the game-world/environment, and walking within it forms an integral part of the game narrative. Location-based games create a kind of ontology that can be studied for future applications of location-based technologies, as well as illustrating how to create a context for a social and situated interaction in a specified locality.

I investigate location-based games under three strands: the technologies used and their characteristic of changing temporalities, the context applied, and the emerging ontology. In other words, the characteristic of wireless technologies to create a notional realm in which communication takes place, the context of the game itself, and the meaning and the emerging ontology that are supported by representations of space. Inserting a new form of spatial syntax through the combination of technologies and changing temporalities, location-based games depict the opportunity and potential of wireless technologies to offer new contexts that can reinterpret urban space; and they display the ability of network technologies to surpass normative models of telecommunication and transcend them, by applying an alternative context in everyday reality. Representations of space, historically associated with grand narratives and the distinction between the actual and the imaginary, become real-time updated graphical representations that illustrate a fusion between the actual world, the game's virtual objects and the imaginary game world.

Location-based games offer an alternative contact for the apprehension of spatial practice as a qualitative experience that includes virtual elements and properties of physical space. These games reconfigure the model of spatial practice and create a mix that consists of the game's imaginary world and its virtual items mixed with the experience of walking and moving in the city. Maps and alerts are key narrative features that represent the game's imaginary world. Maps represent the game's predefined territory and depict key spatial narrative features, such as the location of opponents and objects found in the player's immediate vicinity. Supported by tracking and sensory technologies, these key narrative elements are updated in real time and are sent to the player in the form of notifications, either by alerts or by active representations on maps. This article investigates this specific period in location-based games and asserts that the technologies employed to support the game system create a notional realm in which the players' actions have meaning.

TECHNOLOGY, CHRONOLOGY

Locative Media experiment with location-based technologies and create socially active networks. Working with cartography, Locative Media rearticulate walking in the city as a

process implemented through, and affected by, continuous access to telecommunication technologies. The mobile phone, and radio-based technologies such as Bluetooth, the Global Positioning System (GPS) and Wi-Fi, enable a mobile device user to access a virtual plane of data, a data space consisting of the Internet, the cell network and the satellites which support the access to and processing of data.

The Yellow Arrows project, which began in 2004, is a representative example of Locative Media. This project creates a user-authored environment by asking participants to paste stickers anywhere in the city of New York. Each sticker carries a text message left by the participant. Pedestrians who spot the sticker can retrieve the message left, and add their own by sending a text message with the sticker code. The **Yellow Arrows** project has now expanded to other cities, as in the punk rock Washington tour of 2008. The Urban Tapestries project also creates a user-authored environment. Participants using a PDA (Portable Digital Assistant) and a London map can pinpoint their location and write messages about that specific location. Participants leave notes of their recommendations, personal experiences, observations, information, or descriptions of their walk in the city (Silverstone and Sujon 2005, 39). **Other participants can access, edit and add notations.** Also in 2008, the London-based Hive Networks collective created the **Hidden Histories** project in Southampton. This project focuses on education and oral history, using the Southampton Oral History Archive. With Wi-Fi, Bluetooth and FM radio, users access audio file hot-spots located around the town's landmarks and significant places. These audio files contain descriptions and stories by local residents and war veterans. The project explores how the city can become a museum, and progresses into a more conceptualized idea of how this technological realm and its potential can be applied in the context of education and history.

"Annotating the city with 'geograffiti'" (Hemment 2005, 33) and "pervasive gaming" (Benford, Carsten and Ljungstrand 2005, 54) are some of the terms used to describe new data processes that create virtual parallel worlds. Locative Media associate digital media with location (Tuters 2004) and put location at the forefront of social interaction between technologies, devices and people (Hemment 2005, 33). Locative Media mark a creative intervention in the urban environment. Such ad hoc networks are being discussed as encouraging examples for the future application of autonomous networks (Rheingold 2002, 139-159) created in local areas. Technologies originally created for purposes of surveillance and civil control are now being reappropriated, reinterpreted to include the level of the individual in their network architecture (Holmes 2003). Location-based games also play a large part in the formation of an understanding of Locative Media. Using ideas embedded in Locative Media, location-based games offer a redefinition of future applications of tracking and mapping technologies, ad hoc networks and network processes. Experimenting with new technologies, location-based games recontextualize location and create social contexts in a mixed-reality model.

In the period between 2001 and 2004, experimentation with location-based technologies that combined the Global Positioning System (GPS), Bluetooth (short-range data exchange), Wi-Fi (wireless and LAN Internet), Short Messaging Service (SMS) and voice calls, provided illustrative examples of the possibilities for Locative Media to create people-situated interaction in public, to alter the experience of walking in the city, and to recontextualize location. Between 2001 and 2004, artists' collectives and commercial projects focused on a context of play. The context of play applied in these projects reveals very successfully the possibilities of location-based technologies in recontextualising location to represent the city in a user-authored annotative environment, and to create a context for social interaction in a locality. This article highlights the most important location-based games and examines the ability of these new technologies to create a notional realm of telecommunication in which the game world is materialized.

CHANGING TEMPORALITIES

It was when Locative Media were being established as a field of practice and research that location-based games began to emerge, together with arguments on the rearticulation of the experience of time and place through networked technologies and the mobile phone. A new notion was created that saw a communicational space being added in everyday life: a notional realm of telecommunication formed by the transmission of data, and by the actual network infrastructure of base stations, relay aerials, antennas, satellites—the nodes and intersections used to carry data.

In 2001 Sadie Plant, in her paper "On The Mobile," was the first to identify that in the mobile mode of social life, boundaries of time and space are renegotiated (Plant 2001, 70). In 2004 McCullough, in his book *Digital Ground*, recognized that the future of location-based technologies and public displays created possibilities for the city grounds to become a live surface (McCullough 2004, 88). According to McCullough, new networks should be perceived by the sum of their dynamic components, as "constellations of services" rather than just a network of computers (2004, 107). GPS displays of geo-data are increasingly becoming ubiquitous, so that "representing scenes and situations becomes the essential challenge" (2004, 91). Nigel Thrift in his paper titled "Movement Space" imagines a "chronometrical sea" (Thrift 2004, 589), a space created out of the endless calculations performed between the network components, such as time switches and data packet fragments. Thrift argues that "vocabularies for describing spatial configuration will change" (2004, 599), a "sense of direction will become given" (2004, 600), and "space will increasingly be perceived as relative" (2004, 589). Thrift sees a perpetually mobile space, an environment created out of what he calls "qualculation" which is formulating, in new ways, our sense of location, metrics and access to information (2004, 593). He suggests that the "networking of space and time"

(2004, 596) is creating a new way in which space and time are experienced: “locatable space is changing its character” (2004, 597).

Just as Plant identifies a tension among mobile phone users as to how to perceive the space in which their conversation takes place (Plant 2001, 52) and Thrift suggests the emergence of a mathematical realm of calculations, the qualities and quantities of a new space of possibility are emerging through new applications of telecommunications and location-based technologies. The games described in this article employ a transfigurative mix of location-based technologies to create a playful and social activity within the urban environment. The combination of technologies and networks that supports the communication between players allows for representational tools such as maps and creates a notional realm that coincides with and allows for a reinterpretation of reality. Using mobile devices, location-based games illustrate how the notions of the virtual and the actual coexist in the access and process of telecommunication. The physical space felt by the individual’s senses, and the notional realm experienced by technological equipment, create a new model of spatial practice. Movement and coordinates within the city space are reinterpreted and display the capacity of the individual to share an experience of the urban environment with a virtual world.

EXAMPLES OF LOCATION-BASED GAMES

Mogi-Mogi. 2004. Tokyo/Japan (DURATION: 24/7).

Mogi-Mogi is a recent example of a commercial location-based game. Still very popular in Japan, it started in 2004. Borrowing from the Pokémon craze, the objective of the game is for players to collect virtual items located in specific locations and earn collection points. The game uses a map—a graphical representation of the game’s virtual world that corresponds to the real-world maps of Tokyo and Japan. Subscribers pay a monthly fee. Players can swap objects between them and meet to exchange objects at allocated meeting places. Players can also play online by reading the map and assisting players on the street.

Botfighters. 2001. Finland, Sweden and Russia (DURATION: 24/7).

Launched in April 2001, *Botfighters* was created by the It’s Alive creative media company. It is run by Telia network operator in Sweden and by DNA Finland in Finland. To join the game, players initially log on to the game’s website, where they create a robot and choose items such as ammunition, protective shields and ‘health kits.’ *Botfighters* is based on the Short Messaging Service (SMS), with players receiving SMS messages alerting them of another robot’s presence nearby. A fight between two robots is then conducted with text messages: players write directional actions—for example, ‘fire,’ ‘retreat,’ ‘use protective shield,’ ‘use weapon,’ ‘use ammunition.’ Battles can last up to twenty minutes. SMS messages also alert players when virtual items such as health kits or weapons and ammunition are nearby; players collect them by physically moving to the indicated

location. The game system tracks the user's location/position inside the cell using the method of triangulation (one mile proximity). In a story read in London's *Guardian* newspaper: a player who is shopping in the supermarket with his wife is interrupted by a message alerting him that another robot is nearby; he then detaches from the boredom and domesticity of supermarket shopping, and engages in battle with that robot (Dodson 2002). Players are charged for every message sent, with the profits shared between the network operator and the It's Alive company. On average, subscribers spend £10 a month, although enthusiastic players have been reported to spend a lot more. Currently, the game is very popular in Moscow, where it has been run by SonicDuo since 2003. Players there have the option to download a 'radar facility' into their phones to locate other Botfighters (Dennis 2003).

Can You See Me Now. 2002. In Sheffield (DURATION: 6 hours), Rotterdam (DURATION: 20 hours) and other cities. Blast Theory, a UK-based artists' group.

The game assigns two types of players: street runners and online players. The street runners (who are Blast Theory members) use hand-held computers, GPS receivers, wireless network connections and walkie-talkies to chase up to 15 online players. The street players and the online players communicate with each other and intersect each other's communications. All players see a map that is a graphical representation of the city, defining the game's terrain and depicting the players' location (see Figures 2A, 2B). Each online player controls a virtual avatar that runs at a set speed on the virtual map. When a street runner approaches an online player, online players have the option of viewing a 3D representation of that place in the city. Players can zoom in and out of the map. If a street player approaches an online player within a six-meter radius, he/she has been caught.

Uncle Roy is All Around You. 2003. London, ICA (DURATION: 60 minutes). Blast Theory. Street players and online players collaborate to look for Uncle Roy and exchange information. Street players use a hand-held computer to see an interactive electronic map, which corresponds to a model of the real city (see Benford et al. 2003). Online players also use this map to help street players in their quest by sending them text messages with directions and advice. Street players are directed to various locations throughout the city to look for a variety of clues in the form of postcards and physical objects, which can be found in specific locations. The game ends when players find Uncle Roy's office. When street and online players finally find the location of Uncle Roy's office on the game's electronic map, the street players physically enter an office and answer questions found on postcards, while online players enter a virtual office and answer the same questions as the street players.

I Like Frank in Adelaide. March 2004. Australia (DURATION: 60 minutes). Blast Theory. This game is similar to *Uncle Roy Is All Around You*, but here the online and street players collaborate to find Frank. By using only a 3G phone, street players communicate with online players via voice and text. Online players see a virtual representation of the city, a map that depicts the location of street players and specific locations which need to be 'unlocked' by directing street players towards them. The street players then recover postcards with questions that give them clues to Frank's location. They also receive cryptic text messages with clues. The game is over once Frank has been located.

Samurai Romanesque. Since 26 January 2001. Tokyo, Japan (Java based; DURATION: 24/7). Borrowing from MUDs, this game is based on a fictional world of ancient feudal rule in Japan. The game world is affected by real weather conditions, and players receive weather reports on their phones. Based on i-mode graphics, players see a graphical representation of their character/avatar. The samurai in the game have a 40-day life-span, within which they can produce children who will inherit some of their parents' properties. Players continue playing with their samurai's offspring. Battle begins when two players—two 'samurai'—come in close proximity. Players have the option to use instant messaging to chat with their opponents. Power-ups, weapons and other collectable items can be found using the game's map, which also depicts virtual shops and actual meeting places for players to socialize and swap items. The map represents the city they are in. Subscribers pay a monthly fee.

Human Pacman. 2004. Singapore (DURATION: 10 minutes).

The players consist of two pacmen with two helpers, and two ghosts with two helpers. The helpers are stationary, but the game characters are mobile and wear a VR helmet. Their view is a mix of the game's graphics—dots, power pills and cookies—superimposed on a video image feed from the camera mounted on the VR helmet. Stationary players can see the whole map of the game and direct the mobile players to specific locations through voice communication (Cheok et al. 2004, 74).

PacManhattan. 2004. New York. U.S. (DURATION: 10 minutes to 1 hour).

Also inspired by *Pacman*, *PacManhattan* uses a less complex technology set-up. The perfectly gridded streets of Manhattan are mapped onto the famous grid of the Pacman video game, and players dressed as Pacman and ghosts chase one another on the city streets. Using mobile phones, the street players communicate with stationary players, who use a map to update the street players' position, informing them of their opponents' movements and the location of power pills and cookies. The street players rely on the information coming from the stationary players.

Shoot Me If You Can. 2002-2003. Korea (DURATION: 90 minutes).

Borrowing from and inspired by first-person shoot-'em-ups, players chase each other on the city streets. Split into two main teams that wear distinctive stickers or t-shirts, each member tries to 'assassinate' a member of the opposing team by taking that person's photograph.

Pirates! August 2000. Bristol, UK (DURATION: 20 mins to one hour).

This game is an example of early experimental work (2000) based on academic research. The game scenario is based on pirate ships, naval battles and treasure hunting. Players in groups are assigned to a ship. The ship and its captain have various upgrades as the game progresses and players (team members) complete missions. Using PDAs and portable computers, players see a graphical representation of the virtual game world and choose to make landfall or attack another ship (that is, other players) by physically approaching that area within the game terrain (see Figure 7). Sensors placed in the game arena enable the tracking of virtual objects and players. The game world—lands and an archipelago—are mapped onto physical space: "An important reason to make 'Pirates!' a mobile game, is to make real world properties, such as locations, objects, and states of co-location between multiple players, intrinsic elements of the game" (Björk et al. 2001).

CONTEXT: MAGIC CIRCLE, VIDEO GAME INFLUENCE, AND THE JOURNEY-STORY FORMAT

Location-based games such as the Blast Theory Projects, *PacManhattan*, *Human Pacman* and *Shoot Me If You Can* have a set duration and are played within a pre-specified terrain in the city. The 24/7 games such as *Samurai Romanesque*, *Mogi-Mogi* and *Botfighters* can be played anytime and anywhere in the city. But in *Botfighters*, *Samurai Romanesque*, and similar games, the players' actions, battles and upgrades take place inside the game's imaginary world, while in games such as *PacManhattan* and *Shoot Me If You Can*, the players' actions are enacted in actual space, with players physically moving from one location to another to catch or avoid opponents.

Salen and Zimmerman in their book *Rules of Play: Game Design Fundamentals*, use the term "magic circle" to describe "the space within which a game takes place" (2004, 99). The magic circle creates an enclosing notional space in which the rules of the game and the players' actions are ascribed meaning relevant to the game's goals and set playful activity (Salen and Zimmerman 2004, 374). According to Björk, one of the co-creators of *Pirates!*, "players can only change the game state by performing actions" (Björk and Holopainen 2003, 3). According to Salen and Zimmerman, "the organisation of spatial features in a game is critical to the design of a game's narrative space of possibility" (2004, 390). In location-based games, the city space within which the game world is found becomes the space of possibility. Location-based games are played within the urban environment; their magic circle encompasses the real world and the game's imaginary

world. The space of possibility is inscribed inside the city itself and is formulated by the players' movement within it.

For Henry Jenkins, spatial narrative in video games constitutes the base of the game's narrative structure: "within an open-ended and exploratory narrative structure like a game, essential narrative information must be redundantly presented across a range of spaces and artefacts" (Jenkins 2004). Video games use the journey-story format: in *Doom*, *Final Fantasy* and the *Tomb Raider* series, clues and artefacts are embedded within the game's mise-en-scene, and the player explores and unlocks secrets as she/he is navigating the game world (Jenkins 2004). For Murray, in her book *Hamlet on the Holodeck*, the journey-story format adds "the dramatic power of navigation" (1997, 82) and enables players to feel real emotions of fear and suspense (1997, 135). Murray locates the influence of navigation as a key element in video game design to the *Pong* and *Pacman* games (1997, 80). Location-based games borrow codes and conventions from the journey-story format and the video game genre. For instance, in *Botfighters* players collect health kits and weapons in the same way as in *Doom* or the *Tomb Raider* game series. In the Blast Theory projects and *Shoot Me If You Can*, the city becomes a maze of paths and intersections, with players running and hiding in order to catch or avoid opponents.

For de Certeau, "Every story is a travel story—a spatial practice" (1984, 115). A spatial practice is not defined through attributes of space conceptualization (distance, duration, the alphabet); it can be seen as a narrative structure of tempo, order and form (1984, 116). De Certeau asserts that every journey-story is a spatial practice that embodies spatial narrative. Telling a story or walking down the street implies a spatial narrative, authored or self-experienced. This spatial narrative is formed as one encounters objects, places and intersections, so that a real-life experience can become a spatial narrative. The model of spatial practice and the journey-story format are narrative elements used in all the games discussed in this article. In *Pirates!*, *Human Pacman*, *Botfighters*, *Samurai Romanesque* and *Mogi-Mogi*, the game world is superimposed onto real space, virtual objects are found in real space, players look for them in specific locations—in physical space and to progress within the game narrative.

In location-based games the spatial distribution of game objects within the game's pre-specified terrain creates the experience of a spatial practice, narrated by the game context and its magic circle. Objects and random encounters with opponents reformulate the players' experience of walking in the city, and allow for a reinterpretation of otherwise familiar surroundings and places. A quotation from a player on the *I Like Frank* website states: "I didn't find Frank in any kind of embodied sense, but his trace encouraged me to be a tourist in my own city and to keep seeking out those individual and uncommon details that struggle for recognition within the everyday experience of public life" (Anon. 2004).

EMERGING ONTOLOGY: REAL PLACES, MAPS AND VIRTUAL OBJECTS AS KEY NARRATIVE FEATURES

In location-based games, objects and encounters with other players are key narrative features that form an integral part of the game narrative. In *Botfighters*, for example, SMS alerts provide information as to the location of useful items such as health kits. Communication by phone in *PacManhattan* and *Uncle Roy*, and alerts by SMS in *Botfighters* or by cute graphical representations in *Mogi-Mogi*, are all forms that illustrate the necessary narrative features.

In the book *The Production of Space*, Henri Lefebvre divides social practice into the “three moments of social space” (1991, 40). “Space is conceived of as being transformed into ‘lived experience’ by a social ‘subject’, and is governed by determinants which may be practical (work, play) or ‘biosocial’ (young people, children, women, active people) in character” (Lefebvre 1991, 190). In location-based games, the game system creates a social world which is notionally superimposed onto actual space, so that the imaginary game world is perceived as a new dimension, added as a layer onto actual space. During these games, space or walking within it is perceived within the variables that occur from the differentiation of what’s actually there and what’s communicated and felt by the interaction with the game and other opponents. This is the effect of “representations of space” on the individual’s perception of social space, as Lefebvre asserts.

According to Lefebvre, maps and all kinds of “graphic representation or projection” (1991, 285) are representations of space. Maps can be seen as communication and information systems, “conveyed by images and signs” (1991, 233). In location-based games, the maps used depict minimal information, only what is necessary for the player’s navigation. In *Can You See Me Now* street runners chase online players, supported by a combination of GPS and Wi-Fi, while using a PDA that depicts a map of the city and the position of online players. Stationary players use a similar map that depicts the location of street runners in real-time. The creators of *Can You See Me Now* describe the representational maps used by online players and street players as “a highly abstract 3D model of the hosting city. The model shows the streets’ layout and outlines models of key buildings but doesn’t feature textures to details of dynamic objects such as cars or, of course, most of the population” (Benford et al. 2003). The street runners use two maps, one of a global view and one of a “close-up local view centred on their current location” (Benford et al. 2003). In these games the map acts as a tool and the anchoring element that validates the coexistence of actuality with the game’s imaginary world. In *Human Pacman* the player’s view is a mix of game graphics and the video image of the real world. The creators of *Human Pacman* explain how the two representations of the physical world and the Pacman world coexist: “Pac-World is a fantasy world existing simultaneously in physical reality, in AR and VR modes” (Cheok et al. 2004). In *Human Pacman* the player’s view is of virtual game world overlaid onto actual physical space:

“We have converted the real world to a fantasy virtual playground by ingraining the latter with direct physical correspondences” (Cheok et al. 2004).

For Henry Lefebvre, representations of space can be thought as an expression of social practice carrying relative relations between a “common knowledge and ideology” (1991, 41). Representations of space are founded within an understanding and knowledge that are between real and imaginary. In representations of space, space is conceived through an order of signs, codes and “frontal relations” (Lefebvre 1991, 33). In location-based games, the game world and actual reality coexist. Players have an understanding and knowledge that the game world is artificially infused with actual space—it exists in parallel to and reinterprets the players’ location within the context of the game. Maps and alerts help illustrate how the game world encompasses and is superimposed onto actual space.

GAMES’ SOCIAL SPACE AND SPATIAL PRACTICE

According to de Certeau, a walk through the city can be considered to be a journey-story and a spatial narrative, with the objects encountered, the buildings and junctions, all forming part of a spatial narrative and becoming a form of spatial syntaxes (1984, 115). De Certeau suggests that walking in the city can be thought of as temporal variations resembling ‘turning phrases’ and other conventions in literature (1984, 100–101). For de Certeau, “Space is composed of intersections of mobile elements. It is in a sense actuated by the ensemble of movements deployed within it” (1984: 117). “Stories thus carry out a labour that constantly transforms places into spaces or spaces into places”; stories can identify places and actualize space (de Certeau 1984, 118). In location-based games, the narrative structure of walking in the city and experiencing space includes additional elements of the game world, as well as buildings, intersections and familiar surroundings. Walking in the city can be altered and formulated by making decisions and changing course to collect a virtual item, or to encounter or avoid opponents. Players suspend disbelief and venture out in a specially constructed space of meaning that includes imaginary elements of the game world and incorporates real elements from the urban environment. Binding together imaginary game world and reality, the sociality ascribed in these games gives an extra dimension and realizes the games’ reason for being—their *raison d’être*.

In location-based games, the dynamic of mixing screen-based information with the urban environment creates a kind of ontology not present in other manifestations and experimentations of location-based technologies. The ontology of virtual items/objects and reappropriated places creates a kind of dynamic that is worth noting and recognising as unique. The game’s imaginary world creates a social space in which players interact. Location-based games manage to mix virtual objects with elements from the real world. Walking in the city is seen as a model that can be modified and transmuted into a narrative experience. The players’ walking and location are recontextualized and

given an additional meaning. By adapting a virtual avatar or enacting a game character on the city streets, an additional context is added to the player's location. Employing a mixed-reality model, these games illustrate the concept of virtual objects and a social world which are created out of the game context and coexist with the experience of walking in the city and everyday life. These games create a sociality by prompting players to interact with one another in a specified locality.

CONCLUSION

Today, Sony's PSP (PlayStation Portable) offers in one product the capabilities that were once improvised using a **combination of devices**. The PSP offers four different peripheral devices that provide GPS navigation, video viewing/making, and instant messaging. Go!Messenger, which requires wireless bandwidth connection, provides instant messaging, voice and video calls. It's supported by BT (British Telecom) in the UK. Go!Explore is a GPS device that provides satellite navigation for walking and driving. No Internet connection is required, as the attachment links up directly to satellite. The PSP's Go!Camera allows for video calls and taking pictures, and includes video editing software. With Go!View, users can subscribe to/rent and download films and TV programmes. There's no uploading capability; rather, users first download content to their PCs and then transfer it to the PSP.

Presented as a town guide, the PSP Go!Explore offers navigational capabilities as well as a user-centered annotative environment. The user can store and bookmark relevant information such as favourite places and routes (Anon. 2008). It does not include the option to view annotations made by other users. However, the PSP Go!Explore does reveal a world in which the user is the solo inhabitant. It uses 3D and 2D representations of the city space to help users identify their bearings, and also features a compass. The PSP Go!Explore makes GPS accessible, as a function, to the level of the pedestrian. What's missing, though, is a *raison d'être*, a sociality ascribed in the interaction with the interface and the place the user is found in. What is stopping Sony from integrating the PSP's Go! functionality with a social networking application for gaming? It can only be a series of proprietary policies and privacy issues and the sheer number of users. This new device does not manage to surpass the potential created in the early days of the almost DIY (Do It Yourself) combination of technologies. What the PSP Go! suite lacks is social interaction.

Furthermore, the PSP Go!Explore faces competition from mobile phone manufacturers and telecoms. Nokia and Motorola have independently formed services that provide location services. GPS navigation and downloadable town guides are now offered as commercial services from most mobile phone operators and telecoms. In the UK, T-Mobile's Web'n'Walk service integrates access to the Internet, Google Maps and other navigational features and offers pedestrian navigation, listings and address-finding software to the mobile phone. In October 2008, T-Mobile also released the Android

phone. The Android is a device that supports Flash applications and promises to create a community of users that can populate the device with community software in the form of Java-based programmes and games. Today all current-generation mobile phone handsets include services that were once improvised on a level of experimentation and under a context of play.

For a brief moment at the beginning of this century, artistic work experimented with the potential and ability of mobile networks to create new contexts for situated and spontaneously formed interaction between people. Moving away from screen-based gaming, location-based games created an ontology of virtual objects and real places, mixing reality with the imaginary game world. Against the backdrop of changing temporalities and through the use of a transfigurative mix of technologies, location-based games demonstrate how access to a social world by a technical network can alter the experience of spatial practice both momentarily and for some time. What was once a DIY approach to a combination of technologies is now offered in most mobile devices. The field of Locative Media continues to develop and creates new approaches. Location-based games as a movement and a genre have had their moment. But the ideas engendered through these games should be addressed and explored further in any future application of location-based technologies and social interaction in a specified locality.

Location-based games are illustrative examples of how walking in the city can be altered by the addition of an imaginary social world that is combined with actuality via access to mobile devices and networks. Representations of space become active information displays used as tools to interact between virtual networks, information and people in actual space. The elements of the games' magic circle, narrative features and journey-story format bind together and make the players perceive an imagined game world that exists within the boundaries of the physical world. In location-based games the willingness of players to explore and accept an imaginary game world through the use of representations of space alters and modifies the experience of spatial practice. As I have demonstrated, location-based games can be analyzed in three strands: the technologies used and the emerging ideas; the context applied for social interaction; and the emerging ontology. The characteristic of changing temporalities in these new technologies, the game context and the representations used, all create a new experience for their players.

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Modes of Being in Mobile Telecommunication

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ABSTRACT

In tandem with the boom in mobile media, the number of scholarly articles and essays on the social impact of the mobile phone is increasing every day. Some recent studies have expanded their focus to pay closer attention to specific social and individual uses in “developing” countries, acknowledging mobile use at different social and political levels in different regions of the world, and covering a wide range of other topics related to the mobile phone. However, much of the argument seems to follow preset lines or notions such as “seamless connectivity,” “ubiquity,” “flow” and “new subjectivities.” What do these notions actually signal to us?

As can be seen in some of these examples—the so-called “iPod jack” practices of live sharing, the difficult levels of representation in the interactive theater play *Call Cutta Mobile Phone Theater* by Rimini Protokoll—communication technology functions as a setting that deliberately enhances subject-making processes and aims at a commodification of subjectivity. Today, individual subjectivity seems to be considered more important than ever, and has already become implicated in an economic cycle of subjectivity all its own, involved in production. In my paper, I focus on the relations of individual subjectivity and social systems. By analyzing one project in particular, *Call Cutta Mobile Phone Theater*, I attempt to clarify technologically enhanced modes of “being-in-space” produced through individual and collective uses of digital mobile communication.

INTRODUCTION

The interventions of portable digital devices such as mobile telephones, MP3 players, PDA devices, and many others, have been described as new and crucial factors in the formation of contemporary notions of space. Especially important for the perspective of this study is the notion that mobile telephony is said to enhance the complexity of

subjective space—for example, by its passive aural communication functions, and by questioning and relativizing existing spatial boundaries. The impact of these devices' mobility (which also informs their users' mobility) is sometimes paralleled to the shift in photography brought about by the transition from still to moving images in the 19th century.

Mobile phone studies and practices have each faced rapid development over a rather short time span. Together with the statistics demonstrating endlessly increasing diffusion rates of mobile telephones, the prefixed ideas of connectivity and of ideology—"seamless connectivity," "ubiquity," and others—are frequently used in a hyperbolic rhetoric of daily life. It therefore does not take any great amount of discourse analysis to point to the ideological character of these constructions. Here, it is important to be conscious of what has and what has not really changed under the influence of wireless technology and portable gadgets. What has actually changed (this much can be said) is the social institutions in public environments, leading to a variety of significant alterations in the relation of public and private space, as well as introducing critical changes in the perception of and attention to the self as related to an external social reality. This implies not only a transcendence of spatial models, but also modal changes in our "being-in-space," or more precisely, in subjectification, in settings provided by mobile telephony.

However, significant problems of mobile telephony research have been located in the deliberately expansive nature of the field. Because of its very character—one of essentially complicating spaces, territories, and domains, resulting from the emphasis on connectivity and mobility—this kind of research does not fit easily into any single academic discourse. While mobile telephony research connects and engages in different, otherwise rarely coinciding terrains, categories within the academic field have long become unstable, just as so-called new media have brought variability, modularity, automation, and transformations of encoding and decoding systems. In our context, this suggests a possible relevance and potential use of the cognitive modes found in the poetics of art works—art works as alternative forms of knowledge that enable artists and viewers to examine current phenomena while they are still emerging. What sort of fundamental gaps lie between reality, visions and imaginaries? How do artists observe, process, and contradict the "dispositive" of mobile communication within their theories and practices?

Seeing some notions quite repetitively used, one cannot help but notice that the original contexts of some of these notions are easily changed, or even forgotten. One familiar example is the qualification of communication as "seamless" (seamless connectivity, interaction, integration) and "ubiquitous." It should be mentioned briefly here that the notion of "seamlessness" was regarded as describing something undesirable and negative when Mark Weiser (1991) first presented the idea—together with the set of notions of "seamfulness" within a universalizing system. Yet the positive qualification

has been more widely adopted, even though some phenomena still invite one to reconsider the notion of “seamfulness,” as with beautiful seam, good seamful design, etc. (MacColl et al. 2002; Greenfield 2006). Seamlessness as a structural metaphor is of course connected to imageries of weaving, networking, and working in general, but in the context of mobile telephony it has served the obvious purpose of conveying a simplified picture of a complex hierarchy—one that is certainly more complex than a simple woven and sewn texture. This is even truer for the notion of subjectivity or “subjectivities” that is frequently used within communicative contexts. Many discourse-analytical approaches speak of “new subjectivity/ies,” “mobile subjectivity,” “data subjectivity,” “digital subjectivity,” etc. There are different nuances and emphases in each of these notions, but their specific meaning is not easy to grasp. How do we understand what is actually happening around us? Can it really be seen as a harbinger of the emergence of a “new subjectivity?” Instead of blindly following such an image, it seems advisable to start concretely rethinking these big frameworks, focusing on the “case” of mobile telephony. In my paper, I attempt to examine the juxtaposition of communications technologies with contemporary notions of “subjectivity/ies” in the context of mobile telephony. I also examine the metaphorical dimension of communications technologies through an artistic project, *Call Cutta Mobile Phone Theater*. This was the subject of a documentary I presented as part a series of mobile phone art projects for the exhibition *The Invisible Landscapes*.¹

WHAT IS CALL CUTTA MOBILE PHONE THEATER?

Call Cutta Mobile Phone Theater is a theater piece that was organized by the German/Swiss theater collective “Rimini Protokoll” in 2005. Essentially a mobile phone-based project, it provided personalized guided city tours via mobile telephone conversations in order to explore hidden memories, dimensions and layers in cities that had seemed familiar to the local participants. The project was divided into two parts—one in **Calcutta**, and the other in **Berlin**. In the first part, in Calcutta, the project was a remote-guided city tour for local people, who were navigated by a voice from a call center. The call agents operated as guides and actors at the same time. They navigated the audience from point to point through city streets, making them “discover” details, entering into a more and more personal dialogue, talking about their own memories, and arranging for the guided persons to perform minor tasks.

The second part of the project connected Calcutta to the “other side of the world,” Berlin. The navigator was still at the same call center, participating in the project there during nighttime in Calcutta, and during daytime in Berlin. The audience members in Berlin were guided through many surprising sites of “their own city” by a voice with an Indian accent. However bizarre this second part sounds, the Berlin version actually grew to become a more intimate conversation between two people who were remote from each other and connected only by telephone. In the documentary *Call Cutta*, directed

by Anjan Dutt (2005), Stefan Kaegi of Rimini Protokoll comments that:

[...] at the beginning, they [the participants] will feel somehow like being caught by a service line, because there is a service line at the other end. As time goes by, they (participants) start to trust the person on the other side of the phone, the voice becomes very human, and then you realize that this human voice is also lying on the phone, flirting with you on the phone.

Rimini Protokoll juxtaposed two widely distant cities, Berlin and Calcutta, by means of mobile telephony. This unexpected combination—that is, the absurdity of being guided through Berlin by a person on the other side of the globe who has probably never been there, combined with exoticism towards the Other (conversing with people in Calcutta)—opened up a new approach to thinking about mobile connections. For example, without idealizing theoretical assumptions of political thought, *Call Cutta* placed a new perspective on politics by reflecting a banal daily communication via the mobile telephone. In directing a lot of attention to the call center industry in Infinity Towers, Salt Lake City (in Calcutta), it highlighted interrelations between industry and globalization at the “personal” level of one mobile phone call. It showed how new communication technologies penetrate dynamic transnational economies, and how a global network system functions in unexpected ways, reaching into the existence of another human being on the other side of the world. What realities of individual existence have been left out or ignored in the development of theories and context in wireless portable technology? How can the invisible phenomena around mobile telephony be reflected back into thinking on the subject?

ASSEMBLING/SHUFFLING SUBJECTIVITIES

She is Mrs. Knowles, listening from Manchester. His name is Neelanjan, who calls himself Nick. He is one of the countless Indians who hide their real identity. (Dutt 2005)

Like conventional plays, there were dialogues here too. Sammy (a call agent) spoke his part, and I made up my lines as we went along. He told me anecdotes, I commented. He sang a song, I complimented. I asked questions, he answered. I laughed, he said it sounded like a cascading waterfall. I laughed again, conscious and embarrassed. (Wahi 2005)

The second quotation above is from one of the *Call Cutta* participants in Berlin. During the *Call Cutta* “performance,” call agents played multiple roles based on a script and, depending on individual necessity, on spontaneous improvisation. The agent started out in the role of an official instructor, but soon moved into that of a more friendly “tour guide.” As the conversation got more personal, and reversals of the questioning position were allowed, the mobile communication created the feeling that there were

two subjects who were remotely sharing a similar vision, almost as if their respective partners were just beside them. The agent shifted into the roles of guide, romantic storyteller, practical advisor, director, performer, personal friend, actor, and the exotic Other. Helgard Haug, a member of Rimini Protokoll, describes how “voices sensitively reflect[ed] psychological changes, negotiating modes and spaces of communication” (Dutt 2005). Using different modes of subjectivity, the agent made the participants feel secure. They did not feel on their own, but were guided into a comfortable zone, establishing a close bond.

The illusory impression produced by the performance of different selves may give access to intimate territory where two subjects start to interact on a very personal level. Conversing about one’s personal life—even if in a mode of assuming a fake personality—functions as a catalyst of communication better than any purely rational exchange of information would do. The illusory impression produced by the performance of different modes of self/ves through telephony may open up intimate territory where the two subjects start to interact on a very personal level.

On taking a cautious look at the documentary, the procedure at work in *Call Cutta* articulates a persona through the negotiations between a call center agent and a participant. In these negotiations, personal memories are shared and rearranged in relation to the specific site addressed in the mobile phone conversation. In the bilateral dialogue, each recreates the other’s persona; it is actually constituted by the invisible subjects themselves. They articulate themselves through the mutual creation of a fictional persona about which they negotiate their relations in a very concrete way via a personally connected voice. In a sense, call agents represent how the constitutive elements of subjectivities are copied, assembled, shuffled and (re)created as subjectivities. In other words, they “download” more and more fragments of the fictitious subject and “intimate” information, serving as a default persona that can be reacted to and juxtapose with subjectivities other than one’s own. Then their “updated”, articulated subjectivity can be “uploaded” again. That is, the process becomes a recursive form of subjectification.

In our specific context, *Call Cutta* can be examined as a model for different modes of subjectivity—different ways of understanding the construction of the self—that are developed in the quotidian use of mobile telecommunication. The increased mobility of new telephony structures changes the way we think, the way we form communications, and, as I want to argue, the very concept of subjectivity itself. Going back once more to the possibility (quoted at the beginning of this section) of hiding one’s identity by using different names, I would like to think about how concepts of the self and of identity are addressed here as “subject”. What does the use of fake names actually imply? Does it mean that one starts to perform as another self? Does it only remain a surface by which a person is identified through a specific sound? Does it have an effect on how a person’s subjectivity is integrated? There are certainly opportunities when people need to change the way they look or imagine themselves; when, in order to be accepted, they

resort to not telling everything about themselves, to representing themselves differently, emphasizing different properties of qualities, or simply using a different name. In *Call Cutta*, there is a short episode in which the call agent tells how, under the Nazi regime, his grandfather had to change his name from “Samir Singh” to “Martin Heynold.” Such a change of name is but one example of an “integration process” that is expected to occur when migrants come to start new lives in a new country. Changing one’s name is subordination to power. It is a strategy for the subaltern² to fit in and survive. In the same manner, the switching of subjectivity/ies can be seen not as an act of liberation, but as subordination to the rules of global capitalism.

With these subjectivities, the gap is filled between a banal, individual act of communication and the globalized market in the setting of the digital mobile network. Pointing out such contemporary instable subject positions in the dispersed social fields and in the identity politics of late capitalism, the art historian David Joselit (2000) refers to Ernesto Laclau and Chantal Mouffe (1985, 110–111), arguing: “It [identity politics] is lateral in that it arises from a different economy of coexisting subject positions rather than emerging from an essential human depth.” In the context of post-colonialism, Joselit designates such a shift—from a model of subjectivity that is founded in interiority, to one in which the self is constituted through a play of surfaces—as a condition of “psychological flatness”, echoing what Fredric Jameson (1991, 9) earlier described as the “emergence of a new kind of flatness or depthlessness, a new kind of superficiality in the most literal sense.” Keeping in mind that the juxtaposition of “types” of subjectivities can only be a metaphorical equivalence, is it such a form of unfulfilled, and never fulfillable, subjectivity (since differentiation is almost its only “purpose”) that can be observed in *Call Cutta*, or in attitudes towards customizing communication and personal representation through personalized ringtones in mobile telephones?

Considering the juxtaposed subjects in *Call Cutta*, such an attitude of modifying subjectivities can be seen both in the call agents and in the participants, as they interact with and reflect those of the agents. What does the process of “re-articulating” subjectivity indicate today? Being aware of the fact that the conceptualization of subjectivity is also set in motion, is mobilized, we see that mobile telecommunication inevitably problematizes the intricate relationship of the visible and the invisible. In other words, it is not only about spaces created by and in portable artifacts which are re-rendering or re-appropriating, a space under a different grammar derived from pre-decided conditions, but also about the subjectivities symbolizing and closely attached to capitalism. Looking back to the late 1980s and 1990s, there were extensive cultural inquiries into relations between the body and electronic technologies, in which new forms of subjectivity were theorized, from cyborgs to digital flâneurs to networked space. Epistemological pluralism was frequently discussed together with postmodern thinking and the creation of network spaces (Turkle and Papert 1992; Turkle 2001). Through the shift, we may have started to become familiar with a different epistemic modality of

self “presence.” Can we say that portable network devices accelerate the exploration of alternative forms of the self on the level of something that is done in everyday life? And with stronger bonds to capitalism?

“IMMATERIAL LABOR” AND INTIMACY IN MOBILE TELEPHONY

Examining *Call Cutta* from yet another angle, it is easy to see that communication itself has become an important—if not the most important—form of labor, as well as figuring prominently in processes important to the realization of projects. This circumstance raises more questions than it can offer answers about relationships between labor and economic value in the spectacular phase of the capitalist system. Referring to such a transformation of forms of labor, thinkers from the historical Italian Operaist Movements—for example, Maurizio Lazzarato, Antonio Negri, Paolo Virno, and others—elucidated the notion of “immaterial labor” in the late 1990s (Lazzarato 1996; Virno 1996; Negri and Hardt 2002), and stated the dramatically increased capitalist value of subjectivity. According to Lazzarato, “capitalism changes value and sensitivity” and “the management mandate to ‘become subjects of communication’ threatens to be even more totalitarian than the earlier rigid division between mental and manual labor (ideas and execution/mind and body), because capitalism seeks to involve even the worker’s personality and subjectivity within the production of value” (Lazzarato 1996). His statement (which, by talking of a “struggle against work,” refers back to notions of work and labor developed in the earlier context of the Operaist Movement) can underline the importance of mobile phone studies in such a case study as that of *Call Cutta*, understood not as a unitary approach in the field of knowledge and inquiry, but from a much more general, philosophical viewpoint.

Looking at *Call Cutta* again, the project uses a naïve fascination at its functional root—the capacity to communicate in a surrogate intimacy even with a total stranger on the other side of the world. Actually, in terms of “immaterial labor,” this may be the most controversial point of the whole project. In *Call Cutta*, communication is treated as equivalent to working with structures and contents with different criteria, consumable by new communications technologies. Mobile telecommunication consumes not only information, but also (the “Indian” operator’s) subjectivities, which enrich and valorize otherwise neutral information through their handling, copying and editing in their productive and reproductive labor as part of the working class. Implicitly, *Call Cutta* uses the figure of the call agent as a generic application of the subjectivity of the initiators, and it commodifies the Indian operators’ personal subjectivities enacted in addition to their profession as call center information mediators working under exploitative labor conditions. Actually the role of “hidden-city guide tour” can be realized (and has been realized in many other projects³) with other technologies, such as Bluetooth, GPS, Wireless Internet with sensors, and others. But instead of combining the different wireless technologies, *Call Cutta* used a call agent as “the application of subjectivity,” and it succeeded in inserting an additional layer of subjectivity into the line of production.

Here, processes of realization, production and consumption are inseparable, because in the realms of mobile communication, the modernist distinctions between instrumental action and communicative action no longer function. Within the project, participants probably were not even conscious of the act of consumption they were performing: they were consuming without knowing what they consumed, and were becoming part of an inseparable set-up of agency in late capitalism. The complexity within the project was not limited to the group of call agents, but extended to the audience as well:

Who was the real protagonist of this play? It seemed that the way when we began as he urged me to see his world. Instead, I landed up performing, partly for others and partly for myself... Without technology this play wouldn't have been possible. Yet it talked about the scary world of call centers swallowing our youth and locking them in the dungeon of their stomachs. If theatre is about live interaction between, at least, two people, in this case there was a mobile phone, voices, strangers and I. Did I act? Then, what was *Call Cutta*? Was it really theatre? (Wahi 2005)

This is another quote from a *Call Cutta* audience member. It made me pay closer attention to the fact that commodification and consumption depend not only on the subjectivities of the call agents, but also on those of the participants, who were supposed to be on the consumer side. Were they also a part of production? Were they a constitutive unit in the commodification of subjectivity/ies?

What I raise here may sound overly critical, but the criticism is aimed at further articulating contemporary modes of mobile telecommunication. Needless to say, mobile communication surely opens up positive options as well,⁴ in a double act of communicating and consuming. In the case of *Call Cutta*, it is important to mention the different starting points of the audience members as against the call agents. For the audience members, *Call Cutta* was a participatory project that they entered out of a private interest and in their leisure time, while for the agents it was a "job" by which they could support themselves. Here the relationship of subjectivity can be seen as a part of an economic system and a processing configuration of self-articulation. Ultimately, subject formation is located today within economic systems that are stronger than ever before.

As can be seen in *Call Cutta*, this has exceeded the conditions, which are neither due to an "informational/cultural content" or "skill", but "humanizing" labor in a working class context, that is, more like subjectivity in general. With the current capitalist interest in what has been called the "knowledge industry", there is no longer any certain emphasis on specific (artistic/creative) subjectivity that is meant to stand for the "production of knowledge" or the production of cultural content. A predominant tendency of linguistic power in post-Fordist labor (Virno 2000) invites subjects in general to be a part of "production". But we should not forget that radical changes have

emerged not only concerning notions and definitions of labor, but also concerning concepts of subjectivities. How, in which terms, can we think of these simultaneous transformations?

Rimini Protokoll's intention was to invent a cultural use for those economic structures and infrastructures exploited by global capitalism. To put it cynically, *Call Cutta* eventually introduced a concrete model to capitalize and to exploit new layers of subjectivities in a mobile telephony setting, which, again, may serve as a model of communication services for the communication industry of the near future. Simultaneously, this really confronts us with the fact that contemporary cultural activities also run the risk of exploiting subjectivities. It is difficult to produce an autonomous product without being capitalized. Today, "[t]he conditions for economic production, artistic creation, and political action have entered into a zone of indifference where they appear linked through a series of reciprocal presuppositions" (Lazzarato 2005). Once you liberate something—identity, race, sexuality, class—it immediately and easily becomes a model for a market, instead of remaining a power of criticism. Here it can be seen that multiple subjectivities, commodified as parts of production, are contesting and questioning spaces of criticism by means of its ephemeral standing position; that is, they are strongly coinciding with the logic of capitalism.

THE "HIDDEN HOMELESS"

Another example of a specific "mode of being" attributed to mobile telephony and capitalism can be seen in a contemporary phenomenon in Japan, where the media have taken to speaking of so-called "hidden homeless." This term addresses those impoverished members of society who are rendered invisible, a very contemporary socio-political issue, especially among youth in Japanese society. In March 2007, it was even brought before the National Diet. The hidden homeless are, literally, those who cannot be recognized as homeless by their appearance. Generally, the homeless might be thought to be easily distinguishable by their worn-out clothes and shoes, by the big plastic bags in which they carry their all possessions, and by the cardboard houses they inhabit (rather than "better" housing in a large park), etc. But the hidden homeless do not look different from "normal" people—they are neatly dressed and carry mobile phones or sometimes PCs and portable music devices as well. However, in many cases, they are employed on a day-to-day basis and can certainly not earn enough money to rent a flat. They usually combine different places to stay, such as their friends' flats, or 24-hour spots such as Internet cafes, McDonald's restaurants, and saunas. Because of this, they are also called "Net Cafe Refugees" or "Mac Refugees".

The hidden homeless became particularly noticeable after the Japanese government—under the Koizumi Cabinet—diminished the legal regulations for employers, in order to stimulate the Japanese economy and conspicuously decrease the official number of jobless. At first, it seemed to work—at the surface level of statistics.

According to the next primeminister, Shinzo Abe, 600,000 more people found jobs, and the percentage of jobless fell to less than four percent (Anon. 2007b). However, the government's policy was more beneficial to big corporations and companies. It led to full-time employment being transformed to contract-based work, and even to a large amount of day-to-day employment with no legal insurance whatsoever. Tsuyoshi Inaba, a representative of MOYAI Independent Life Support Center—a non-profit organization working to support the homeless—warned about the changes among the homeless as early as 2004, when he said in an interview: “The overall situation is becoming more complicated. 10 years ago most of the homeless people were day-laborers, construction workers. Now people who have worked at different kinds of jobs became homeless. Some of them are young people” (Read 2004). According to a survey report by the Ministry of Health and Welfare (2007), compiled following an urgent request from the National Diet, there were 5,400 hidden homeless in August, 2007. 26.5% were in their 20s, and 23.1% were in their 50s. It is assumed that the actual figures are higher still.

Having no fixed address has effects on many levels of life, but it also makes the mobile telephone more important in the pursuit temporary solutions. For example, almost all job arrangements made by the hidden homeless—search, offer, confirmation—are done by mobile phone. The hidden homeless also use mobile phones for reporting their arrival at a meeting point. For them, the mobile phone guarantees availability to the market, but they have learned to see that this availability spells dependency more than freedom, for, simultaneously, they are managed by the capitalist rationale that is “embodied” in the mobile gadget.

It is not so long ago that the functionality of the “mobile office” or the portable home/living room (Kopomaa 2000; Bull 2000 and 2004; Fujimoto 2003) was seen as an important part of the capabilities of such portable gadgets, in an extension of the concept of “mobile privatization” proposed, for instance, by Raymond Williams (1974). However, a vision such as this is too simple, too naïve, to describe with any precision the reality of post-Fordist capitalism and labor. The negative symptoms associated with mobile telephony are deeply rooted within its very own reproductive nature. Once it is acknowledged that the hidden homeless can be expected to carry their own mobile phones, a great number of social and economic transactions are performed exclusively through the network of mobile telephony. These include automatically initiated cycles, which introduce differences or hierarchies among the homeless according to whether or not they have a mobile phone. The hidden homeless also become a new marketing target for venture businesses. The fact that they cannot vote without having a physical address is continually ignored within the political sphere, but extreme capitalist solutions react quickly enough, with the emergence of “new business[es] for the poor”. These new industries—such as one-night residences for the homeless, 24-hour manga/Internet cafes, real estate agencies dealing in low-rent properties requiring no deposit, and

others—rely on the existence and the functioning of a BOP (Bottom of the Pyramid) in society. They grow with the population of the poor.

Such camouflaged social venture businesses exactly fit the area that the government used to address with social welfare. Cynically enough, the hidden homeless are those who are excluded from capitalist society, and then re-included—but as consumers. In this endless cycle, the mobile phone is playing a significant role, much more than just a gadget associated with the sweet talk of “connectivity” or “ubiquitous communication”. Mobile connectivity can be twisted to open another social dimension altogether. The more the mobile phone is considered an essential tool, the more the flow of information exchange through the mobile phone plays a key part in sustaining the new conditions. Here again, the mobile telecommunication service is an industry that both supports and benefits from such users. The distinction between them is quite ambivalent.

MOBILE TELEPHONE CONNECTIVITY

The phenomena described above, performed and enacted in the context of mobile telephony, arguably form a different configuration in processes producing modes of being, ultimately forming subjects and leading to mutations in subjectivity. In the case of *Call Cutta*, the availability of the mediated voice (through mobile phones) gives a subject commercial value and makes his/her subjectivity into a commodity. However, the transformation coexists with ambivalent positions of creative activity, and these are more precisely linked through mobile connectivity. For the hidden homeless of Japan, the mobile phone is a necessary device to become, and to remain, available to the market. The two examples are very different, but both phenomena share as a common trait the fact that the mobile phone connects the subject to a mode of being “within” society—it represents the capitalist mode of society and strongly and directly reflects the individual realities in global capitalism. Networks only connect subjects. Behind these subjects, there are the accumulations of past and present politics and economics. This makes it all the more crucial to consider relational aspects of politics and history in contemporary subjectification—the mode of being—in mobile communication.⁵

Call Cutta shows us the fact that mobile telephone connectivity can create a space where an interaction of “human power, knowledge/information and action” can easily be realized. As a result, the interaction inserts a new stratification of reality around those engaging in mobile communications. Simultaneously, the space implies conditions in which multiple and experimental subjectivities can more easily live and play in high mutual dependency and in live sharing. The hidden homeless indicate an extreme cycle of consumerism in global capitalism by creating inseparable ties between the use of the mobile telephony and bare survival. Here, rethinking subjectivity (mode of being) as a consumerist mode of productivity, “subjectivity” as it is used today may at first give one the impression that it is inextricably linked to an activity of nurturing the economic system. Under this line of thought, it can be said that a space created by

mobile telephony tends to materialize all the involved subjectivity/ies as a commodity at different levels. There is no clear line between a symbolic capital and economic capital, social supports and venture capitalism. Individual subjectivities are not only the content of cultures any more, but are also transformed into economic production, which, according to my hypothesis, eventually feeds back subjectivities that have been exhausted and emptied out by capitalism. This process can be reversed into a cycle of production: a mobilized economy feeds subjectivities through the implementation of modes of mobile communication. This can be as pervasive as the technologically enhanced mode of “being in spaces” produced through individual and collective uses of digital mobile communication.

ENDNOTES

¹The Invisible Landscapes is a series of mobile phone art projects which I curated. It started in Malmö Konstmuseum and Rooseum Center for Contemporary art, Malmö, Sweden, in 2003. It was further developed at the Gallery of Chulalongkorn University, Bangkok, 2005, and Lund Konsthall in Lund, Sweden, in 2006. For further details, please consult www.invisible-landscapes.net.

²Here I do not use the notion as a military position, but in a sense of Spivak's notion in postcolonial theory.

³There are a number of mobile phone projects that were situated in city spaces in order to facilitate the experience of a mixture of real and virtual components, combining the use of different media—public telephones, internet/webcams, mobile phones with GPS technology, Bluetooth. For instance, *Ima Hima* (Prix Ars Electronica, 1999) by Neeraj Jhanji, was a “located” information service, indicating friends nearby, the nearest restaurants and shops or the exact address of the spot where the mobile phone carrier stands. Some other uses of locative media projects are a Bluetooth tour in Mölndal, Sweden (2002); *Can you see me now?* (Prix Ars Electronica, 2003); and *Uncle Roy All Around You* (2004) and *I Like Frank* (2005) by Blast Theory and others.

⁴As one of the positive examples, Rotkirch found that, as a collateral effect of the globalized movement of labor, mobile phones contribute to migrants being able to maintain distant relationships with their homelands. They have also helped them to establish and develop a network within their own social circle under aggravated language and living conditions. There exist other similar cases where the device has helped to build a network within specific groups of people.

⁵At the end of the fifty minutes of the mobile phone-guided tour, the two subjects are emancipated from invisibility by way of a mutual webcam, effecting what might be seen as a typical residue of theatrical modes of representation. The visual representations of the two conversation partners were revealed—to the Calcutta resident, in her usual working environment, and to the Berlin resident, by a monitor in the storefront window of a computer shop inside a shopping mall—the final point on the tour. The project experimented with an emphasis on temporary, ambulant forms of network existence (at least for the guided person), as well as on the power of voice, which connected the two subjects over a distance of 15,000 miles. However, this ending most of all confirms the significance of the materiality of communication.

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The Power of Momentary Communities

Locative Media and (In)Formal Protest

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ABSTRACT

Technological advancements have always been the harbingers of social change; however, the roles these changes take have varied implications for the populace. In recent years, the application and use of technology have accelerated for the individual and for the authorities. Technology is increasingly used as a method for societal monitoring and control, raising issues over civil liberties and personal freedoms. In this paper I will trace a history of informal protest and “momentary communities” from Rave culture of the 1990s to a non-protest/protest community of FlashMobs in the twenty-first century. Protest movements are reacting to increases in surveillance, infiltration and infringement of civil liberties by utilizing underground methods to achieve their goals. Locative media and the rise of ubiquitous computing have put power into the hands of the many and are being employed to enact protests online and on the streets. New technologies have allowed for new communities to be defined: FlashMobs can be seen as a protest for common space; SmartMobs utilize technology to better organize activist and rights protests. Citizens have new methods to mobilize large groups of people who share a common interest, goal or outlook, creating new “momentary communities.” These new methodologies are stretching the conceptual understanding of social protest and empowering citizens to react against authoritarian controls. This paper will show the power inherent in this new method of social organization and its potential (already under way) for activism and hactivism.

INTRODUCTION

TECHNOLOGICAL ADVANCEMENTS HAVE ALWAYS BEEN the harbingers of social change; however, the roles these changes take have varied implications for the populace. In recent years, the application and use of technology have accelerated for the individual

and for authorities. Technology is increasingly used as a method for societal monitoring and control, raising issues over civil liberties and personal freedoms. As our rights are increasingly eroded under the guise of national security, benign technologies such as cell phones, GPS devices and wi-fi enabled laptops allow for creative methods of social organization. Technology provides citizens with a way to mobilize huge groups of people who share a common interest, goal or outlook, thereby creating new momentary communities. Protest movements are reacting to increases in surveillance, infiltration and infringement of civil liberties by utilizing underground methods to achieve their goals (see Figure 1). These new methodologies are stretching the conceptual understanding of social protest and empowering citizens to react against authoritarian controls. This paper will show the power inherent in this new method of social organization and its potential (already underway) for activism and hactivism. I will start with a discussion of some of the earlier uses of technology for social mobilization and move on to instant communities and more recent trends in the latter half of the paper.



Figure 1

Washington DC, USA, 2005. A father and child protest the War in Iraq by the White House Fence and are moved on by Police.

IN THE BEGINNING: THE ILLEGAL RAVE (AKA WAREHOUSE PARTIES)

One of the earliest examples of the utilization of underground networks to organize forms of social protest was seen in "Rave Culture." Although rave culture was associated with shared musical interests, the organization of dance parties that occurred grew from a growing disillusionment with the restrictions and limitations of legal high street clubs. "Ravers," as they became known, began to take over empty warehouses in urban areas or abandoned fields in rural areas and held their own parties. As these parties were not "legal" (they did not secure licensing agreements etc.), knowledge of venues and times was circulated via underground social networks. In order to avoid detection, this would often take the form of an elaborate chain of events such as distribution of flyers at a particular place and time with a phone number to call on a designated date, which would have a recorded message with details of the location. This circumvention of the legal "entertainment" system was instigated by a lack of representation by mainstream clubs and bars, but was reflective of a growing disillusionment with methods of governance. The very actions of Ravers can be understood as a form of social protest that challenged the established societal norms and created a new community linked by the desire for alternative culture (Jordan 2002, 83). As the activities were illegal (and would often proselytize the use of banned substances, especially the drug Ecstasy), Ravers utilized underground networks in order to connect like-minded individuals and evade the controlling mechanisms of authority. Increasingly Ravers came to view themselves and their community as a movement that sought to instigate social change.

The illegal rave was (is) seen by many participants as an expression of freedom as well as a form of protest. Parties would usually be organized on disused land or in urban environments that were vacant. Many felt that the use of this "waste ground" was a form of economic redistribution and a protest against the excesses of late 1980s consumer culture. Such practices became tied with squatter culture which sought to re-take un-used property for public good and to question the established concept of property ownership. The occupation of private land as well as the blatant disregard for increasingly draconian laws is a very direct protest against societal attitudes. Ravers were increasingly connected as a group of disparate community members, tied together at the moment of the rave. In the early days of rave culture, what drove people to events was not just the drugs, music, and freedom; it was instead a sense of community. In recalling these events, many attendees focus on the "instant community" that would spring up around the rave (Coco 2008). These new forms of community were different from other community affiliations as they were momentary; lasting a day at most, a few hours at the least. And yet to any participant, these communities would be as important as any other community. The individuals became tied together under a group interest, creating a connection and bond while sharing in a localized event.

Eventually the wider public and authorities became aware of these "illegal raves" and after some highly publicized negative events associated with the taking of Ecstasy,

the UK Conservative government passed a new law. The “Criminal Justice and Public Order Act 1994” (UK Government 1994), also known as the “anti-party” bill, was established to counteract these gatherings and disperse the growing underground community. The law restricted any form of gathering in groups for free where music is played: “This section applies to a gathering on land in the open air of 100 or more persons (whether or not trespassers) at which amplified music is played during the night (with or without intermissions) and is such as, by reason of its loudness and duration and the time at which it is played, is likely to cause serious distress to the inhabitants of the locality” (UK Government 1994). The UK-based activists at Urban75.co.uk summarized the act as: “targeting of peaceful protest, criminalisation of trespass, encroachment on the right to silence, and perhaps most infamously, its section defining rave music as ‘wholly or predominantly characterised by a succession of repetitive beats’” (Merrick 1999). The Criminal Justice bill was updated in 2003 to include the “Anti-Social Behaviour Order,” which was seen once again to target youths and youth crime, although the law covers a wide-variety of acts focused on social order and assembly. In the United States the Supreme Court’s approach was to “delineate a space of protest that retained the protesters’ rights” while “ensuring safety and order... promoting the free flow of traffic on public streets and sidewalks, and...promoting the property rights of all citizens” (Mitchell 2003, 47). This in effect redefined the protest zone. These laws were used effectively by authorities in Seattle during the anti-WTO protests of 1999. Declaring a state of emergency, the Seattle authorities set up a non-protest zone. Anyone within this area was arrested for protesting in a non-designated area: “Mayor Paul Schell issued a Civil Emergency Order creating a militarized zone in an area of two dozen blocks in the core of downtown Seattle... In practice, police prevented anyone who sought to express anti-WTO views from entering or remaining in the zone, even if they lived or worked there” (Anon. 2006). At this point the very nature of organized protest begins to change and evolve.

THE NON-PROTEST, PROTEST COMMUNITY

The draconian laws in the UK made almost any form of non-sanctioned outside gathering by youths illegal. Naturally, these restrictions failed to prevent the gatherings. But Ravers began to organize differently and more efficiently by employing covert and underground methods of communication. As the Raver movement progressed, newer technologies were incorporated, such as the use of text messaging and websites. The method of dissemination of information became increasingly technological. At first it was flyers in pubs or music stores that you would pick up with a map to the rave. This method was easy for the authorities to discover and close down, especially if you were more urbanized than your comrades in rural locations. With the rise of Internet newsgroups, boards sprang up with hints or clues to where the raves would be held. Often revelers would be told to go to a certain place (store, corner, train station), where

they would be contacted by organizers. If the organizers felt it was too risky on that night, the venue would be moved. By using new technologies the organizers were able to keep a step ahead of the authorities, as it was hard to police the increase in newsgroups, and authorities were behind the technological curve that many Ravers were embracing. In many ways the rave organizers were employing typical “resistance movement” methodologies—establishing code words, distributing secret maps to covert meetings, and relying on the ability to move at a moment’s notice, all the while keeping in touch and updating fellow “protesters” via technological means.

As such, these communities can be understood as protest communities. Through these raves, participants were enacting a form of protest, sometimes knowingly but often unknowingly, against the authorities and social structures of that time. It was in many ways a “conceptual protest”; although not outwardly or consciously fighting authority and asking for political change, by enacting and taking part in an illegal rave, all attendees were forming a protest. Any action that challenges social norms and restrictions can be conceptualized as a form of protest, irrespective of the individual intention. Social theorist Don Mitchell has argued that a homeless person urinating in the street is a form of unconscious protest: “No matter how appalling it might be to argue and struggle in favor of the *right* to sleep on the streets or urinate in an alley, it is even more appalling, given the current ruthless rate in which homelessness is produced, to argue that homeless people should *not* have that right” (Mitchell 2003, 27, italics in original). Following from this conceptualization, Ravers can be seen as enacting a form of protest, whether consciously or unconsciously and as such are seen to be dangerous by those in power. As mentioned previously, this was certainly the case with the passing of the so-called “anti-party bill,” which had much wider ramifications on personal and public freedoms than simply regulating parties.

The Raver movement, a reaction to existing social controls, utilized technology and subterfuge to enact social protest. It showed that, through using different methodologies of protest that did not conform to the expected practice, underground movements could increasingly challenge the established attempts to control social action. It laid the path for other forms of social protest that circumvented not only social control mechanisms, but also the existing concepts of “protest.” These new forms of protest would become increasingly technologically based.

FLASHMOBS AND SMARTMOBS

Many of the tenets set out by Ravers have been carried on into newer forms of social action. In more recent years, the FlashMob has become a new form of group organization, challenging societal norms and the right to assemble freely. FlashMobs started in New York City in the early 1990s as a pseudo social experiment crossed with a satirical take on Manhattanites’ fascination with being part of “something new,” no matter how pointless it might be (Goldstein 2003). A group of people who might or might not know each

other would communicate via forwarded email or a website (as well as phone or printed media) and receive instruction on what the “FlashMob” would be. The first FlashMob was held in a Manhattan carpet store where the “players” or “mobbers” turned up to ask about a specific carpet. The idea quickly spread internationally, and even though the FlashMob was officially claimed to be dead by its purported founder, the meme has taken root in the international consciousness. YouTube and similar websites are now awash with FlashMob activities, from pillow fights in high streets to apparently “spontaneous” dancing in Paddington train station, London (Anon. 2008).

The FlashMob can be seen to be an enactment of the right to free assembly. Although the act itself may be seen as “fun” or even pointless, at its heart it is about people performing an illegal act. In many locations across the world, the right to collect together as a group in a public space has been increasingly restricted and controlled. In 2005 a peace protester, Maya Evans, was arrested and jailed for reading out the names of the Iraq dead at the war memorial by Downing Street in London (BBC News 2005). The police were able to arrest her because she, a 25-year-old lone female, posed a terrorist threat and because her protest was unapproved. In the UK, due to recent additions to the “anti-party” bill and the addition of the anti-terrorism act of 2001 (UK Government 2001), public congregation without prior approval is now deemed a terror threat: “Armed police will use anti-terrorism powers to ‘deal robustly’ with climate change protesters” (Vidal and Pidd 2007). Increasingly across the globe the concept of what is public and what is private space has become eroded and the commons have come under more and more legislation (Murdock 2001). In the UK, to combat the media-dubbed problems of “Binge-drink Britain,” public spaces (the pedestrian areas outside of pubs or bars) have been given “dispersal area” status: “The 2003 Anti Social Behaviour Act introduced Dispersal Orders (DO) and this provision gave the police, acting in tandem with local authorities, the power to disperse groups of people (two or more) from designated areas for up to 24 hours” (Manchester City Council 2008) (see Figure 2). The concept that any group of three or more persons congregating in a “public” area is a nuisance or that they are “up to no good” is fast becoming part of the public consciousness (see Figure 3).

Clearly these dispersal zones have implications for the right to assembly in public spaces, and these increasingly restrictive measures have necessitated a more flexible method of organizing social action. The FlashMob willfully ignores established laws and, for a short time, can be seen to be enacting a form of protest just by coming together and standing still in a private or public space (a shopping street or shopping mall).

Activists have increasingly utilized the same “flash tactics” for political purposes, creating what Howard Rheingold refers to as the “SmartMob.” These mobs will usually have a defined purpose or cause, tying them more closely to established concepts of social protest but utilizing more contemporary methods of organization. Following on from the immediacy and short-duration of the FlashMob, the SmartMob can be seen to be issue-based, idealist and ultimately intelligent. Increasingly the use of locative



Figure 2
 Portsmouth, England, 2006. Street sign informing public of new “Anti-Social Behaviour Disorder” (ASBO’s) by-laws allowing police to give on-the-spot fines.



Figure 3
 Oxford, England, 2006. Street sign informing public of new by-law legislation of 2004 prohibiting alcohol in certain areas of the city.

media such as cell phones, GPS, wi-fi enabled devices and social networking groups are providing an avenue for the creation and successful organization of SmartMobs (Rheingold 2002). Through such forms of networking, the SmartMob may not just organize in one location or space, but instead could be global in scope and form a larger, purposed intelligence across geographical spaces. These “instant communities” may never meet face to face until the action takes place; as with FlashMob they are ideally a group of strangers who meet to perform a specific act, then disperse, explicitly never meeting up with one another. This form of anonymity can be a useful tool for activism, as any authority would have a hard task to identify ringleaders or organizers in any “mob” such as these. This, in part, is the power of the instant community: it is able to impact, to perform and organize without any of the restrictions associated with hierarchies and group dynamics.

One of the most famous examples of such social organization was seen in the “Battle for Seattle” in 1999. The Direct Action Network established protest SmartMobs to create ad-hoc “leaderless” networks to communicate and keep ahead of the authorities: “The cohesion of the Direct Action Network was partly due to their improvised communications network assembled out of cell phones, radios, police scanners and portable computers” (de Armond 2000). Also utilized in Seattle was another organizational tool, the “TXTMob,” created by an artists’ group to keep protesters on the ground organized (Hirsch). The website and software allowed anyone who signed up to send a text message to a group en masse and therefore reorganize and change collective tactics based on rapidly updated news of police action. Using mobile phones made many protest organizers “invisible” to the police and authorities, just as two-way walkie-talkies had often made them targets. Another instance of the use of technology for protest was in the toppling of the regime of President Estrada in the Philippines (Rheingold 2002, 158). Since citizens were unable to legally organize protests in groups, text messages were sent out and then multiplied through social networks, culminating in a mass instant protest over a million people.

NEW TECHNOLOGIES, NEW COMMUNITIES

Although the action of an event or mob may be successful, one could argue that the short duration and lack of media attention (or even awareness from the public that they are actually witnessing a protest or activist event) lessen the impact of the action. However, contemporary technologies are increasing the exposure of social protest through a differing style of media consumption. As our technologies have changed, so too has our access to media; the “net generation” no longer looks to the radio and television networks for news, but to websites and aggregators such as Digg.com. It is here that many of the actions and protests will be seen by millions and can perhaps gain support. Access to such dissemination technologies has extended the power of the instant community and circumvented many of the attempts at establishing controls.

Similarly, as recording technology becomes increasingly miniaturized, it opens up the possibility for the surveilled to reflect the monitoring process outwards, watching the watchers. Our participation in and viewing of the media have changed as people are able to record participation in a mob and send video to others worldwide in an instant, effectively globalizing the protest or action immediately. The ability to broadcast without the need for any "traditional media" frees the individual and group forming new associations: "One could imagine each user becoming a broadcasting station unto him or herself, a node in a wider network of communication that the state could not possibly even begin to monitor, much less control" (Rafael 2003).

Locative media are part of the evolutionary process of both the individual and society, providing reflexive avenues for social change. Using locative technologies allows social action to be organized under the radar of governmental control, making it fragmented and harder to suppress. Technologies such as cell phones and GPS units allow for spatialized communication on a large scale whilst resisting traditional organizational structures. With the advent of 3G phone networks, the web is now far more mobile than before, allowing for social network sites such as Facebook or MySpace to realistically join the fray for activists and other groups. There doesn't need to be a central hub or a 'head' to the protest; these are "Flat Hierarchies." They structure involvement in a different way: "Flat networks for co-ordination mean allowing all who want to participate to do so... there is no privileged decision-making point" (Jordan 2002, 70). The event can take place simultaneously across geographical boundaries and yet be joined by these socializing technologies that include those who wish to participate either in different countries or in virtual worlds. The key is in the spontaneity of the action and in its impact: the nature of these technologies is that they are decentralized and diverse. Locative technologies allow for the participants to utilize methods that would restrict and control, and usurp them for social action.

The commonality and wide distribution of these technologies make them appear benign. However, their very status as accepted technology gives them an inherent power. The very consumerism of society that makes mobile phones "necessary" has made them a key "weapon of choice" for those wishing to circumvent traditional policies of denial. One may not bring a camera, video or audio recording equipment to an event or place, but mobile phones that contain video cameras, and increasingly powerful cameras, are acceptable. As the right to photograph or record in public has been eroded globally using the banner of "the war on terror," technology has allowed many to record acts against citizens as proof of oppression and keep ahead of those who would wish to deny us our rights or freedoms. As the technology evolves, the gap between computer and person will decrease; already people in the UK have suggested that being without a mobile phone is a traumatic experience (BBC News 2008). The technology has become an extension of the self: it is portable, personal and everywhere. And it is this very ubiquity that allows for them to be useful to those who wish to exercise their rights and freedoms.

Phones can easily be re-chipped, repurposed, and cast aside if required. Many people would question the wisdom of discarding a laptop, but fewer would hesitate to discard a pay-as-you-go phone.

As technology becomes increasingly ubiquitous and “everyware” (Greenfield 2006), it extends our options for creative social mobilization across conceptual and physical geographies. In addition to mass-events, locative media can also be used to subvert the protest process by infusing social discontent randomly throughout daily life. In my ongoing work “Protest Cell,” participants become linked in a networked community through the process of spontaneous individual but linked action(s). The concept behind the project is to enact a protest anywhere you can get mobile phone reception, integrating a protest statement into your immediate surroundings. Protest Cell will allow people to protest anywhere by the action of receiving a phone call. The Protest Cell website will allow anyone to download “protest” ringtones, which could be the names of the dead in Iraq, or a listing of Halliburton’s illegal actions, and so on. The action is in allowing one’s self to be open to phone calls and thus the caller essentially activates the process. It could be organized or completely random, depending on your own personal choice. It provides individuals with another avenue to question and circumvent government disciplinary control systems. Protest Cell will allow people to perform protests in areas of non-protest like government buildings or university areas not designated for “free speech.” Every call is a mini-protest and people can easily group together and create “call-ins” in areas of high traffic, effectively creating a “phone-mob.” As the action is not directly instigated by the participant, a new form of democratized protest is created which sits outside the current control mechanisms regulating public freedoms. This project begins to blur the line between performative art and passive protest, forming new links across conceptual media-based societies.

CONCLUSION

Semi-structured and spontaneous forms of social expression create new momentary communities that challenge our existing bounded concepts of “community.” New connections are forged between seemingly disparate groups through processes such as flashmobbing and mobile-phone SMS texting utilizing the internet-generation mindset of organization. Such conceptual communities unite (sometimes fleetingly) under a shared connection, which may have numerous purposes: artistic, activist or communitarian. This redefines the concept of resistance to one that acknowledges the possibility to enact change on the “capillaries of power” (Foucault 1995). Such spontaneous communities challenge the normative view of individualization and provide the means to (re)create societies along alternative pathways. Works such as Protest Cell, TXTMob and SmartMobs reconfigure protest, activism and dissent in increasingly creative ways, providing a medium for recapturing individual and social rights. Locative media devices and ubiquitous computers can be repurposed outside of

their commoditized forms to become a vehicle for social change. There is promise that in the intersection between technology and social networking, where these mobs were born, new forms of social interaction and political action can take place. Phones and the Internet, unlike the passive medium of television, are both used actively and could potentially bind us more closely together. Our society is in a period of ongoing social experimentation, and we may be inventing the technological building blocks of new social connections. Further, one can argue that that every action you take as an aware individual is a political act, be it online, at a rave or answering the phone.

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