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Locative Media: A Brief Bibliography And Taxonomy Of Gps-Enabled Locative Media

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Locative Media: A Brief Bibliography And Taxonomy Of Gps-Enabled Locative Media

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location-based media, locative media, geography, place, GPS, cartography, map-making

ABSTRACT

Since the event "Locative Media Workshop: Mapping 'the Zone'" (http://locative.x-i.com), locative media has circulated through the emerging and electronic arts communities with some interest. As a cultural marker for the developing interest in locative media, this workshop stands in as an important moment in the developing history of the practice, showing the creative uses to which Global Positioning System (GPS) technology could be employed. This essay provides an introduction to GPS-enabled locative media, provides a few examples of both GPS-enabled and other forms of locative media, and launches a collaborative taxonomy and bibliography project to annotate, index and catalog locative media projects, in the broadest sense.

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Beginning a bibliographic taxonomy of locative media first requires situating the practice within its conditions of possibility. What brings locative media to the foreground of arts-technology communities? Why consider the practice of location-based media production? What are locative-media's debts and burdens?

For the purposes of this brief introductory bibliographic taxonomy, we would suggest that the locative media that is of most immediate concerns is that 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. These locative media experiences may delve "into" the historical surface of a space to reveal past events or stories (whether fictional, confessional or standing on consensus as factual). Locative media experiences may also cross space, connecting experiences across short or long geographic, experiential, or temporal distances. At its core, locative media is about creating a kind of geospatial experience whose aesthetics can be said to rely upon a range of characteristics ranging from the quotidian to the weighty semantics of lived experience, all latent within the ground upon which we traverse.

While locative media includes a breadth of practices and techniques that reach far beyond what could be captured here, Global Positioning Systems are one particular mechanisms for creating such media and GPS has captured the attention of those who work in locative media practices. Because GPS came to be through the U.S. military, it is important to carefully consider the implications and consequences of framing locative media "art" within the context of the military-industrial light and magic complex. The military has a role in locative media, whether we like it or not. Locative media as framed herein owes most everything to the U.S.military's deployment and $400 million (U.S.) annual maintenance of the Global Positioning System, the introduction of consumer-grade GPS handhelds for $99 (U.S.), and corporate sponsorship of commissioned essays, ethnographic studies, and art-world panels focused on mobile, locative and related social practices [ ]. The consequences are ethical and practical, and rests with the art practitioner to negotiate within the context of the creation and exhibition of their work.

It is painfully ironic that, in a time when public funding for art in the U.S. has evaporated, locative media artists are able to "piggy-back" on the U.S. Department of Defense, in a fashion, appropriating GPS technology for creative purposes. The military expenditures on instrumentalizing location, refashioned for aesthetic purposes, have circulated the culture of location-awareness, made access to the technology widespread, and created a an exciting topic for discussion at conferences, trade shows, symposiums, and on net discussion lists [2].

These are the birthright of today's locative media, and these are the entities which have committed the kinds of intellectual, technical and creative re-sources that make it possible to imagine and then construct many of the locative media projects and practices introduced in this bibliography. Consequential financial, political and creative-capital investments are one of the drivers of interest in the digital territorialization of physical geography, thereby establishing it as an interface for electronic media experiences. Through this territorialization, real-estate has become virtual-estate.

It is important to indicate that locative media or artistic practices "situated" geographically have a history that predates that first satellite launch in 1978, or came before any technician authored the first draft specification for the pervasive NMEA communications protocol, used almost universally by location-aware instruments (NMEA or NMEA 0183 is a combined electrical and data specification for communication between marine electronics and also, more generally, GPS receivers). The rich history of land art is in part a legacy of the digitalization of geography discussed herein. For instance, the 'Earthworks' group exhibition in October of 1968 in New York may count as a canonical point in the history of such geography and land form inspired art works. There is a distinction to be made of motivation as well as technique, which is what we mean to draw out by demarcating pre-satellite from satellite-enabled locative media.

Categories and taxonomies always fight against one another, and are always cauldrons frothing with epistemological confusion and disputes with very consequential and mortal stakes (Bowker and Star, 2000);(Foucault, 1982). By choice and with awareness of practices that pre-date such, we are motivated by a fairly recent attention to specific instruments, or explicit reference to the aforementioned conditions that make the cited projects, practices, and discussions possible. By our choosing to use the proliferation of GPS as a boundary marker we mean to foreground a particularly exciting form of locative media that, for many of its practitioners, is only possible with the existence of GPS and its network of satellite and military operations support.

It is our objective that this essay introduce a cooperative effort to continue this project through a Wiki-style taxonomy, bibliography and index to projects, found at http://locative.techkwondo.com. We intend that the Wiki become a broad index of locative media projects, not solely limited to those using GPS. Such online efforts are already underway by many individuals. It is our desire to productively supplement these resources and, thereby, increase the knowledge base available to those interested in locative media.

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BIBLIOGRAPHY

AMSTERDAM REALTIME
Esther Polak

Inhabitants of Amsterdam were invited to carry a PDA that traces their movement in the city in real time. GPS was used to determine the user's location and GPRS was

used to deliver this information to a server where the visualizations were rendered on a large high resolution projection. This aggregated activity creates a map, not of property boundaries or rights of way, but of human movement in daily life.

http://www.waag.org/realtime/

SIGNAGE FOR INVISIBILITY
Pete Gomes

Drawing with chalk and the aid of a GPS receiver, Pete Gomes outlines shadows, persons, trash bags, etc.; marks territories and defines borders for things both temporary and permanent. All while dutifully chalking latitude and longitude. In these often large scale and impermanent drawings, he points to the variable nature of position over time, unseen power structures and the arbitrary relationship between the physical world and the coordinate system.

http://www.mutantfilm.com/wireless/here/index.htm
http://rixc.lv/reader/txt/txt.php?id=176&l=en
http://www.eventnetwork.org.uk/petegomes/

SONIC CITY
Lalya Gaye, Margot Jacobs, Ramia Mazé, Daniel Skoglund

Wearing this sound art project through city space activates sensors that include a metal detector, an IR-sensor, a light intensity sensor, a microphone and accelerometer that senses motion. The music created is a reflection the wearers environment and movement. As a compositional tool, movement, becomes an act of artistic creation.

http://www.viktoria.se/fal/projects/soniccity/

SURFACE PATTERNS
Blink

The simplicity in using a mobile phone belies the rich experience that Lisa Roberts creates in Surface Patterns. By tapping specific numbers on the keypad tied to specific city spaces the user can hear histories at 10 different locations in Huddersfield, U.K. Not only is the barrier to experiencing this work reduced by utilizing ubiquitous technology like the mobile phone, the user has gained some degree of agency with the ability to add her own histories to the electronic memory of the city space.

http://www.centrifugalforces.co.uk/surfacepatterns/pages/home1.html

TRACES OF FIRE
Volkmar Klien and Ed Lear

Cigarette lighters, fitted with the same transmitters used to track animals in their habitat, were left behind on a series of pub crawls. Using directional antennas from rooftops, the lighters, or rather the people carrying them, were then tracked over the next several weeks. With a deft touch of humor, Traces of Fire shows that knowledge can be gained from observing the movements of individuals in an urban environment and also points to the ease and potential evils of tracking the individual.

http://www.traces-of-fire.org/

TRACK THE TRACKERS
Annina Ruest

This GPS-based project determines the users location and audibly alerts her to the proximity of surveillance cameras. *Track the Trackers* uses cheaply available commodity hardware to tap into U.S. military technology to short circuit government and private surveillance; power used to subvert power.

http://www.t-t-trackers.net/

YOU ARE HERE
Laura Kurgan

In this project Laura Kurgan works with ideas of access to and control of navigation systems, which historically goes hand in hand with power. Prior to 1 May 2000 the United States deliberately introduced errors into the civilian signal of the GPS system while retaining accurate information for the United States military. This error known as selective availability caused inaccuracies of up to 100 meters.

In fall 1995, a GPS antenna was placed on the roof of the Museu d'Art Contemporani

de Barcelona. Measurements were taken over time, but selective availability caused the location of the stationary receiver to vary widely giving the appearance that building was moving. By averaging the results, a more precise reading of location was determined and mapped inside the installation.

http://www.princeton.edu/%7Ekurgan/urhere/html/intro.htm

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TAXONOMIES

GEOGRAPHIC SPACE

Situating media within geographic space is a familiar attribute that is characteristic of locative media. Typically this is done by assigning an index between the physical location and the semantics of that location as expressed by the particular media content. Often, the physical location is identified by its latitude/longitude coordinate, or physical "tags" at a specific location that contain some sort of identifying code that can be used to refer to some kind of media experience. The media experience can be both read-only and read/write.

* Yellow Arrow - http://global.yellowarrow.net/

* Location33 - http://www.location33.net/

* Patholog - http://www.patholog.org/

* One Block Radius - http://www.oneblockradius.org

MAP HACKING

Characteristic of locative media is a stake in "hacking" the traditions of map-making. An approach in locative media practice is to use maps, signage, directions, streets, public transit, etc., as semantically mutable objects that are not fixed in their intent, expression or usage. "Cartographic Hacking" has begun to cohere as a locative media approach to map making.

* Google Cartography - http://richard.jones.name/google-hacks/google-cartography /google-cartography.html

* Mappr - http://www.mappr.org

* Mapping Hacks - http://www.oreilly.com/catalog/mappinghks/index.html

EXPERIENTIAL MAPPING

Capturing the histories, fictions, futures of a location in geographic space is another characteristic of locative media that resonates in many projects. Often times these projects have an investment in representing and mapping a unique social or existential character of a geographic space.

* Voices of Oakland - http://www.cc.gatech.edu/ael/projects/voicesofoakland.html

* One Block Radius - http://www.oneblockradius.org/obr.html

* Streetmemes - http://www.streetmemes.com

* New York Songlines - http://home.nyc.rr.com/jkn/nysonglines/

* Urban Tapestries - http://urbantapestries.net/

* Annotated Earth - http://www.annotatedearth.com/

CARTOGRAPHIC LEGIBILITY

Connections between distinct data layers are collapsed together and represented as geographically coherent. These projects are the purview of Geographic Information Systems and the analysts who operate within that practice, but the tools, approaches, technologies and language of that field. GIS is data visualization applied to literally creating maps that make legible various location-specific data sets. For instance, micro-scale political allegiances, earthquake occurrence, pollution levels, cafe homogeneity patterns.

* Fund Race 2004 - http://www.fundrace.org

* Carrizo-Parkfield Diaries - http://www.carrizoparkfielddiaries.net/

* Environmental E-Science - http://www.dataclimates.com/project_escience

/escience_maintext.html

* Delocator - http://www.delocator.net

MIXED REALITY

Authoring connections between fictional and non-fictional places is a media experience particularly well-suited to location-based practices. These linkages between virtual and the really-real are often experiences that either take into account the semantic character of a really-real location, or laminate a fictionally reality on top of a really-real location, using the affordances of the really-real location as "virtual" characters, structures or interrogation points.

* Mixed Reality Lab Human Pacman - http://mixedreality.nus.edu.sg/research/HP/HP_webpage/research-HP-infor.htm

* Undercover 2 - http://www.undercover2.com/

* Mogi Mogi - http://www.in-duce.net/archives/mogi_item_hunt.php

* GPS::Tron - http://datenmafia.org/gpstron/index-english.php

* Uncle Roy All Around You - http://www.uncleroyallaroundyou.co.uk/

* Can You See Me Now? - http://www.canyouseemenow.co.uk/cambridge/en/intro.php

HYPHENATION

An early characteristic of locative media was to make use of affordable location-enabling technology - typically a GPS device - and hyphenating it to an existing, understood practice, thereby creating a hybrid media expression.

* Geo—Storytelling - http://arago.cprost.sfu.ca:8587/Members/mtuters/locative_media_news/Geoheritage_text

* GPS—Drawing - http://www.gpsdrawing.com

* Geo—Graffiti - http://www.gpster.net/geograffiti.html

* Geo—Caches - http://www.geocaching.com/

* Geo—Note Taking - http://www.sics.se/research/article.php?newsid=105

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REFERENCES AND NOTES
1. The Global Positioning System was authorized by the U.S. Congress in 1973, and is operated by the U.S. Department of Defense. The instruments involved in this system are a ring of 24 satellites circling the earth such that at least four are visible from any point on the globe at any given time. Information on GPS generally, including U.S. Government expenditures to maintain and upgrade the system are available: http://www.spacetoday.org/Satellites/GPS.html; http://en.wikipedia.org/wiki/GPS).

2. cf, O'Reilly Media's "Where 2.0" conference, http://conferences.oreillynet.com/where/, "Mobile, Multiplayer, 3D and Location-Aware Gaming Conference", http://www.c5-online.com/index.cfm?conference=3068; Vodaphone Reciever, http://www.receiver.vodafone.com; PLAN, http://www.open-plan.org/; Place Lab, http://www.placelab.org/; Locative.net, http://www.locative.net/about.htm.

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Foucault, Micheal, *Archaeology of Knowledge*, (1982).

AUTHOR BIOGRAPHIES
JULIAN BLEECKER is an emerging technology researcher and professor. He has been involved in mobile, locative and entertainment technology design, research and scholarship since 1988.

Currently his research vectors focus on investigating new and future forms of social cooperation, social networking, entertainment and communication, particularly through location-specific mobile, wireless and WiFi enabling technologies.

His technology designs and wireless innovations have received attention worldwide. They have been exhibited and presented in many academic, commercial and

art-technology venues. Bleecker is the recipient of numerous research and development grants, fellowships and project commissions from such institutions as the Banff Center for the Arts, Canada, American Museum of the Moving Image in New York City, Art Interactive in Boston, the Annenberg Center at the University of Southern California, Walker Art Center in Minneapolis, ACM SIGCHI, Boston Cyberarts Festival, Keio University in Japan, Eyebeam Atelier in New York City and Fuji Xerox PARC in Palo Alto.

Bleecker has a Bachelor's Degree in Electrical Engineering from Cornell University, a Master's Degree from the University of Washington, Seattle, in Computer-Human Interaction, and a Ph.D. from the University of California, Santa Cruz where his dissertation is on technology, culture and entertainment.

JEFF KNOWLTON is a Los Angeles-based artist. His work with information in virtual space began with "a text for the navigational age", shown at VRML Art 2000 and Siggraph2000. "34 North 118 West" his collaborative work with Jeremy Hight and Naomi Spellman, locating information in the physical world, has been seen at Futuresonic <4>, La Freewaves and received the grand prize at University of Southern California's Art in Motion festival.

During the summer of 2004, Knowlton and Naomi Spellman were resident artists at the Digital Research Unit in Huddersfield, United Kingdom. While there they began to develop "an interpretive engine for various places on the earth". An early version of the "interpretive engine" was shown in Lower Manhattan at Spectropolis in October 2004.

In 1990, Knowlton was the recipient of a New Forms Initiative Grant funded by the NEA and the Rockefeller Foundation. He graduated from CalArts with a Bachelor of Fine Arts in Fine Art (1995) and a Masters of Fine Arts in both Critical Studies and Fine Art (1999). He teaches at the University of California, San Diego.