

Global Positioning System (GPS), are new tools
recording movement. As a terrestrial panopticon,
of 'being within' that merges the personal and
historical ideologies in defining place. In this
through recent examples of collaborative artworks
memory and notational traces of place reveal a
exact individual locality. The literal recording
acted through these projects as the visible com-
e. Instead of constricting language to a narrow
expression/technology relationship becomes a
semantic creativity.

Connecticut College, Department of Art
270 Mohegan Avenue
New London, Connecticut 06320
Visible Language, 34.1
Wollensak, 56-75
ajwol@conncoll.edu
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Rhode Island School of Design
Providence, Rhode Island 02903

L A C E

**ANDREA
WOLLENSAK**

Satellite technologies, specifically Glo

for naming orienting, locating and reco

Like words, places are articulated by a thousand usages. They are

thus transformed into "variations" – not verbal or musical, but

spatial – of a question that is the mute motif of the interweaving

of places and gestures: where to live. These dances of bodies

haunted by the desire to live somewhere tell interminable stories

of the Utopia we construct in the sites through which we pass.

They form a rhetoric of space. They are steps (dance figures), glances

(composing mobile geographies), intervals (practices of distinction),

criss-crossings of solitary itineraries, insular embraces. These ges-

turations are our everyday legends. They open up unpredictable

spaces in an order of sites. They also play within the labyrinth of

city signs (street names, advertising slogans, historic landmarks,

commercial, political or academic identities), in the same way in

which the voice wanders, delinquent, stubborn, through the net-

works of the linguistic systems, tracing pathways foreign to

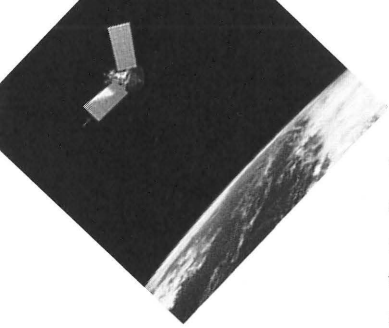
*the meaning of the sentences.*¹ MICHEL DE CERTEAU

defining of territory, place directly comports our demographic

reality, giving us a sense of belonging to our original place, and

helping us to reify the otherness of

elsewhere.



The relationship of individual expression to place belies our cultural needs to name, to identify and to own. But within this relationship lies decidedly more profound opportunities to develop modes of expression beyond claiming territory or documenting our passage through the places of the world. Global Positioning System (GPS),² a technology that increasingly helps us to define with precision where we are going and to orient and refine our bearings, has a unique capacity to record our passage within an absolute terrestrial grid. This permits a mode of expression quite different from prior filmic technologies, which necessitate the privileged and obfuscatory vantage-point of a camera's location. GPS is the terrestrial panopticon of place, position and movement – an invisible virtual space of concrete data. In contrast to the optic representation of landscape through the naked and surveilling topography of photographic satellites, GPS is most

concerned with the numerical relationship of one

subject

moving

towards

a destination.

My recent artwork has focused on the relationship of gesture, memory and notational traces of place within – the context of GPS technology. The gesture of movement within the absolute lattice of GPS coordinates is explored to reveal the powerful and expressive visuality of place in the context of exact individual locality. The literal recording of the individual's place is re-constructed through my art as visible gestural communication. As such, the user/technology relationship is redefined with relevance quite different than the standard GPS goal-directed quantification of bearing, heading and correctable margin of error. Instead of constricting language to a narrow navigational-numerical space, the user/technology relationship becomes a starting point for

aesthetic

and semantic

creativity.



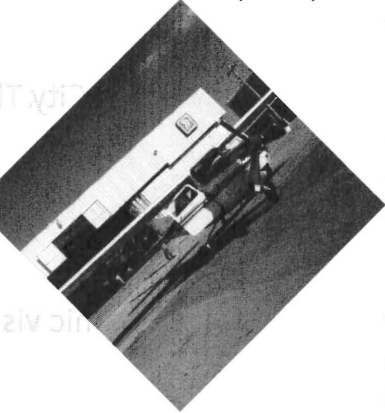
describe here include a GPS-based flight drawing
an desert and a GPS-based choreographed perfor-
from dancers exploring the urban landscape of
The Mexican project connects art inspired by local
petroglyphs with a real-time realization (and his-
sualization) by the artists in flight. The New York
focuses on the personal memory of dancers leading
y particular paths in the city – the recorded visual-
ese paths then provide the basis for organized
Both projects record the gestures of movements
emory, and use this primary articulation of a visible
ace as a secondary creative lexicon.

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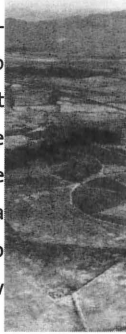
ained a group of artists³ in a flight departing from C
exico to begin a daylong GPS flight drawing over t
e final drawing spanned over 200 miles and took se
in the air to complete.

The departure point and southern boundary of the drawing was the town of Chihuahua.

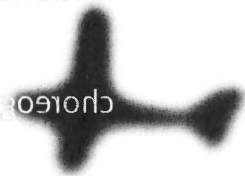


The northern point of the drawing was the airport at Juarez, a small border town near El Paso, Texas. Most of the Chihuahuan Desert – the largest desert in North America covering more than 200,000 square miles – extends into parts of New Mexico, Texas and sections of southeastern Arizona. The topography of the desert varies from dry flat land to moderately mountainous terrain. There is also some agricultural farmland near the town of Chihuahua.

The projects premise was to overlay the desert with cultural and site-specific gestural line drawings using two Garmin GPS receivers connected to Navstar satellites. The GPS was used as a beacon that informed us where we were and recorded our passage over the site. Beginning at Chihuahua, we left by plane to begin the first detailed component of the drawing. The pilot navigated from a computer screen containing a pre-drawn line superimposed on a scanned map (FIGURE 1). The GPS software allowed the pilot to see our position on the screen visualized as a red crosshair. Surprisingly, the pilot was watching the laptop screen on the passenger seat more than out the front window



of the
plane.



SATELLITE SITE DRAWINGS
OF CHIHUAHUA



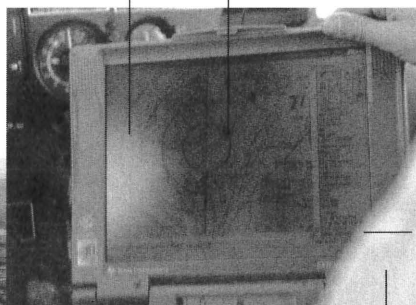
Chihuahua,
desert
hours

The drawing was based on an interpretive composite of regional petroglyphs, celestial signs and local Chihuahuan landmarks (FIGURE 2). The final drawing included a three-dimensional rectangular box-form that signified sculptures located in Chihuahua created by Sebastian, a contemporary Mexican artist and participant of the project. Time was mapped visually through symbol and represented in the drawing as a celestial sign – the sun/moon – indicated by a small circle with larger half-circles enclosing the left side of the center form. The time of the flight and the content of the drawing were interconnected conceptually as the day of the flight was a full moon.

I join
Mex
(The

*here is the scanned in map
and line drawing (flight path)
in GPS software*

*position of plane – pilot
was watching his screen as
a navigational guide*



*andrea di castro sitting in
passenger seat with realtime
tracking of our position on
the laptop computer screen*

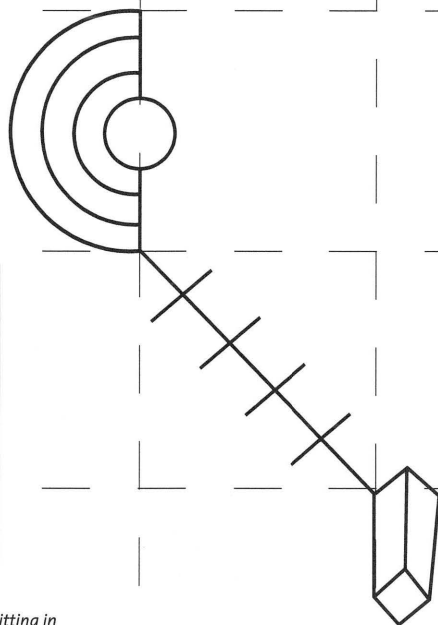


FIGURE 2

There were some differences between the original art drawing and the GPS flight drawing (FIGURE 3). For example, the line traced by the plane permitted no discontinuity, whereas the artist had, in some cases, drawn distinct line segments. The flight drawing altered the geometrically idealized qualities of the original drawing into smooth curves and subtle variations induced by weather and steering. The northern part of the drawing was modified by the need to refuel during the flight and the location of the nearest air-strip. The other significant restriction was that we are not allowed to venture across the border into the United States, which imposed a northern limit on our travel. The freedom of airspace we enjoyed and the clear and unobstructed connection to satellites led to continuous lines and curves in the GPS flight drawing. In contrast, the New York GPS project showed random displacements caused by signals ricocheting between tall buildings.

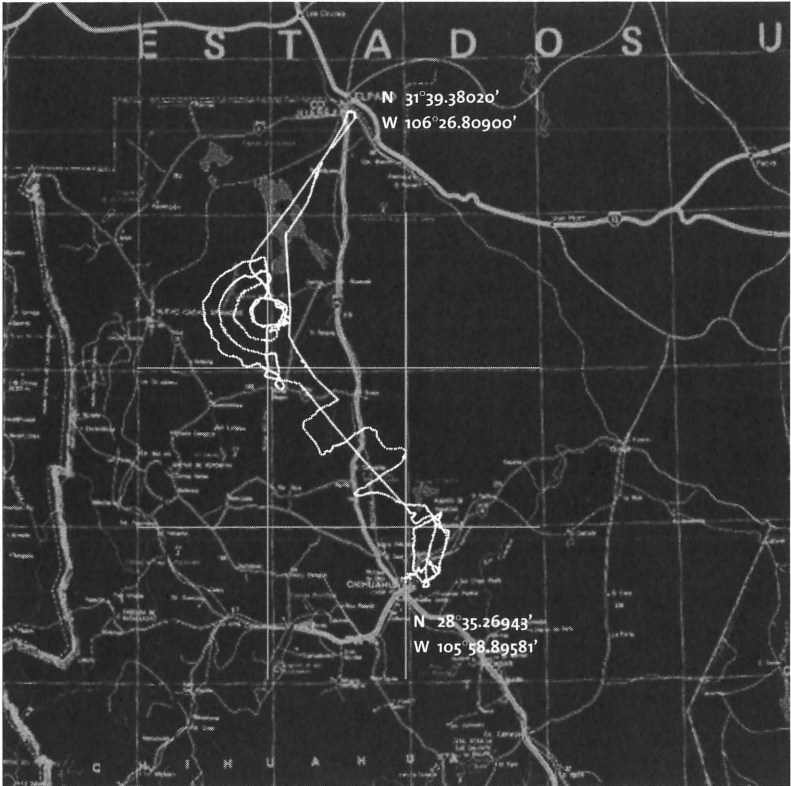


FIGURE 3

Two-dimensional data: Chihuahua drawing, Mexico flying over the Chihuahua desert in a Cesna for 7 hours stopping in cd. Juarez for a soda

south/north distance of drawing: 334.5082km

DATE: July 18, 1997 full moon

TIME: 9:17am – 5:25pm

TRACK SET UP RECORD: fill x2

TIME INTERVAL: 00:00:30

MEMORY USED: 100%. 1024/1024

The many representations of cartographic maps – national, socio-demographic, historical and topographic – each imbue the landscapes they define with particular perceptual biases. Although each represents different characteristics and data in a visual form, there are many facets of the landscape that resist the normative cartographic lens. The cartographic form afforded by GPS is unique in recording, in Michel de Certeau’s words, the gesturations of itineraries and the dances of bodies in a rhetoric of space. The dynamic and spatial mapping of social movements and social interactions is in marked contrast to static views of geography and population. GPS cartography constructs a personal visible language of movement for the user, marking points of relevance with waypoints.

C A R T O G R A P H I C
S E R I E S
R E A L I T I E S

Defining our ‘place’ in the world is a cornerstone in our notion of identity. Introducing a set of essays entitled Place and the Politics of Identity Michael Keith and Steve Pile note:

“New spaces of resistance are being opened up, where our ‘place’ (in all its meanings) is considered fundamentally important to our perspective, our location in the world, and our right and ability to challenge dominant discourses of power.”⁴

GPS can be used as a unique visualization (and quantification) of place that challenges dominant readings of socio-territorial perspective. Keith and Pile continue:

... it may be argued that simultaneously present in any landscape are multiple enunciations of distinct forms of space –

and these may be reconstructed to the process of re-visioning and

remembering the spatialities of counter-hegemonic cultural practices.⁵

GPS also represents an inversion

of the individual marking the outdoor environment with publicly readable expression.

With GPS, expression is realized as a spatial-temporal path marked by the environment

a public movement recorded as private data. GPS participates as a technology to map

'sites of resistance' (Frederic Jameson's term), helping to create personal history and to

re-orient individuals to their position in the world. In so doing, GPS is a tool in develop-

ing what Jameson describes as needed to recover these sites:

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e of **past in a new way and reading i**

ked **its spatial structur**

nal **the more intangi**

economies and lin

The city represents, to many writers, a vast plurality of semantic readings of landscape, transition and the cultural forms of capitalism. Sharon Zukin argues *“that the localism, or neighborhood urbanism, of the modern city has been transformed into postmodern transitional space.”* In the creation of the city as cultural category, it’s *“sense of place has succumbed to market forces. Thus, the postmodern urban landscape imposes multiple*

**imagination capable of confronting the
less tangible secrets off the template of
- body, cosmos, city, as all those marked
organization of cultural and libidinal
stic forms.** ⁶

*perspectives which are not only wedded to economic power but also facilitate the
‘erosion of locality – the erosion of the archetypal place-based community by market
forces.’”*⁷ The New York project described below is an exploration of GPS re-visioning the

EXPLORING THE NEW YORK CITY URBANSCAPE - DRIFTING: MEMORY SPACE

Last summer, I collaborated with choreographer Anita Cheng on a dance project in New York City incorporating GPS for documenting and interpreting movement. This project involved recording three paths determined by dancers wearing GPS receivers, each of which explored different places of personal significance within the city. These sites included areas in west midtown Manhattan, in midtown's East Side and in Northern Little Italy around Mott Street.

The dancers moved about the city collecting GPS data.

The coordinates of their movements were recorded and relayed back to the choreographer (FIGURE 4).

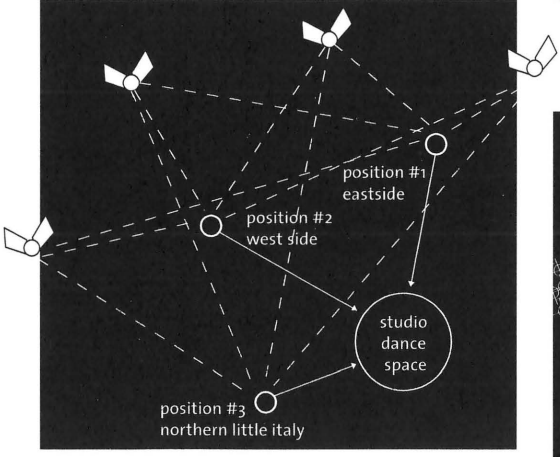


FIGURE 4

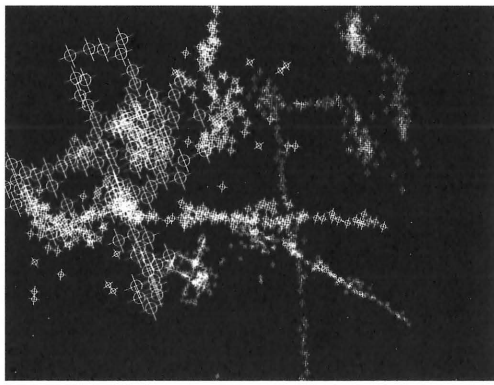


FIGURE 5
movement data projected from computers onto large screen in dance space

In the studio, the stream of data was downloaded onto a computer and projected onto a screen in the dance space. As more data was fed in, the line drawing became thicker (FIGURE 5). Scale was used to separate different paths visually and to identify distance of urban sites in relation to the studio dance space. The dancers interpreted the stream of digital data into improvisational and choreographed movement.

The choreographic process explored the space/time connection between drawing and movement. Visualizing motion associated with personal memories of particular places became our Rosetta stone. The act of describing a remembered space emerged immediately as the strongest way to generate movement. We wanted to avoid developing steps resembling codified or class conditioned sequences. In planning the project the choreographer explained:

"I was interested in drawing on the individuality and uniqueness of each of the dancers. So

I began to ask them personal questions that related to their memories of space. Dancers

and non-dancers alike became animated, intent and specific when describing their child-

hood homes or other significant sites. They would move through the space completely

personal memory (a subjective experience of place), and a vocabulary

focused and build their personal spaces within the rehearsal space. This was also interesting

of movement built from the data coordinates. The interpretations of the

on camera because the lens picked up on the intensity of their emotional engagement."

GPS data used by the choreographer varied from literal recreations of the

urban paths into paths on the dance floor, to body shapes and gestures

made in space. The distance and angles between some of the GPS data points

were used to direct emphasis of gesture and order of sequences (FIGURE 6).

The three site drawings show location (black and white aerial photographs of Manhattan),

memory (personal descriptive narratives), the path traversed (a string of crosshairs) and

GPS site-specific data. The simultaneous presentation of location, memory, path and

data reference back to a performative event involving multiple variables at a particular

moment. In the drawings, I chose to highlight this simultaneity in order to characterize

the nature of GPS data as parallel streams of longitude, latitude, altitude and time, as

well as the duality inherent in experiencing place as an ontological phenomena while

simultaneously constructing an ontical-numerical history of place. This reading of place

is not immune to the irony that in the recording of the 'here and now,' one is presumably

not entirely 'present' owing to the distraction generated through the use of the

GPS technology. The pilot's flying our plane in Mexico while looking at the laptop screen

instead of out the window is a fitting example.

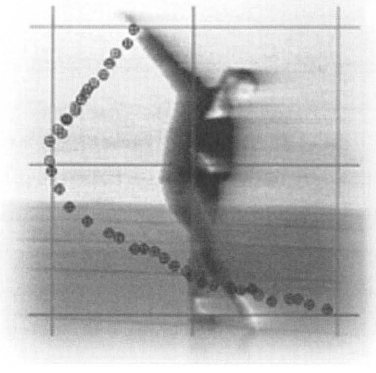
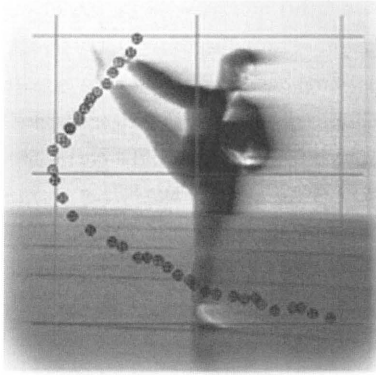
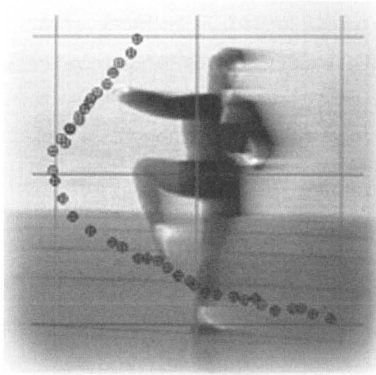
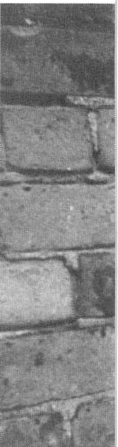


FIGURE 6

*Dancer interpreting data gesture in studio space.
Images created by Anita Cheng and Ronaldo Kiel. 1999.*



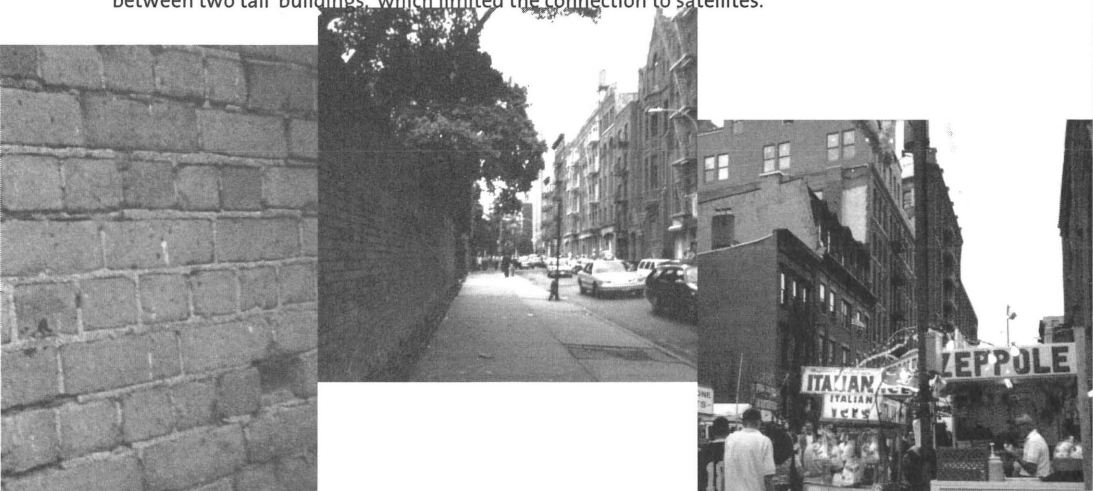
THE NEW YORK GPS SITE DRAWINGS

The meeting place (FIGURE 7) described a walk from the Empire State building to the neighborhood of the Chrysler Building. The dancer recalled memories of that walk as she retraced her steps passing familiar landmarks and social formations (elderly ladies waiting in line for the Madison bus). The walk occurred at noon when the streets were hectic.

The houseguest (FIGURE 8) was a walk on the West Side of Manhattan to a neighborhood that the dancer had not been to in fifteen years. Revisiting the neighborhood allowed her to remember her first visit and her mindset of moving to the city.

The neighborhood, (FIGURE 9) the final path mapped with GPS in this series, explores the neighborhood around Mott, Houston and Prince Streets. This walk covered less ground and has overlapped areas on Prince Street between Mott and Lafayette. Photographs were used to record the visual external markers on the walk: the texture of the brick wall separating Mott street from Old Saint Patrick's cemetery and Mulberry at Prince streets during the San Gennaro Italian street festival.

The path reveals the characteristics of movement and variations of speed as seen in clustering, dense and stretched-out data in straight and circular lines. The data also showed limitations in positioning through distinctive silences, blank spaces and distortions in the collection of positions. Buildings in urban spaces obscured connectivity to satellites and threw position off considerably. The drawings document the range of error within the city. There are segments of the path that are discontinuous and position points that are nowhere near to the actual path. Much of the range distortion occurred while passing between two tall buildings, which limited the connection to satellites.



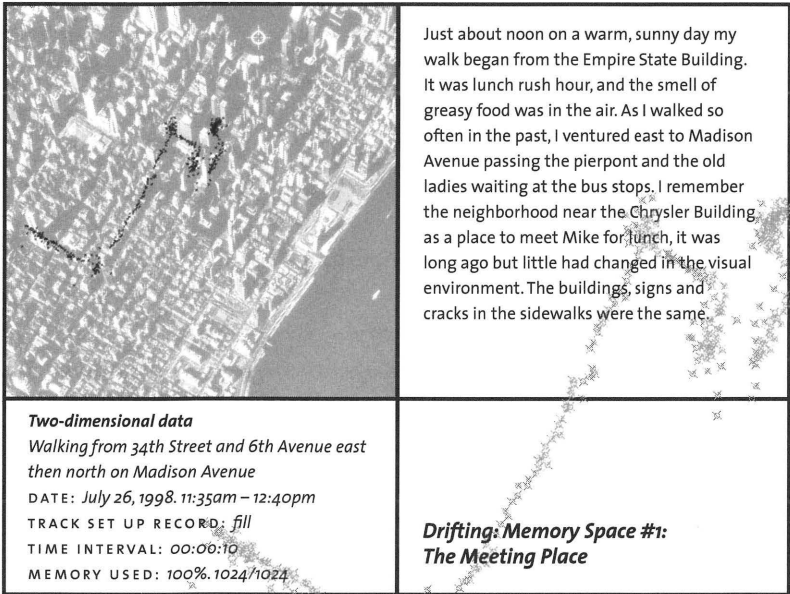


FIGURE 7

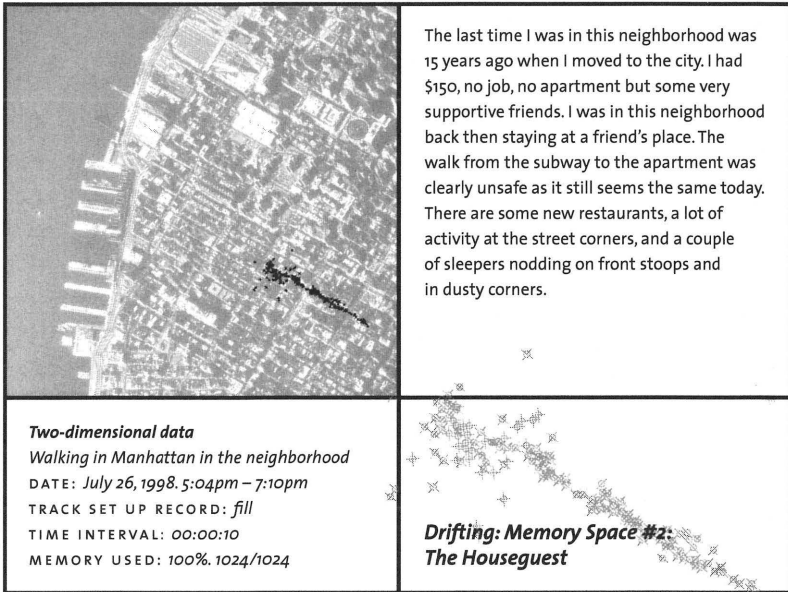


FIGURE 8

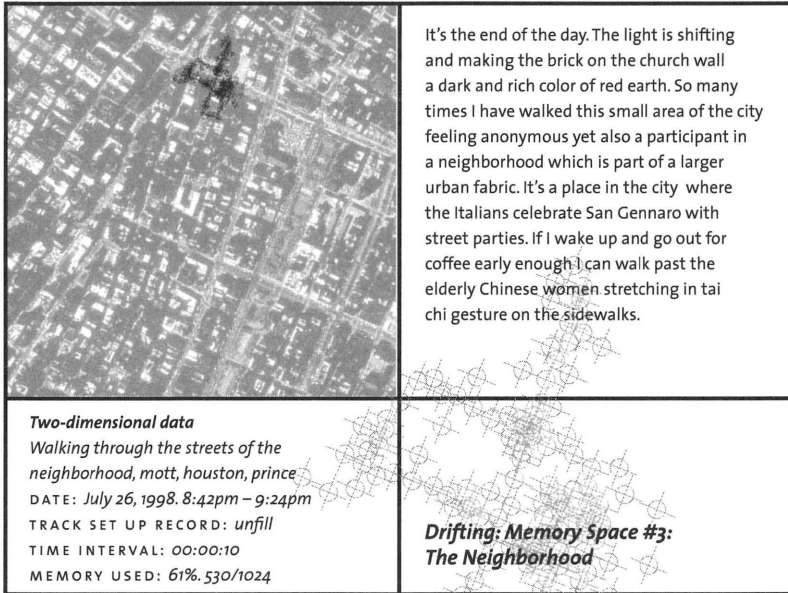


FIGURE 9

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The work documents 'the deposit of a memory trace' in describing the characteristics of a city plan. Kevin Lynch remarks *"by appearing as a remarkable and well-knit place, the city could provide a ground for the clustering and organization of meanings and associations. Such a sense of place in itself enhances every human activity that occurs there, and encourages the deposit of a memory trace."*⁹ If indeed the amelioration of the urban environment is reflected in the additive deposits of individual meaning, GPS affords us a similar although quintessentially digital modality for attaching meanings to places.

in cars, planes, boats and eventually

In similar fashion to the development of longitude, GPS enhances our spatial imagina-

s effects and its conceptions of place

tion in historical step with technological advances in the precision of time-keeping. As

creasingly influential. Embedded in this

the problem of longitude depended on independent clocks remaining synchronized in

are multiple perspectives: market

spite of inclement weather while at sea, the advent of precise atomic clocks makes pos-

and surveillant overtones, pragmatic

sible the timed triangulations necessary for GPS's precision. Thus, the characterization

rigational accuracy, leisure and recre-

of place made by GPS inherits a temporal bias, by means of which it forms its own vir-

creative applications. The role of the

tual cartographic historiography.

to this technology is to develop its

on and meaning, and to help prevent

et forces from arbitrarily and irrevoc-

izing place. GPS has significant po-

Andrea Wollensak is an associate professor of Art and Associate Director at the Center

a discourse of personally relevant

for Arts & Technology at Connecticut College. Her work, which explores the intersections

meaningful itineraries of travel. It has

of design, culture and technology, has been presented and published nationally and

ord and visualize gestural movements

internationally. Together with Brett Terry, they direct Leverkuhn Studio, an experimental

realized as personal cartography. GPS

design and sound studio.

our own rhetorics of space, providing

language with which to convey our

As GPS appear

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THE AUTHOR WOULD LIKE TO THANK BRETT TERRY FOR PROVIDING SUPPORT AND ASSISTANCE IN EDITING THIS ESSAY.

ENDNOTES

- 1 de Certeau, Michel. 1985. "Practices of Space." In Blonsky, Marshall, editor. *On Signs*. Baltimore: The Johns Hopkins University Press, 131.
- 2 GPS and DGPS (Differential GPS) are satellite-based navigational technologies developed by the U.S. Department of Defense. Now available for commercial use, the systems claim to revolutionize the navigation industry, allowing individuals to know their position with unprecedented accuracy anywhere on earth. The system, based on triangulation, is comprised of a constellation of 26 satellites that orbit the earth. The satellites each contain extremely accurate atomic clocks which are perfectly synchronized, which is the basis for measuring the time it takes an encoded radio signal to travel from the satellite to the GPS receiver. When the signal-travel times are calculated from four well-spaced orbiting satellites whose positions are precisely known, the position of the receiver becomes known. Up to date status of Coast Guard DGPS broadcasts is available at <http://www.navcen.uscg.mil>
- 3 The project was organized by Andrea DiCastro, director of the Multimedia Center at the National Center for the Arts in Mexico City. The crew and collaborators included Jose F ez Kuri, Humberto R. Jard n, Andrea Wollensak, Edmundo D az, Sebasti n, Alberto Guti rrez Chong, Armando L pez, H ctor Moreno, Carlos Salom, Ignacio Del Rio and Alejandro Nava.
- 4 Keith, Michael and Steve Pile. 1993. "Introduction: The Politics of Place." *Place and the Politics of Identity*. London: Routledge, 6.
- 5 Keith, Michael and Steve Pile, "Introduction: The Politics of Place," 6.
- 6 Jameson, Fredric. 1991. *Postmodernism, or the Cultural Logic of Late Capitalism*. London: Verso, 364-7.
- 7 Keith, Michael and Steve Pile, 7-8. Quoting Zukin "Postmodern urban landscapes: mapping culture and power." In S. Lash and J. Friedman, editors. *Modernity and Identity*. Oxford: Blackwell, 222-240.
- 8 Anita Cheng, describing to me her interest in personal gesture as a basis for choreographed movement. This exchange led to other collaborative projects including a website titled home of the gesture, architecture and memory between generations," which is a site that explores a remembered architectural space recalled by Anita's grandfather during his childhood in Beijing, China. Gesture, memory and social aspects of architectural spaces inspired by his recall are explored through choreography, mapping and sound. The URL is <http://n2.burnettgroup.com/gesture> created by Anita Cheng, Ronaldo Kiel, Brett Terry and Andrea Wollensak.
- 9 Lynch, Kevin. 1960. *The Image of the City*. Cambridge: MIT Press, 119.

REFERENCES

- Aronowits, Stanley, Barbara Martinsons and Michael Menser, editors. 1996. *Technoscience and Cyberculture*. New York, New York: Routledge Press.
- DeCerteau, Michel. 1998. *The Practice of Everyday Life Volume 2: Living and Cooking*. Minneapolis: University of Minnesota Press.
- DeCerteau, Michel. 1984. *The Practice of Everyday Life*. California: University of California Press.
- Gregory, Derek. 1994. *Geographical Imaginations*. Massachusetts: Blackwell Publishers.
- King, Geoff. 1996. *Mapping Reality An Exploration of Cultural Cartographies*. New York, New York: St. Martin's Press.
- Lynch, Kevin. 1960. *The Image of the City*. Cambridge, Massachusetts: The MIT Press.
- Poster, Mark. 1990. *The Mode of Information Poststructuralism and Social Context*. Chicago: University of Chicago Press.
- Vattimo, Gianni. 1992. *The Transparent Society*. Translated by David Webb. Baltimore, Maryland: The Johns Hopkins University Press.
- Virilio, Paul. 1997. *Open Sky*. Translated by Julie Rose. New York, New York: Verso Publishers.

PHOTOGRAPHY CREDITS

- FIGURES 2-5: Andrea Wollensak
FIGURE 11: Anita Cheng and Ronaldo Kiel
FIGURES 15-17: Andrea Wollensak