Paradigmatic Performance: Data Flow and Practice in the Wild

Brett Stalbaum
Lecturer, PSOE
Coordinator, Interdisciplinary Computing
and the Arts Major (ICAM)
University of California, San Diego
Department of Visual Arts
9500 Gillman Drive # 0084
La Jolla CA 92093-0084
U.S.A.
stalbaum@ucsd.edu
http://www.c5corp.com
http://www.paintersflat.net

Figure 1: The installation at the CLUI Wendover Exhibit Hall
Copyright © Brett Stalbaum

Keywords

paradigmatic performance, locative media, walking works, pictorial art, computer art, performance art, database, global positioning system, geographic information systems

Abstract

An essay reflecting on the implications of recent work by C5 and Painters Flat wherein data and database play a principal role in determining the loci of performance works. In it the notion of "paradigmatic performance", or allowing data to lead in the landscape, is defined. Data modeling is described as a non-visual representational practice that is intimately knitted into the fabric of the real, indicating that artists should pay attention to the relationships that emerge where data, and the real it derives from, interact generatively. Paradigmatic performance explores the intersection of data and the real via artist made technologies, with the goal of generating new configurations of exploration at time when it may be assumed that the Earth is already thoroughly explored.

Paradigmatic Performance

Paradigmatic performance might prove to be an excellent term for hybrid (often collaborative) configurations of aesthetic and conceptual art practice whose primary goal is to use computational techniques to produce experience in and of the wild. It is an apt term for such data-driven art practice both in the nominal sense of "in the wild", but also in the sense which Edwin Hutchins describes "in the wild": as socially distributed computational systems wherein human cognition is a parallel, shared task between groups of individuals and the tools they utilize, "where no individual acting alone is entirely responsible for the outcomes that are meaningful to the society at large" [1, 2]. "In the wild" therefore refers to humans interacting in their natural linguistic, semiotic, social and computational environments. Such environments constitute our "wild nature". In this essay, I explain how C5 and Painters Flat (two collaborations I am involved in) have begun to digest the landscape using digital computation to produce configurations of activity and related artifacts that range from

Page **1** of 8
http://leoalmanac.org/journal/vol_14/lea_v14_n07-08/bstalbaum.asp

Leonardo Electronic Almanac
Vol **14** Issue **07 – 08 November** 2006
Last updated on 30 November 2006
info@leoalmanac.org

walking performances to landscape painting. The work intersects indiscriminately with land art, walking works, site-specific art, pictorial art, computer art, conceptual art, performance art, and the recently emerged meme of "locative media" [3, 4, 5, 6]. Other terms I think apply to the practice are global positioning system art, geographic information systems art, and most paradigmatically, database art.

Definition

Paradigmatic performance recognizes that the environment in which we produce artwork today is mediated by data models and data processing in a fundamentally "databased" culture. Indeed the term "paradigmatic" is intended to emphasize the role of model-based, digital data processing and all of its algorithmic and interfacial correlates. It is not enough in a computationally mediated post-industrial culture to pay attention to select software abstraction layers, as exemplified in the common computer art memes of visualization, interaction, algorithm and more recently, network and database. Rather, the totally embedded mediation of global material culture and economics by computation and communications indicates that artists should at a minimum pay attention to how the material effects of information technology are distributed via a holistic analysis.

At maximum, however, we would be best advised to explore how material reality and human experience might be freshly distributed via the same types of model-based processing of data that now ubiquitously mediate the real, such as through object-oriented programming and design, the unified modeling language, entity-relationship modeling and relational databases. In the case of the arts, we should do so with a specific focus on information technology developed by and for artists. In other words, artists should not only play a role in utilizing, explaining, reflecting on, kvetching about and inoculating against (the negative effects of) database, network and computational culture; we should also develop related technologies where data and database (and yes, their correlates of algorithm, interaction, network, etc.) are generative of new configurations of practice. Ideally, this would lead to mixed modes of artistic experimentation at those points where the potential for computation and data flow to be woven into the fabric of 'what happens' have not yet been fully explored. Paradigmatic performance therefore assumes a world of database and distributed data processing, but with an internal focus on producing its own kinds of exploratory mediation of the real world and our relationship to it; the same world that is modeled by data, and from which the data is generated and flows. In order to do this, data and data modeling must be allowed to be co-participants, becoming increasingly equal collaborators, in art projects that are manifest "in the wild".

Thus, paradigmatic performance can be defined as art practice which allows the data to have co-participatory agency in the outcome of promiscuously varied modes of artistic practice, particularly those that explore emerging relationships between data, considered virtual [7], and the real. For C5 and Painters Flat, this project has to date focused on practice which takes place in loci traditionally thought of as "wild nature". However, as the reference to Hutchins above indicates, we think that such loci are now in fact wildly mediated by human computational and social systems. Instead of assuming that the modeling of every meter of the Earth's surface [8] short-circuits or obviates the possibilities for new exploration of its landscape, we have reason to believe that the possibilities are expanded in many new directions, and seek to explore new configurations of technology and exploratory performance in the digitally mediated landscape that is revealed.

An emphasis on going there (wherever that may be) and being there is implicit in our practice, but the definition of paradigmatic performance above is not necessarily bound by locative concerns. It is the case that the large data sets of today, which are driving many interesting new problems in computation and culture [9], derive primarily from four general discipline areas: the earth sciences (including Geographic Information Systems), astronomy and astrophysics, biology, and intelligence gathering. The former simply produces large data sets for exploration that are most directly congruent with much current artistic interest in location, and indeed in a

Page **2** of 8
http://leoalmanac.org/journal/vol_14/lea_v14_n07-08/bstalbaum.asp

Leonardo Electronic Almanac
Vol **14** Issue **07 – 08 November** 2006
Last updated on 30 November 2006
info@leoalmanac.org

practical sense GIS and earth sciences data are generally a good fit when considering the scale of performance most applicable the human body: somewhere between the often very small in biology and the incredibly large in astronomy. In the later cases in particular, it can be difficult to "go there". The examples that follow demonstrate configurations of GIS data and artist-made technology that processes the data into activity in the "real world" in a geographical sense. How the later data sets might drive paradigmatic art practices is left here: an open question that begs further investigation and discovery [10].

Paradigmatic Performance Example I: A simple implementation of model-based (paradigmatic) performance

For the Painters Flat project "Remote Location, 1:100,000" (30 July – 4 August 2004, Box Elder County, Utah, USA), a map consisting of 36 geo-referenced tiles showing the terrain surrounding the Center for Land Use Interpretation's "Remote Location" were encased in acrylic resin. The one centimeter square map image on each of the tiles represents a one kilometer area, creating a 1:100,000 scale between map and terrain. The tiles were then cracked out of the resin, cutting the map into 36 separate tiles. Living on site for most of five days, Brett Stalbaum collected data in the field while Paula Poole remained at the SW corner base camp [11] to process the data into information.

The daily process was as follows: Utilizing GPS, Brett hiked to each of the 36 points in a six kilometer grid surrounding the CLUI Remote Location, hiking approximately 70 kilometers in the process. Upon arrival at each site, the geo-referenced tile was left in the center of the one kilometer square it represents, and the tile was photographed to record the local land surface. A soil sample was also taken at each site and the Universal Transverse Mercator coordinates were recorded on the sample. The samples were returned to the campsite every day for Paula to process into a 6x6 array of paintings to be displayed in the CLUI Wendover Exhibit Hall. Also displayed were the photos of the tiles, showing their situation against the local soil in which they were placed, and a corresponding digital map of the terrain produced with C5 Landscape Database 1.03 software [12], showing at a larger scale the same map images as on the tiles, corresponding to the soil paintings. The exhibit invites visual comparison of the three representations of the landscape, revealing connections between the data about the landscape and the landscape as data, and synthesizing these into an informational configuration bound in a very precise way to the original landscape.

As paradigmatic performance the question of "where" (both where tiles were placed and where Brett walked), were dictated by the model. In this case the tiles were placed at regular confluences of UTM easting and northing coordinates, and Brett followed straight lines through the desert dictated by the coordinate system grid. Within certain limits, the coordinate model, landscape data, and landscape itself played an important role in dictating the performance, activity, location, and final pictorial and representational work produced [13] (see figure 1, page 1).

Paradigmatic Performance example II: searching; pattern-matching the landscape

In C5's "The Other Path" (2004 and ongoing), a more extreme approach was taken that transferred yet more agency regarding the issue of "where" from the artists to the database. As preparatory work, Geri Wittig set out on a month long trek along the Great Wall of China, starting in the northwest desert and following the Wall eastward to where it runs to the edge of the Yellow Sea. GPS data was collected from twelve separate trekked locations along the length of the Great Wall. Using pattern-matching search procedures developed at C5 (Amul Goswamy and Brett Stalbaum), the 12 most similar corresponding terrains in California were identified. After determining the blocks representing the most similar matching terrains in California, phase two of the Other

Page **3** of 8
http://leoalmanac.org/journal/vol_14/lea_v14_n07-08/bstalbaum.asp

Leonardo Electronic Almanac
Vol **14** Issue **07 – 08 November** 2006
Last updated on 30 November 2006
info@leoalmanac.org

Path search process identified discrete paths within those terrains expressing similar statistical characteristics, such as simple distance, cumulative distance, and elevation change. To do this, a swarm of virtual hikers, implemented as experimental features of the C5 Landscape Database 2.0 [14] were unleashed in the virtual California landscape to explore and generate tracklogs, which were then compared to Wittig's original "input" Great Wall of China tracklogs. The results of this search identified the most closely matching virtual tracklogs, which were then exported to tracklog files, uploaded to GPS devices, and physically pursued by C5 in a performance of tertiary (after the original, after database) exploration of the Great Wall of California. [15]

Paradigmatic Performance Example III: Going Where the Data Says to Go

For the Painters Flat project "Primary and Other Remote Locations" (12 – 15 Aug 2005, Box Elder County Utah, U.S.A.), a similar approach with a different goal was pursued. The South East corner of CLUI's Remote Location property on Lemay Island was used as an input point, and the database containing topographical data for the surrounding area (including Lemay Island, Crater Island, Floating Island and the Silver Island mountain range) was searched for points with similar topographical characteristics, isolating five topographical others of the CLUI Remote Location; or the "Other Remote Locations" as we call them. The "Other Remote Locations" were visited with the help GPS, four wheel drive, and hiking. The sites were documented, with the primary goal of producing landscape paintings in which agency of site selection, often assumed to be the natural province of the painter, is turned over to the C5 algorithm digesting the landscape data through pattern matching. The database literally told us where to go, and from where Paula should paint the landscape. [16]

Figure 2: "Other Remote Location 5",
12 T 267600 4545660 (NAD 27)
Copyright © Brett Stalbaum

Figure 3: Paula sketching "Other Remote Location 3",
12 T 265500 4553130 (NAD 27)
Copyright © Brett Stalbaum

Page **4** of 8
http://leoalmanac.org/journal/vol_14/lea_v14_n07-08/bstalbaum.asp

Leonardo Electronic Almanac
Vol **14** Issue **07 – 08 November** 2006
Last updated on 30 November 2006
info@leoalmanac.org

Data as representational form

The major change brought about by humankind's recent monumental accomplishment — that being the wrapping of the Earth in wire, fiber, and electromagnetic carriers for communications — is not so much the invention of data or its algorithmic processing into information (these are ancient inventions), but rather the ease and speed at which these representational forms are deployed, transmitted, utilized, computed digitally, automated, and ultimately stitched into the fabric of both culture, economics, and the material world. Critically, data increasingly entails the actual, playing an active role in the unfolding of what happens through virtual systems of surveillance, panopticonism, marketing, command and control. Strangely for visual artists, much of the representational technology that now fully impinges on our actual and lived experience is not in its first nature a technology of visible representation. Representation today exists in a complex of database, data processing, and communication between machines that happens in real time, distributing the real in its wake. The use of data representation (a.k.a. database, entity-relationship modeling, object-oriented systems design) expresses more social power today than visible artistic or media representations, as in painting, film, television, and digital imaging. These latter forms are increasingly like the ripples on the surface of a deep sea; generated by representational activity taking place at lower, invisible levels in our information technology.

Yet in the academic world of the humanities, representation is still most often assumed to be a manifest, directly consumable expression which is presented for an aesthete, reader, listener, user, consumer or some such end-audience in a context of appreciation, information, work or marketing; whether looking at a painting in a museum or a flash animation in a web browser. Generally, related artifacts take the form of visualization (be it painting, data visualization, television), or sonification, computer interaction, and in various forms of narrative, such as computer games and other multimedia. Interfacial forms are always present in some way in all art works; so that these surface representations or media experiences become the primary 'texts' that are studied in the humanities and indulged in by most artists is no surprise to anyone. But the very fact that the formal definitions of data and information are different from one another (information is processed or produced from data) implies the existence of another representational regime, one that is less visible and seemingly more powerful in terms of its material consequences. Exploring the latter (data and how it is processed algorithmically) in an equally conceived complex of representation with interface (where information is most commonly manifest) is a critical aspect of cultural studies moving forward, because not only do visual representation and interaction impinge on our relationship with the world, so do database and datascapes. As artists, we seek to explore the mediation of the real by this relatively new regime of active digital representational forces, because these are now embedded parts of our socially distributed cognition, and constitute a significant, somewhat unexplored, and generative aspect of our wild nature. As artists, it is our job to discover what these paradigmatic forces can be made to do (including that which was not originally intended), and more importantly what these forces *might make us do* in configurations of paradigmatic performance.

References and Notes

1. Edwin Hutchins, *Cognition in the Wild* (Cambridge, Massachuetts: The MIT Press, Feb 1995) ISBN 0262082314, p. 6

2. The symmetry between Hutchin's views emerging from the Cognitive Science discipline in the 1990's and Allan Kapow's notion of audience responsibility in a "Happening" are noted. See for example Kaprow, Alan, "'Happenings' in the New York Scene", 1961, reprinted in Noah Wardrip-Fruin and Nick Montfort (eds.) *The New Media Reader*, (MIT Press, 2002) ISBN 0262232278

Page **5** of 8
http://leoalmanac.org/journal/vol_14/lea_v14_n07-08/bstalbaum.asp

Leonardo Electronic Almanac
Vol **14** Issue **07 – 08 November** 2006
Last updated on 30 November 2006
info@leoalmanac.org

3. Karlis Kalnins and Marc Tutors founded *Locative Media Labs* in 2001, and developed technology such as GPSter.

4. Drew Hemment, *The Locative Dystopia*, <nettime>, Date: Thu, 08 Jan 2004 22:57:10 +0000, http://amsterdam.nettime.org/Lists-Archives/nettime-l-0401/msg00021.html, last accessed 7 January 2004. Hemment reported on the emergence of Locative Media as a theme for major international conferences and outlined some of its socio-political parameters.

5. I have been working on geospatial software libraries for artistic performance at C5 since 2002. Various versions of this C5 Landscape Database API have been released. Please see http://www.c5corp.com

6. At the ISEA 2004 conference, (GPS and Art panel, 19 August, 2K4), Joel Slayton suggested that the term "locative media" be dropped because of its connotation with modernism along with terms like "performance" and "dance". His suggestion was to replace it with "sublime profiling".

7. A basic assumption of all C5 theory is a constant, clear distinction between the virtual and the unreal. The virtual is always viewed as having an intimate and actual relationship with the real. It is quite unlike the unreal, which by definition is not real and therefore impinges much less (if at all) on the actual. For more on this, see Brett Stalbaum, in *Derivas: cartografias do ciberespaço*, Lucia Leão (ed.) (São Paulo: Annablume, 2004), ISBN: 85-7419-456-5.

8. NASA's Shuttle Radar Topography Mission took a one-meter resolution snapshot of the surface of the Earth in 2000. The data is made available through the USGS. See http://www2.jpl.nasa.gov/srtm/ and http://srtm.usgs.gov/ for more information.

9. For more on Large Data, see my Editorial Notes for "Large Data Sets and the Sublime", published in *YLEM Journal, Artists Using Science & Technology*, Vol. 24 No. 8 (July-August 2004). SSN 1057-2031. http://www.paintersflat.net/ylem.html

10. The *Ecce Homology* Project, a large scale collaboration (http://www.insilicov1.org/collaboration.html) that produced an installation allowing poetic audience interaction with the BLAST algorithm (used for pattern matching in gene sequences) is the only art project I am aware of that explores the aesthetic possibilities of large data sets in biology in a way that mediates how humans (the audience) perform for the system: the database thus producing activity, and that activity potentially playing a role in type of knowledge discovery. http://www.insilicov1.org/

11. Z12, T, E260782, N4558391 (NAD27)

12. Refer to [3] - Fair Assembly: Making Things Public: Online exhibition at the Zentrum für Kunst und Medientechnologie (The Center for Art and Media Technology), Karlsruhe, Germany, 18 March 2K5, Curator: Steve Deitz. Opened March 18th 2K5, ongoing. C5 Landscape Database Version 1.0.3 is released under the Lesser General Public License, 3/18/2K5, as contribution to exhibition. (See software section). Please see: http://makingthingspublic.zkm.de/fairassembly/

13. For project documentation on "Remote Location 1:100,000", see http://www.paintersflat.net/remotelocation.html

14. Refer to [3] — Version 2.0 is currently in development.

Page **6** of 8
http://leoalmanac.org/journal/vol_14/lea_v14_n07-08/bstalbaum.asp

Leonardo Electronic Almanac
Vol **14** Issue **07 – 08 November** 2006
Last updated on 30 November 2006
info@leoalmanac.org

15. Deitz, Steve, *The Path More or Less Taken*, http://www.yproductions.com/writing/archives/000707.html, Last accessed 25 August 2005. Also Published in *Camerawork: A Journal of Photographic Arts*, Vol. 32, No. 1 (Spring/Summer 2005).

16. For project documentation on "Primary and Other Remote Locations" see http://www.paintersflat.net/otherremotelocation.html

Author Biography

Brett Stalbaum is an artist specializing in information theory, database, and software development. A serial collaborator, he was a co-founder of the Electronic Disturbance Theater in 1998, for which he co-developed software called FloodNet, which has been used on behalf of the Zapatista movement against the websites of the Presidents of Mexico and the United States, as well as the Pentagon. Recent work includes Painters Flat, projects with the painter Paula Poole in the Great Basin, and ongoing projects with C5 Corporation, of which he is a founding member. Stalbaum holds a Masters of Fine Arts (computers in fine art) from the CADRE digital media laboratory at San Jose State University, and a B.A. in Film Studies from San Francisco State University. He is a lecturer and the coordinator for the Interdisciplinary Computing and the Arts Major (ICAM) at the University of California, San Diego.

Citation reference for this Leonardo Electronic Almanac Essay

MLA Style
Stalbaum, Brett. "Paradigmatic Performance: Data Flow and Practice in the Wild." "Wild Nature and the Digital Life" Special Issue, Leonardo Electronic Almanac Vol 14, No. 7 - 8 (2006). 30 Nov. 2006 <http://leoalmanac.org/journal/vol_14/lea_v14_n07-08/bstalbaum.asp>.

APA Style
Stalbaum, B. (Nov. 2006) "Paradigmatic Performance: Data Flow and Practice in the Wild," "Wild Nature and the Digital Life" Special Issue, Leonardo Electronic Almanac Vol 14, No. 7 – 8 (2006). Retrieved 30 Nov. 2006 from <http://leoalmanac.org/journal/vol_14/lea_v14_n07-08/bstalbaum.asp>.

Page **7** of 8
http://leoalmanac.org/journal/vol_14/lea_v14_n07-08/bstalbaum.asp

Leonardo Electronic Almanac
Vol **14** Issue **07 – 08 November** 2006
Last updated on 30 November 2006
info@leoalmanac.org

" . . . the highbrow hot spot of cyberspace . . . a digital bible
for the lowdown on the [hi-tech] art scene." —Wired

Leonardo Electronic Almanac (ISSN: 1071 4391)

Nisar Keshvani, Editor-in-Chief

Established in 1993, Leonardo Electronic Almanac is, jointly produced by Leonardo, the International Society for the Arts, Sciences and Technology (ISAST), and published by MIT Press, is an electronic journal dedicated to providing a forum for those who are interested in the realm where art, science and technology converge. For over a decade, LEA has thrived as an *international peer reviewed electronic journal* and web archive covering the interaction of the arts, sciences, and technology. LEA emphasizes rapid publication of recent work and critical discussion on topics of current excitement with a slant on shorter, less academic texts. Many contributors are younger scholars, artists, scientists, educators and developers of new technological resources in the media arts.

Wild Nature and the Digital Life
Guest edited by **Dene Grigar and Sue Thomas**

Generative and Emergent
- :: Artificial Ecologies: Second Nature Emergent Phenomena in Constructed Digital - Natural Assemblages - *Peter Hasdell*
- :: Butterfly Effects: Synthesis, Emergence, and Transduction *- Tara Rodgers*
- :: Digital Behaviors and Generative Music *- Dave Burraston and Andrew Martin*
- :: Bodies in Biotechnology: Embodied Models for Understanding Biotechnology in Contemporary Art - *Jennifer Willet*

Locative and Performative
- :: Kudzu Running: Pastoral Pleasures, Wilderness Terrors, and Wrist-Mounted Technologies in Small-Town Mississippi - *Adam Gussow*
- :: Mapping the Disaster: Global Prediction and the Medium of 'Digital Earth' - *Dr. Kathryn Yusoff*
- :: Views From Above: Locative Narrative and the Landscape - *Jeremy Hight*
- :: Paradigmatic Performance: Data Flow and Practice in the Wild - *Brett Stalbaum*

Wild Nature and the Digital Life Gallery
Curated by **Dene Grigar and Sue Thomas**

- :: Future Nature - *Karl Grimes*
- :: The Affective Geography of Silence - Towards a Museum of Natural Quiet - *Elisa Giaccardi, Hal Eden and Gianluca Sabena*

Page **8** of 8
http://leoalmanac.org/journal/vol_14/lea_v14_n07-08/bstalbaum.asp

Leonardo Electronic Almanac
Vol **14** Issue **07 – 08 November** 2006
Last updated on 30 November 2006
info@leoalmanac.org