

Mapping the Database: Trajectories and Perspectives

Sharon Daniel
and Karen O'Rourke

Mapping is intersubjective communication—the visualization or representation of information. The term “map” applies both to a clear representation and to the act of analysis required to create such a representation. A map fulfills the functions of both record and statement—it is a history of the subject’s, or mapmaker’s, relation to that which is mapped and an act of communication with others who will interpret and use it. To map is to locate—but position is always “relative to . . .” Intersubjective communication occurs when the meaning of data or information is accessible to, or established for, two or more subjects. In intersubjective communication, values and truths are inseparably intertwined. Interpretations and representations are produced dialogically—in cooperation with a “text” or data set. None of the participants is assumed to be a *subject presumed to know*—i.e. an unquestionable *authority*—so objective knowledge is displaced by shared subjectivity. To accurately map social and cultural experience requires infrastructures and interfaces that facilitate intersubjective communication, favor dialogue over monologue and allow representations and interpretations to emerge and evolve—an infrastructure like the database.

A database is an organized collection of information. It provides a framework for retrieving information, contributing new information, drawing conclusions and making decisions. A database is a meta-structure, which maps out a multitude of potential trajectories for dialogic and emergent processes.

The database and the map are far more than simple tools used to organize, elaborate or conserve knowledge; indeed they are significant components of our perceptual world and of our perception. As generally understood, cartographic mapping involves representing a three-dimensional, continuous space in two dimensions—assigning fixed correspondences between abstract symbols and experiential points of reference. In mathematics and genetics, mapping is a function such that for every element of one set there is a unique element of an-

other set. Therefore, the database would seem to be at odds with the map in that it allows users to rearrange information in patterns that no longer bear any relation to a particular origin or point of reference. Using a database, one can regroup or reorganize data—for example, street names or towns from different geographical locations, in radically different ways. In an alphabetical sorting, for instance, a small town in Florida can appear next to the Iraqi capital some 7,000

miles distant. Geographical location thus becomes just one of the ways of ordering relevant information. Instead of merely representing the territory, the database-as-map becomes a territory to explore in and of itself—allowing us to gather and search greater amounts of information, to sort, visualize and scale it to fit particular needs, and to make new correlations.

Access to data and its potential significance for an individual or community are both tied to sociocultural context. Mapping, classifying and interpreting experiential data in the digital realm may involve using interfaces and tools that are developed from a particular sociopolitical perspective. Systems of representation are culturally constructed. Both systems of representation and the interfaces we use to engage them can function as repressive and normative forces. However, digital information and communication technologies do present an opportunity—a material context that we, as artists and researchers, exploit to challenge dominant perspectives and provide alternative means of self-representation. Our research is both critical and utopian. We attempt to re-imagine classification systems as emergent systems—where names, categories and associated data structures arise from the bottom up through collective usage. These systems explore the aesthetic dimensions of the database [1]. In our respective projects we have each employed mapping as a methodology and an interaction metaphor in the design of dynamic, evolving systems that allow participants to create and archive their own itineraries and maps on-line.

Our approach to building evolving databases differs from purportedly user-driven systems such as the Google search engine’s relevancy ranking algorithm, which rates a web page according to the number of other pages that link to it. In this system a particular page’s rating is improved if the pages linking to it are themselves often linked to by others. Since viewers rarely tend to view more than one or two pages of results for a given search, this filter tends to empower the powerful,

ABSTRACT

The authors attempt to re-imagine classification systems as emergent systems—where names, categories and associated data structures arise from the bottom up through collective usage. Each has employed cartographic methodology as an interaction metaphor in the design of dynamic, evolving systems that allow participants to create and archive their own itineraries and maps on-line. These systems explore the aesthetic dimensions of the database. The authors have presented and tested prototypes of two developing systems, *Subtract the Sky* and *A Map Larger Than the Territory*, in a workshop/exhibition. This article provides a brief description of the premise and implementation of both projects. It concludes with some preliminary findings from the workshop/exhibition and the authors’ shared research.

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Article Frontispiece. Karen O'Rourke, *New York Body 'n' Soul Map, a New York-based version of A Map Larger Than the Territory*. During the festival *Psy-Geo-Conflux* (8–11 May 2003), several participants interpreted Christina Ray's written itinerary “Post September 11th Walk” by (re)walking it. © Karen O'Rourke



Fig. 1. Sharon Daniel, *Subtract the Sky* version 1. Screenshot of *Subtract the Sky* search interface as presented in workshop exhibitions at Université Paris 1 and DEAF '03. (© Sharon Daniel)

increasing the gap between those who possess symbolic capital [2] on the Web and those who do not. As a secondary result, its widespread use marginalizes and makes it more difficult to find the offbeat, the idiosyncratic, the unfashionable or simply any newcomer without connections. Certainly, Google reflects the collective behavior of its users but it simultaneously homogenizes their network environment.

In contrast, our systems are being designed to promote heterogeneity and to accelerate the proliferation of voices online—however offbeat or idiosyncratic. *Subtract the Sky* [3] and *A Map Larger Than the Territory* are open systems that encourage and reflect difference, that map the particular within the collective behavior of users by allowing individuals and communities to author their own representations and construct their own sets of associative links. Both *Subtract the Sky* and *A Map Larger Than the Territory* are being developed by involving groups and individuals through workshops and community-oriented events and exhibitions. For example, in “Mapping the Database,” a workshop/exhibition that took place in November 2002 at the Université Paris 1 [4], we presented and tested prototypes of these two developing systems. In the text and figures that follow, we each provide a brief description of the premise and implementation of our respective projects. We then conclude with some preliminary findings

from the workshop/exhibition and our shared research.

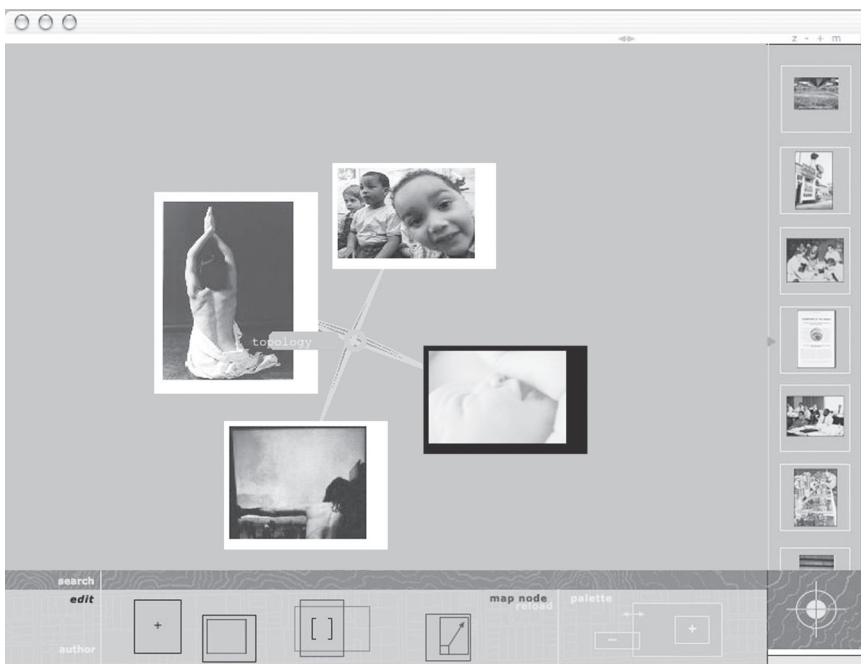
SUBTRACT THE SKY (SHARON DANIEL)

Subtract the Sky takes its name from a method used in astronomy. Astronomers

must eliminate the light of all the stars they do not wish to see in order to capture the light of a single star. Effectively, astronomers must define what “sky” means for every observation. In other words, there is no single meaning for “sky,” but many, given the perspective of the observer. To “subtract the sky” is to interpret data from a subjective perspective. Here, the phrase is used as a poetic metaphor for the process of collecting, authoring and contributing data.

While political and economic power are increasingly dependent upon access to and presence within the global information culture, the voices of the culturally, economically and technologically disenfranchised are becoming less and less audible. This dangerous trend might be reversed if communities of interest across the socioeconomic spectrum had access to information technologies and the ability to map their own positions in information space. As an artist my goals are: to avoid representation—not to attempt to speak for others but to allow them to speak for themselves; to build collaborative networks that address the special problems of communities with limited access to information technology and culture; and to build collaborative tools for use by communities in their own empowering, authoring practices. *Subtract the Sky* is a collaborative system [5]. It provides an on-line environment for collective and emergent methods of map-

Fig. 2. Sharon Daniel, *Subtract the Sky* version 1. This screenshot shows the “edit” interface, which allows participants to create and update new nodes in the database. The individual participant’s “palette,” shown on the right, collects images the participant will use as source data in the prototype multi-user map-making application. (© Sharon Daniel)



selected, provides access to tools and data. Simple forms for text input and sliders for navigation supplement this type of interaction as necessary. Participants learn through exploration that they can create their own node clusters to build maps and associations between nodes dynamically by dragging the mouse from one node to another. The main “menu” (Fig. 3), a graph or node-cluster, is used to launch navigation tools (zoom, rotate and “sky” sliders used to customize the background and current view of the database) and the search tool. The search tool allows the participant to select or combine categories (contexts) and type in keywords (descriptions), then choose a source (*Subtract the Sky* or the Internet—Google—or both) and display the “map” returned in the current window or in a new window. The map of search returns is a graph or node-cluster that displays thumbnails of images or icons for text and sound files in *Subtract the Sky*’s database and the titles of web pages returned by Google.

Participants may view this map from several different perspectives—through the filter of classification and categorization (Fig. 3); by genealogical association between contributed images, texts and sounds; by tracing connections in a map of the community of users or network of contributors (Fig. 4); or from their own personal perspectives (Fig. 5) by creating a map or visualization of associations between nodes in the database for their own use that is tied to their own participant/contributor identity. Each node

can be selected to open a detail window (see Fig. 4) that contains an image text or sound along with the contributor’s information and any keywords or descriptions added by the contributor, or, in the case of an Internet search, a link to the web page, which will open in a separate browser window when selected.

Participants may search the project database (or the Web) by category (contexts) or keyword (descriptions). They may add selected images, texts and sounds found in their search results to their personal view of the database (see Fig. 5), then build maps by creating links between new data objects and/or connecting them to existing objects, keywords or categories. The participant’s personal view of the database and the contribution sub-panel allow the participant to add an image, text or sound file with a description and label to her personal view. In the window that displays her personal view the participant can then create a map by connecting her own data objects to each other and assigning relative “weights” to their various associations. She may add her nodes and node-sets to the collective map of the database by connecting her nodes to existing nodes in the database (images, texts, sounds and/or contexts). A new node or node set is added to the database when the contributor “drags and drops” a new connector from a new node to a context label or an existing node. The classification system, or list of possible “contexts,” consists of highly contested terms such as *nature, culture, aesthetics, public, private.*

It is my hope that the maps contributed under these categories and the keywords used to describe them will begin to inflect the meaning of the terms themselves and create new associations for them—relocating and re-mapping language, multi-vocally.

Mapping, which includes adding new data to an evolving database and creating new links and associations to existing data, is thus always a collective and collaborative act. Figure 4 shows a window that displays the contributor network. Node labels display the login identity of each participant in the network (anyone who has created a login). Connections between nodes express the relations between participants based on associations between the data objects they have contributed. Each node links to a “detail” window that gives information about the participant (as defined by the participant) and a list of contributions made by that participant and provides a further link to the “detail” window for each contributed data object. The contributor detail window also provides a link to a synchronous communication space for direct communication and collaboration if such a connection is specified and accepted by the contributor. Potential for synchronous communication is meant to enhance remote collaboration between participants with shared interests and is intended to assist in building community.

A multi-user map-making environment, *SkyDraw*, currently in development, will allow participants to author maps (images, texts and sounds) collaboratively over the network using source data from the database and/or their own data. The map-making environment, which includes image, text and sound editing tools in a multi-user “white-board” environment with file-sharing and synchronous communication, will track parent/child relationships between each new map contributed to the database and the data objects used to author it. This information will be uploaded with each contributed map, so its links and associations may be automatically represented when a participant views the data from the perspective of the personal (the participant’s own “home” view—see Fig. 5), the contextual (overview of categories—see Figs 2 and 3) or the contributor network (a genealogy of participants as related through their contributions—see Fig. 4).

Subtract the Sky is a tool. It is designed to give voice to communities and individuals on issues of relevance within their own social worlds. When development is complete, it will be available globally for

Fig. 5. Sharon Daniel, *Subtract the Sky* version 2 design sketch. In this screenshot the participant’s personal view of the database and the contribution panel are open. This interface allows the participant to add an image, text or sound file with a description and label to her personal view. (© Sharon Daniel)

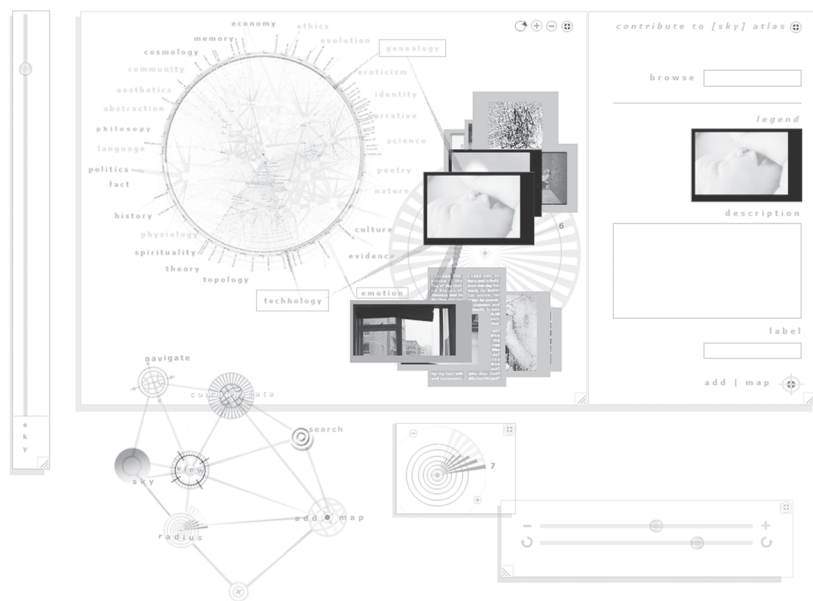




Fig. 6. Sharon Daniel et al., *Need_X_Change*. Image of Fruitvale needle exchange “in-progress” project web site created by a participant who has been able to take advantage of one-on-one computer literacy and web publishing training in the project lab at Casa Segura’s Oakland office. (© Sharon Daniel)

users on-line but will also be employed in specific local contexts as a tool for constituencies who do not generally have access to communications technologies and whose voices are not heard in information space.

For example, *Subtract the Sky* will be used as a tool in the context of a project I have initiated called *Need_X_Change* [6]. *Need_X_Change* is a work of technology-assisted, community-based public art designed to help the staff and clients of Casa Segura, an HIV prevention clinic and needle exchange program in Oakland, CA, attain social and political voice through self-articulation, activism in their local community and participation in the global information culture. Through this

work, needle exchange clients (a community of homeless injection-drug users) become the source of self-narration and re-symbolization, and in so doing create the conditions under which a claim to dignity is possible.

Needle exchange programs are a controversial but proven method of reducing needle-related HIV risk behaviors among injection-drug users. Needle exchange programs are part of a therapeutic strategy called “harm reduction.” Harm reduction is a type of practical ethics—a process of de-escalating moral conflicts and educating as required so that each participant in a given circumstance can effectively see the other’s point of view. I share the philosophy be-

hind “harm reduction” therapy, which is based on a recognition of the value and dignity of all individuals, their experiences and their perspectives.

Most of the potential *Need_X_Change* participants have never used a computer and, although they say they have “heard about” the Internet, have never been on-line before. They are subject to the force of information culture without having the opportunity to engage with it—it is a kind of glass ceiling, a pervasive ghost. Every instance of `<http://www... />` on a sign, on the radio, on the television or in a set of instructions is a statement in a foreign language. Many of the clients of Casa Segura live on the street, have no form of official identification because they have no fixed address and thus have no access to basic civic and social services. Their absence in the virtual data-world has serious implications in the physical world. The complex struggle over civil liberties and social rights in electronically mediated information space is materially different from the one on the street. Building a collaborative relationship in this context requires developing social, institutional and technological infrastructure.

I begin by asking “What do you think—what is your experience” of individuals who are rarely, or never, asked. Each participant in the project tells her own story in her own words, using her own images, texts and sounds. I work one on one with participants. In some cases I teach them basic computer literacy and web publishing. Several participants have published a number of web pages after learning to use a standard WYSIWYG html application and image editor. This has required considerable effort for these participants given the extremity of their circumstances. Many of Casa Segura’s clients are not able to make the sustained commitment to the regular meetings required to benefit from this type of training. Most live on the edge of desperation—in need of housing and food as well as methadone treatment and/or clean needles. Some are relatively stable and able commit to the training program but not necessarily capable of learning how to use complex commercial tools. I have successfully used existing technologies—(for example, free web log interfaces provided by blogger.com `<http://blogger.com>` and some simple form templates built on the ZOPE open-source content management system at `<http://zope.org>`) to keep active those participants who cannot follow through with training. But a special set of intuitive and non-prescriptive tools is needed to

Fig. 7. Karen O'Rourke, *A Map Larger Than the Territory*. One of several questionnaires developed for the "Mapping the Database" workshop. This one unfolds over six successive screens to encourage participants to call up memories of significant details from their journey. (© Karen O'Rourke)

give this user community a voice in information culture.

There are ethical issues to resolve. The political assumptions embedded in the design of digital tools reinforce the boundaries between the technologically and economically enfranchised and disenfranchised. I hate the idea of training homeless, mentally ill needle exchange participants to use proprietary programs like Microsoft Word, in which the spell-checker resolutely insists on changing "underserved" to "undeserved." This is an example of the political subtext of the design of commercial digital tools. For me the principal question is how to design interfaces that will facilitate productive participation for inexperienced users without over-determining their contributions. This problem is simultaneously technical, aesthetic and political. I am convinced that some sort of frame is necessary to identify a field of potential—an open space allowing and provoking meaningful responses from participants

who are so unaccustomed to having their perspectives valued or even queried. I hope that *Subtract the Sky* can provide this frame. However, I am concerned that the technological interfaces and the power relations implicit in the social and institutional context may combine to repress or prescribe, to enforce normative values and impose master narratives. (For example, participants are called "clients" by Casa Segura staff, which represents a particular type of institutional relationship. Many of these "clients" have difficulty accepting the possibility of collaboration and self-articulation and strive to give "appropriate" responses instead of direct or honest ones. I see these individuals as "participating subjects" and try to get them to see me as just another participating subject.)

Subtract the Sky will provide a personal cartography or map-making environment that I hope will help participants focus on their own priorities and articulate their own perspectives. Figures 2–6 show the

interface for version 2 of the project, which is being progressively re-designed and simplified toward this end. The process of participatory design began with the workshop exhibition at Université Paris 1 (see Fig. 1) and continued during "Open Territories" at the Dutch Electronic Arts Festival (DEAF '03) in Rotterdam [7], and will include *Need_X_Change* participants who contribute their images, sound files and stories to the Subtract the Sky database at the needle exchange tent sites (see Fig. 6) [8].

Worlds should not be mapped using only the data available in the cultural mainstream. Media representations map a complex geopolitical terrain. These representations should not be accepted as monolithic absolutes. The terrain must be examined, mapped and re-mapped from multiple perspectives. The field of data must be open to additions and re-configuration from every perspective, without hierarchical ordering or restriction. A map is always perspectival. It locates but it is itself already located. Maps are political instruments that should be authored and employed by collectives and grassroots networks, not controlled by governments and authorities. Grassroots networks, nonprofit organizations and disempowered, often technologically disenfranchised groups need a context, access to the field of data and tools for "imagery activism," for developing collective and emergent methods of mapping and visualizing data—this is the premise underlying the development of *Subtract the Sky*.

A MAP LARGER THAN THE TERRITORY (KAREN O'ROURKE)

"What a useful thing a pocket-map is!" I remarked.

"That's another thing we've learned from your Nation," said Mein Herr, "map-making. But we've carried it much further than you. What do you consider the largest map that would be really useful?"

"About six inches to the mile."

"Only six inches!" exclaimed Mein Herr. "We very soon got to six yards to the mile. Then we tried a hundred yards to the mile. And then came the grandest idea of all! We actually made a map of the country, on the scale of a mile to the mile!"

"Have you used it much?" I enquired.

"It has never been spread out, yet," said Mein Herr: "the farmers objected: they

said it would cover the whole country, and shut out the sunlight! So we now use the country itself, as its own map, and I assure you it does nearly as well."

—Lewis Carroll [9]

Australian Aboriginals find their way in unfamiliar country without using navigational instruments or notions of astronomy. They construct cognitive maps based on myths, traditional songs and stories that depict the physical features of their ancestors' Dreamtime tracks, the paths they made all across the continent as they shaped a world out of chaos. For them territory is not a piece of land enclosed within borders but "an interlocking network of 'lines' or 'ways through'"—the Songlines, sung into being by these ancestors. To survive in the Outback, much of it arid scrub or desert where rainfall is erratic at best, it is necessary to move continually to find water and sustenance: to stay in the same place would be suicide [10]. Much of this very precise geographical knowledge, or "bush erudition," comes from conversations with other travelers who describe in great detail the trails, camps and sacred sites they have encountered along the way [11].

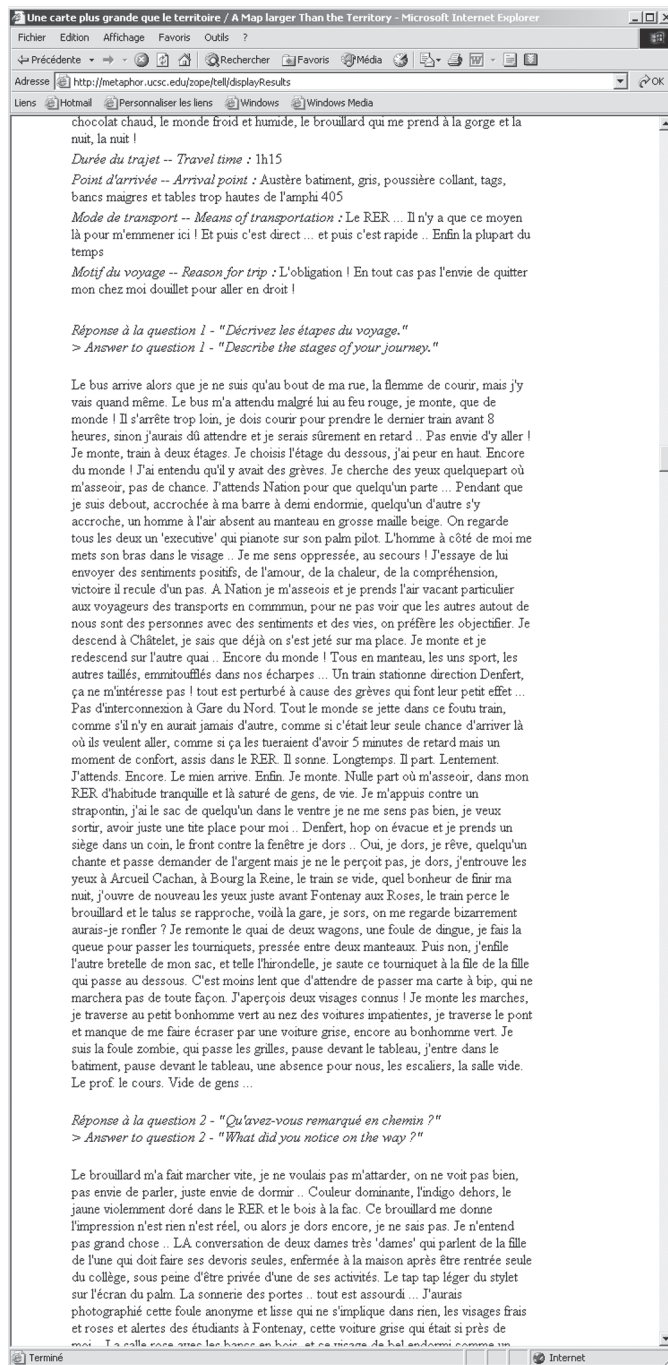
A far cry from either the Aboriginal nomadic wanderings or Western urban experiences such as Baudelaire's *flâneries* or Breton's aimless ramblings, our own daily itineraries would appear at first to be rather well-beaten trails, limited in scope. Their very banality would seem automatically to exclude any discovery or chance encounter. In the metro at rush hour, do we not sometimes feel that we have seen the same faces so often they have become landmarks? At least we are not on the wrong platform. . . . By asking participants to recount their paths across the city, this project aims to build experiential maps based on such notions as landmark, district, edge or boundary, path, rendezvous [12]. What details reveal a neighborhood, an intersection, a street? What characteristics of places or routes help us to find our way in a complex urban center? What information is charted on our mental maps? What makes them specific to Paris, London or Tokyo?

Many of our waking moments are devoted to getting from one place to another. Although we often feel this is time wasted, like negative space in a graphic design, it models the "positive" moments in surprising ways. However mundane, each of our urban itineraries tells a unique story. Why this particular trip today? How did we find our way? Which

path, which means of transportation did we choose? What was the weather like? What did we see, hear and smell on the way? What remains afterwards?

Our itineraries reveal not only our personal choices or tastes but also cultural and political determinations. The hundred-kilometer trip from Jenin to Hebron on the West Bank could take either 2 hours or 14, depending on whether we are required to stop at each of the 24 army checkpoints on the way [13]. To a greater or lesser degree, our travel vicissitudes point to larger issues, providing clues about living conditions in a given time and place.

Fig. 8. Karen O'Rourke, *A Map Larger Than the Territory*. The questionnaire responses are stored in a MySQL database and displayed using a text search interface programmed by John Jacobs. In her response entitled "routine perturbée" (disrupted routine) this participant relates a trip on the underground during a transportation strike. (© Karen O'Rourke)



Guy Debord defined the *dérive* (literally: "drifting") as "a technique of rapid passage through varied ambiances. *Dérives* involve playful-constructive behavior and awareness of psychogeographical effects, and are thus quite different from the classic notions of journey or stroll" [14]. Geography, according to Debord, accounts for:

the determinant action of general natural forces, such as soil composition or climatic conditions, on the economic structures of a society, and thus on the corresponding conception that such a society can have of the world. *Psychogeography* could set for itself the study of the precise laws and specific effects of the

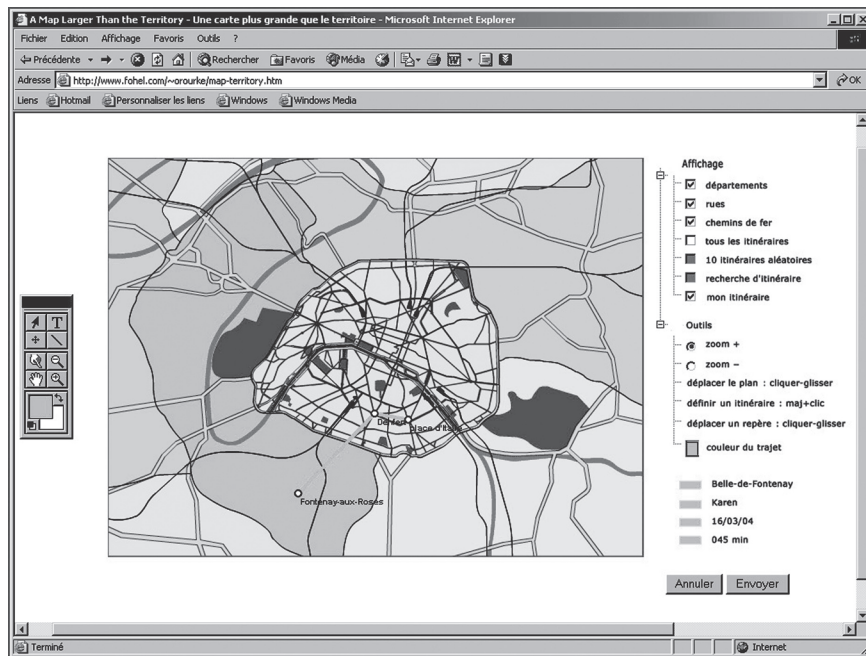


Fig. 9. Karen O'Rourke, *A Map Larger Than the Territory*: design sketch for the map interface. (© Karen O'Rourke)

geographical environment, consciously organized or not, on the emotions and behavior of individuals [15].

Psychogeographers look out for the subliminal messages in urban planning; they practice a sort of city-space cut-up [16].

A Map Larger Than the Territory develops a Web application that will enable participants to represent their urban travels on-line, using images, texts and sounds (see Color Plate B No. 1). The result will be a cross between a "Map of Tender" charted by surveillance technology and a network of trade routes or "Song-lines" [17]. Both kinds of territory are defined by the crisscrossing paths of those who travel through them. Instead of trading songs, participants exchange stories, impressions. Each trip can be analyzed or simply recounted. The 10-minute walk from school could be structured like Lévi-Strauss's *Tristes Tropiques*; a shopping expedition to the Printemps department store could mean advancing into the "Heart of Darkness" of the January White Sales.

The project involves:

1. A Web-based method of notation for participants to re-create and visualize their itineraries on-line, using both text and image files they have uploaded and information available from the database and on the Internet.
2. A searchable, modifiable on-line database of participants' urban itineraries.
3. A re-scalable, zoom-able map interface that allows one to search all the itineraries on file.

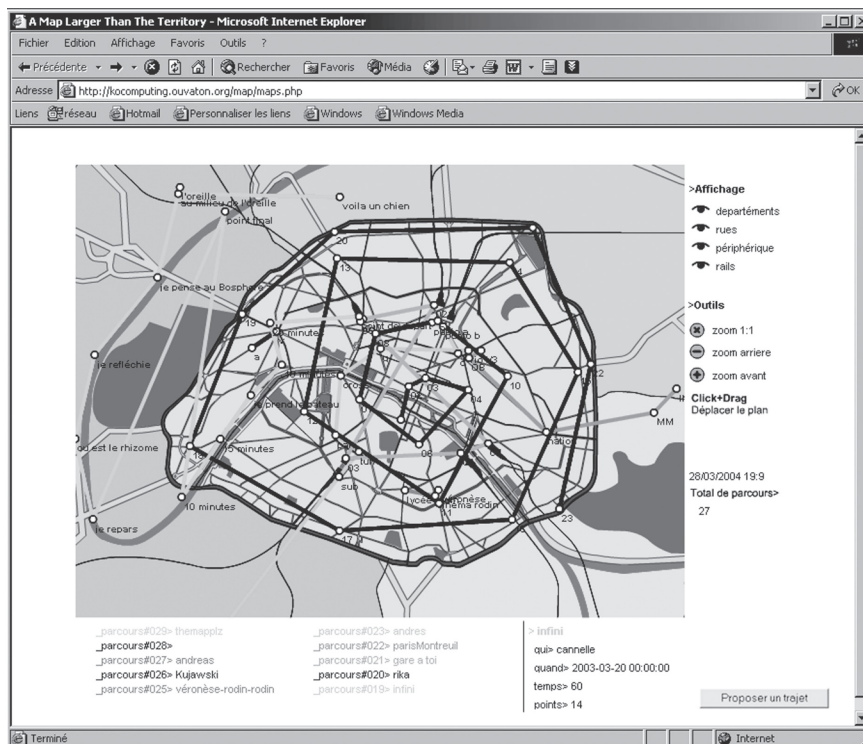
4. An on-line Rummage Sale for used itineraries, a networked marketplace where users can preview, download and exchange itineraries.

In its first version, the database contained textual descriptions culled from responses to an on-line questionnaire (see Fig. 7) and interpretations of these

texts by others (Fig. 8). The questionnaire itself was envisaged as a symbolic form, in perpetual re-negotiation as the questions themselves were modified in response to the replies they attracted. This led to the development of several very different questionnaires based on archetypal question-and-answer situations, from parlor games (the famous *Proust questionnaire*) to administrative forms, each bearing its own distinctive tone and style. Participants could choose from *Fill in the Blanks*, *Interrogation*, *Follow the Dotted Line*, *Tell It Your Way* and *New York Body 'n' Soul*. The questionnaires included both extremes: multiple choice questions, which limit the number of answers the respondent can choose from, and open-ended questions followed by an expandable text field, which places no limits on answers. The first option is useful for making correlations, showing the different ways in which people's paths intersect (both literally and figuratively) by matching responses, while the second allows participants to tell their stories in their own words in texts of variable length. To encourage very specific multi-layered narratives while also building data-objects that can be interconnected, I have tried to strike a balance between the two.

The new interface aims to render the variety and complexity of the narratives people contribute, allowing readers to

Fig. 10. Karen O'Rourke, *A Map Larger Than the Territory*: A screenshot from the project web site. The map interface is being designed by Karen O'Rourke in collaboration with programmer Cesar Restrepo. (© Karen O'Rourke)



draw meaningful parallels and make new correlations, while engaging them visually in the map-making process. The mapped relationships will be semantic, topographic rather than strictly geographic. After the participant has chosen a city and a language (French or English), the opening screen allows one to view selected itineraries in the database. Information about each itinerary is displayed when the mouse rolls over the name. The only place names on the map are the ones previous users have given to the points on their paths. This screen will allow the viewer to sort itineraries by date, place, traveler, keyword, run searches and display results. A click on a previous participant's itinerary will open a window showing a written description and/or a movie.

Another button sends the viewer to a blind map where she can add an itinerary of her own. To do so, she must first give it a name, a date and a color. She can use the tools provided to locate it and draw it on the map: zoom button, map mover, place marker, etc. (Fig. 9). Each time she marks a location on the map, a dialog box opens up for her to identify it. At this point she can also follow one of several links to add images, texts and sounds, either by uploading a file, selecting an object from the database, writing a text or responding to a questionnaire. Once the text has been keyed in or the object uploaded, identified, annotated and added to the database, she can validate the place marker and go on to the next. When she has finished marking up her path, she can view the movie she has made. By default the images and texts are assembled into a simple slide show in the order in which they were entered. Several tools will be available to edit it, allowing her to modify the number, order and rhythm of the frames, and the soundtrack. To help people create their movies, I will be holding a series of workshops in which participants will design audiovisual "path-building blocks" that can be reused by others. The blocks can be key-frames, "tableaux vivants" set up in the cityscape and very short video sequences inspired by urban travel experiences. Visitors online can also contribute their own images to the database.

The database intentionally confronts descriptions of very different itineraries (Fig. 10): adults driving to work and children running off to play, well-worn commutes and spontaneous joyrides, military parades and anti-war protest marches, quick jogs over to the corner drugstore and slow traffic crossing town, early-morning dog-walks and late-night bar

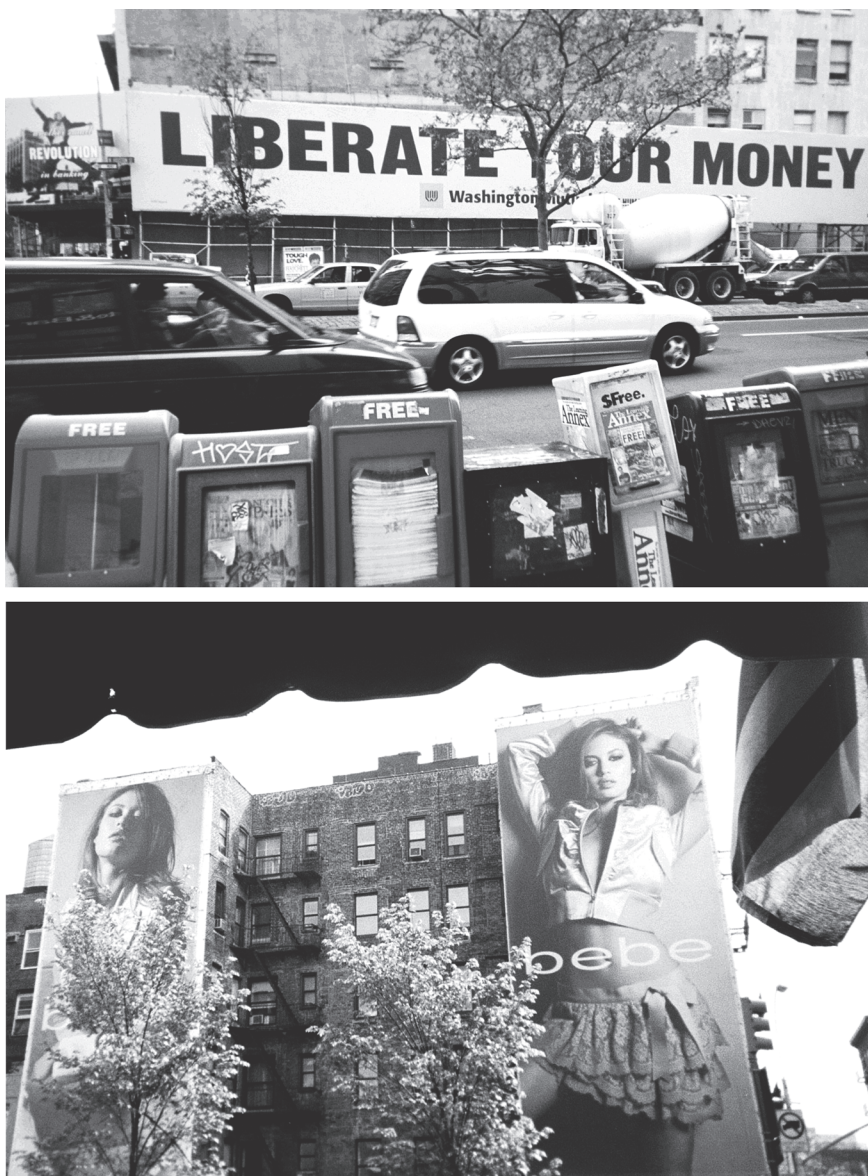


Fig. 11. Karen O'Rourke, *A Map Larger Than the Territory*. Walking the "Post September 11th Walk": photographs from the project web site. (© Karen O'Rourke)

hops, each capable of revealing a specific aspect of our urban imaginary (Article frontispiece and Fig. 11). The infinitesimal details of our subjective itineraries, which on their own might seem trivial or anecdotic, take on significance when we take the time to describe them and confront them with others, many others. In conjunction with a great quantity of other details, unique stories and ordinary trips, they form a new entity, a dynamic whole that is greater, more intelligent than the sum of its parts.

The *Map* with its marketplace of itineraries and network of links holds up a mirror to the city. The more a city favors diversity, the livelier it is. Versatile, multifarious, abundant, it is a dynamic system that results largely from simple interactions between its inhabitants and their liv-

ing spaces [18]. Acting individually, interacting with others at a local level, they produce complex, collective behavior at a higher, global level. The *Map*, like the city as a whole, forms an organized complex system made of "situations in which a half-dozen or even several dozen quantities are all varying simultaneously in subtly interconnected ways" [19]. Rather than creating an object for contemplation, this project focuses on the interconnections, the ways in which data networks "work."

RECURSION—META-MAPPING THE DATABASE

Recursion is a way of specifying a process by means of itself. The process of mapping may be indefinitely re-applied to the

results of its own application. A recursive map is one that begins with one or more initial instances and then specifies a set of conditions and repeatable rules for deriving others. Mapping the database is a recursive process.

The exhibition/workshop "Mapping the Database," at the Université Paris 1, was a beginning of a recursive process—an initial attempt to specify a set of conditions and tools for intersubjective communication that might lead to deriving others. Artists, computer programmers and participants worked together in the gallery space. We began by presenting the projects to invited groups and individual visitors. The gallery/workshop space allowed them to consult the artists and developers, explore the web interfaces and contribute to the databases by preparing a map or responding to a questionnaire. At the same time, participants were able to give us feedback throughout this process. This kind of preliminary user testing is essential to building a participatory project. Discussions with members of the academic community offered us some engaging cross-cultural perspectives: the participants were French and American, students and professors, artists and computer scientists. Presenting the two projects in the same space also allowed us to measure their differences and begin to examine cross-cultural perspectives on the following issues:

1. The representation of spatial, temporal and cultural experience in non-hierarchical information systems.
2. The design and use of interactive interfaces to networked databases.
3. Participatory design processes in a public environment.
4. The social implications of classification systems and information architectures in public information space.

As political and aesthetic trajectories and perspectives are increasingly marginalized, suppressed and absorbed by the commercialization of the Net, we conclude that, in order to maintain a truly public information space, collaborations between artists and communities must be undertaken to build open systems and interfaces that map alternative points of view and support the proliferation of voices on-line.

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References and Notes

1. See essays by Sharon Daniel, "Collaborative Systems," and Karen O'Rourke, "Paris Réseau, Paris Network," in *AI and Society* 14, No. 2, Special Issue on Database Aesthetics, pp. 196–222 (2000).
2. Pierre Bourdieu shows how "symbolic capital" (socially recognized legitimization in the form of prestige, honors) is readily convertible back into economic capital. See his *Esquisse d'une théorie de la pratique, précédé de trois études d'ethnologie kabyle* (Geneva: Droz, 1972). When Google references a site, classifying it among the most relevant for a given search, it generates visits to that site that can be converted into revenue in the form of advertising or sales.
3. Subtract the Sky and SkyDraw—the multi-user map-making environment—are both open-source projects; see <<http://sourceforge.net/projects/skydraw/>>.
4. "Mapping the Database," exhibition/workshop by Sharon Daniel and Karen O'Rourke, salle Michel Journiac, Université Paris 1, Unité de Formation et de Recherche des Arts Plastiques et des Sciences de L'Art, Fontenay-aux-Roses, 25–28 November 2002.
5. This project is a collaboration with Mark Bartlett, assisted by John Jacobs, Olga Trusova, Adam Hiatt and Victor Dods.
6. *Need_X_Change* is supported by the Creative Work Fund, a collaborative funding initiative of the Columbia Foundation, Evelyn and Walter Haas, Jr. Fund, Miriam and Peter Haas Fund, and Walter and Elise Haas Fund for artists and organizations in San Francisco and Alameda counties.
7. DEAF, the Dutch Electronic Art Festival, is a biennial international and interdisciplinary festival organized by V2_ in Rotterdam, which showcases crossovers between art, technology and society. *Subtract the Sky* was one of three DEAF '03 "open territories" workspaces. DEAF '03 "open territories" workspaces were installed at Pakhuis Las Palmas (Arena) in Rotterdam, from Tuesday, 25 February–Saturday 1 March 2003.
8. Casa Segura operates three weekly needle exchange events at remote locations in Oakland, California. The exchange staff and volunteers set up tents and tables at each site where they distribute clean syringes in exchange for used ones to registered injection-drug users. Casa Segura also provides hot food, free clothing, acupuncture, homeopathy, HIV and hepatitis C screening, and medical treatment for wounds and abscesses at each weekly exchange. I have become acquainted with project participants by volunteering at the Fruitvale exchange periodically since 2002. In the future a tent will be allocated for project participation using a laptop and remote wireless Net access.
9. Lewis Carroll, *Sylvie and Bruno Concluded* (London, 1893). See also Borges's description of a similar map in "Of Exactitude in Science," in Jorge Luis Borges, *A Universal History of Infamy* (London: Penguin Books, 1975) p. 131. My title was inspired by Lev Manovich's use of Borges's image to describe "indexes and the data they index. . . . But now the map has become larger than the territory. Sometimes, much larger." See Lev Manovich, *The Language of New Media* (Cambridge, MA/London: MIT Press, 2001) p. 225.

10. Bruce Chatwin makes this point in *The Songlines* (London: Jonathan Cape Ltd., 1987, Vintage Classics ed., Random House, 1998) p. 56.

11. This knowledge comes both from firsthand experience and from hearsay. See David Turnbull, *Maps Are Territories* (Chicago, IL: University of Chicago Press, 1989, 1993) p. 52. Arthur Upfield's fictional detective, the half-Aboriginal Napoleon Bonaparte, uses what he calls "bush erudition" to resolve crimes. See for example *The Bone Is Pointed* (New York: Scribner, 1947).

12. See Kevin Lynch's groundbreaking study, *The Image of the City* (Boston, MA: MIT Press, 1960), which elucidates the concept of urban "imageability."

13. Akiva Eldar, "Checkpoints in the Territories—and Jerusalem," in *Ha'aretz*, 21 February 2002/Adar 9, 5762.

14. Guy Debord, "Théorie de la dérive," in *Les Lèvres Nues* No. 9 (December 1956) and *L'Internationale Situationniste* No. 2 (December 1958). English translation by Ken Knabb: *Situationist International Anthology*, Edited and translated by Ken Knabb (Berkeley: Bureau of Public Secrets, 1981 [third printing 1995]).

15. Guy Debord, "Introduction to a Critique of Urban Geography," first published in *Les Lèvres Nues* No. 6 (1955), Ken Knabb, trans. [14].

16. Wilfried Hou Je Bek, "Flaneur Culture," <www.socialfiction.org/psychogeography>. In the 1950s Debord and his friends developed specific techniques for objectifying their *dérives*, such as navigating in the Harz region of Germany using a map of London. Today members of the Dutch group Social Fiction have developed algorithms derived from Conway's "Game of Life" to determine their itineraries. As Hou Je Bek writes, "Generative psychogeography, strolls following a route generated by an algorithm, has been developed to test the proposition that once you start using the city in a different way you will find out that there are a myriad of discoveries possible."

17. See Madeleine de Scudéry's 17th-century "Carte du Tendre," which appears in her 10-volume "*roman galant*" *Clélie*. Chatwin emphasizes the idea that Songlines are also trade routes; Chatwin [9] p. 57.

18. Local authorities of course modify these behaviors through urban planning and legislation (and subliminal messages) but, as Jane Jacobs has shown, their efforts often do not produce the desired effects. See Jane Jacobs, *The Death and Life of Great American Cities* (New York: Random House, 1961).

19. Warren Weaver, "Science and Complexity," *Annual Report of the Rockefeller Foundation*, 1958; quoted by Jacobs [18] p. 433.

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Karen O'Rourke's work deals with intercultural communication, archiving and emergent storytelling systems. At present she is preparing a series of database projects entitled A Map Larger Than the Territory. She is a Maître de conférences in art and communication at the Université de Paris 1.