

URBAN DATABASE AS FEEDBACK LOOP

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TRANS.MIT: City of messages: The scattered bits and atmospheric surround hovering around an urban area, which generates social texts and intertexts. The constant process of broadcast and reception writes and rewrites the urban terrain.

Over the past two decades, several nations have embarked on a “digital” strategy to become key players in the new information economy. Interestingly, despite the heralded innovations these technologies promise, most nations have pursued a similar use of space and place to build isolated multimedia cities. Our research project investigates and analyzes four such multimedia initiatives beginning with the Cité Multimédia and Technoparc in Montreal. This project investigates traces of the “digital city” and its networks, from multimedia districts to virtual environments and mobile devices. The role of technology in the city has been an important focus of cultural research. While earlier studies have concentrated on urban infrastructure such as electrification and transportation routes,¹ new communications media have given rise to technological systems and networks that re-order the city. Through the workings of new communications media, the social and technological apparatus of cities is transformed, altering the terms of urban theory and representation.²

Within this context our interdisciplinary exploration of the digital city particularly focuses on the urban database as a device for capturing divergent networks, and for revealing unusual and dynamic relations through new media. Just as the city is organized around a series of operating principles, so is the database. The database tracks an evolving set of relationships established by the attributes, parameters and functions ascribed to media objects. Once initiated in the system, media becomes programmable and subject to algorithmic manipulation. Digital objects are not fixed, but open to endless reiteration. Moreover, the computer is able to understand meaning embedded in objects and can build multiple versions of new objects

¹ See David Nye, *American Technological Sublime* (Cambridge: MIT Press, 1996).

² See Marcos Novak, “Cognitive Cities,” in *Intelligent Environments: Spatial Aspects of the Information Revolution*, ed. Peter Droege (Amsterdam: Elsevier Science, 1997); and William Mitchell, *City of Bits: Space, Place and the Infobahn* (Cambridge: MIT Press, 1995).

initiated by programmed routines and in response to user input and actions.³ In other words, the database is an engine now capable of manipulating media both through intentional categories, filters, and through random juxtaposition and user-defined output. This process creates a responsive environment that reveals patterns and links, establishing potential networks for experimental research that documents and translates digital city phenomenon.

Through our investigation of databases, we are considering how the digital city suggests algorithms for composing, extending, and disseminating data back into the urban context from which it was generated. Such a framework presents the possibility for the spontaneity and randomness of urban events to “infect” the logic of databases, and to form an endlessly evolving structure. This circular interplay challenges the discrete status of data, and instead requires a process of continual re-situating and adjustment to urban context. The feedback loop not only expands the site of the “interface” from computer terminal to the city, but also expands types of input to encompass both physical and virtual data. In this sense, we are reversing the logic of the feedback loop, which attempts to maintain system equilibrium in the face of disturbance. Our research asks what would happen if the feedback loop were inverted, such that the city controlled the data, and the data’s performance were always measured against the changing tides of urban life. By privileging urban dynamics as the “command signal” that guides the data, the database becomes doubly urban, both documenting and being shaped by activities in the urban environment to form an expanded feedback loop.

While we are pursuing the analogy between city and database as a way to structure research materials and reveal shared dynamics, we begin our project in the field by mapping and documenting the digital city. Our research uses digital image, text and sound as both tools and objects of research. These tools allow us to reveal the ways in which both media and the city are transformed through their interaction with each other. Our methods for mapping the city are flexible and “tactically operational,” suited to the fluid relationships, points of linkage and transformation found within the digital city.⁴ In this sense, we have identified a series of

³ see Lev Manovich, *The Language of New Media* (Cambridge: MIT Press, 2001).

⁴ See Manuel Guasa, Vicente Guakkart, Willy Muller, Federico Soriano, Fernando Porras, and José Morales. *The Metapolis Dictionary of Advanced Architecture*. (Barcelona: ACTAR, 2003)

topologies—or operational landscapes—to explore, represent and structure our mapping strategies. At the same time, these scans of the urban environment will reveal categories for composing and structuring the database. These topologies represent types of networks that structure the digital city, and include:

Technopoles: These are the product of digital strategies adopted by governments, often in partnership with industry in the form of subsidies, to create concentrated zones of connectivity in the new information economy. In Montréal, Cité Multimedia, Technoparc, and the Cité du commerce électronique are typical multimedia initiatives, which can also be found in other cities, including the Super Multimedia Corridor in Kuala Lumpur, the Digital Media City in Seoul and the Hi-Tec City in Hyderabad.

Infrastructure: Communication and transport infrastructures, from the railways of the industrial past to the fiber optics of the digital present, emerge as the most evident lines structuring current urban systems. Frequently, old and new infrastructures overlap as a palimpsest, revealing stages of urban activity.

Hubs: The switching stations, data havens, render farms, phone centres, server warehouses and recycling centres are sites where digital activity accumulates en masse to be sorted, sifted and delivered. Hubs are monumental workplaces within the new economy, comparable to the markets and factories of earlier days.

Nodes: A dotted network of cellular towers, satellite dishes and telecom hotels is scattered across the landscape in industrial parks, strip malls, neighborhood streets and city parks. This elaborate hardware supports wireless networks, where transmission—the space in-between—becomes the site of activity.

Mobile Points: Cell phones, PDAs, and GPS devices establish local connections in the network that constantly reposition and reorient digital activity. These new

communication conduits create a diffuse territory through the connections between users, and redefine our experience of space and place.

These topological categories then guide our mapping and documentation of digital city phenomenon. They also suggest ways to annotate material as it is entered into the database, structuring searching operations and creating ways to disseminate knowledge on the digital city in new formats. In this sense, the database becomes an engine of synthesis, facilitating an understanding of territorial transformations and social relations engendered by new media. Our research on the “urban database as feedback loop” focuses on strategies for “curating” a database in order to move it beyond merely “a repository of the given.” Steve Dietz, a new media curator, suggests that this approach to archives ultimately allows for the development of expanded and transactional databases.⁵

TRANS.ACT: City of exchange: The mixing of data, dollars and commodities in markets both visceral and dematerialized, where burgers and bits merge in a terminal array, circulating in the gleaming seduction of interface.

We are investigating ways of understanding and representing the digital city as a space, repository and network. Our database project, TRANS.ACT 1.3, a preliminary repository of multimedia urban artifacts, raises questions about how to synthesize data in order to generate material that advances our understanding of the city and the media we use to describe it. Included in our investigation is a consideration of how the defining attributes of new media both code the city and change the relations between image, text and sound. As a platform for collaboration and experimentation, and a medium for creative dissemination, the database is an ideal tool for analytic research. The urban database establishes an ecology of communication, a space for incubation, and a staging ground from which to launch interventions.

⁵ Steve Dietz, “Memory_Archive_Database,” *Switch*, Vol. 5, N. 3, 2000. <http://switch.sjsu.edu>.

TRANS.MUTE: City of surface: Riddled with scratches, stains and marks, streams of data rain and write thin mutations over the dense plains of the real, staging an intervention that confuses the virtual with the actual, explicitly.

Filtering: Operators + Triggers

The database is a standard research tool in the social sciences and humanities for information acquisition, storage and retrieval. However, researchers and artists working with search engines, information visualization, navigation and aesthetics have opened a new conceptual field by exploring the database as a vehicle for critical inquiry, creative expression and collaboration. Organizers of the recent Dutch Electronic Arts Festival [DEAF 03], “Information is Alive” symposium, suggest that operability is a critical component of these storage systems. Operability produces meaning through the juxtaposition of material and establishment of contexts, thereby translating data into active knowledge. These studies that we are showing now are transmutations of urban data through image compositing, data mining, and 3-D visualization.

These processes are based on phenomena in the digital city, and are initial attempts at inverting the feedback loop between city and data in order to generate random operations. From transmit to translate and transact, the filters delineate research material and reveal cross sections of the digital city. The operators tag and filter information, and are complimented by a series of triggers, or descriptive keywords, that function on both categorical and interpretive/poetic levels. We use triggers such as “data cloud,” as a way to describe relations both within the digital city and the database. A search for clouds of data may generate material documenting zones of data density or high-level traffic, or may initiate a visual interface consisting of precipitous data masses. The combination of operators and triggers creates a conceptual and virtual space for connecting media objects. At once programmed and planned, this real-time interface will allow researchers to generate new material each time they visit the site. One will be able to wander through the database as one would wander through the city, encountering accidental associations and new juxtapositions by browsing the data.

TRANS.GRESS: City of lapses: The spaces in-between, peripheral and beneath that expose the limits, gaps and confusion encroaching on and emerging from the tide of data. This is a faltering space in which to copy, cut and begin again.

Network / Digital Commons

The digital city has emerged in the last two decades as a significant phenomenon that impacts how we understand urban life. Traversed by the flow of communications, the city is re-ordered by technological systems and networks that establish a considerable digital architecture. Today, urban territory appears as a “plug-in system” that reconfigures our understanding of the city. Communication spaces are simultaneously contracting, as evidenced by the miniature screens on handheld devices, and expanding, as we are able to maintain continuous connection with any number of networks as we move through time and space. Creating a public space out of the digital commons, this project explores the transaction between network and database as a zone of critical inquiry, creative expression and collaboration. At a time when the architecture of urban space is undergoing a radical transformation, it is critical to consider how we develop tools for creating, participating and intervening in the new public spaces of the network.

Returning to the feedback loop, we find our current area of urban database exploration to be situated in the extended space of the network. In order to build on the feedback between urban database and digital city, we are exploring the potential of these networks to create new public spaces in the digital city. Utilizing a wireless system of remote sensing devices and transmitters, we are designing devices to document and capture the variability of the city (rather than monitor data to maintain stasis, as the standard feedback loop would operate). Within the feedback loop between urban database and digital city, wireless input devices and environmental stimuli may be used to trigger random generation capabilities within the database. In this sense, the city with its variability is the command against which the data is measured—and the data, in its attempted stability, becomes the deviation. Here, feedback maintains change.

With wireless devices, in the space between data and network, we intend to stage events that will activate zones of public dialogue and exchange. These network-based installations, from projections of image and text that annotate the city, to SMS icons and an urban dictionary, will expand the interface from the computer terminal out to the city, and will present a creative investigation of the intersection of urban public space with the digital and often-private space of data. In this sense, the database becomes a public space that is subject to creative use and appropriation. By reversing the logic of the feedback loop and making variability the measure of optimum operation, we interrupt the standard flow of data.