Cyburban Semiotics

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ABSTRACT
Through interpretation from observations of everyday practice in the use of urban space and digital communications technologies, this paper examines the ways in which the superimposition of digital communications networks on the spaces of cities is influencing the way in which city dwellers socially construct and maintain a symbolic relationship with the city and, through the digitally mediated physical space of the city, with one another.

Keywords
Urban semiotics, digital communications semiotics, interface, urban sociology, spatial perception

1. INTRODUCTION
The notion of 'the urban' emerged from the unique conditions of the city as a living environment, and is associated with semiotic density of physical culture in space. The expansion and evolution of urban regions have historically been facilitated by technological advances – from the iron skeleton frame to broadcast technologies – that have transformed the physical, experiential and semiotic fabric of the city. Though the latest generation of technologies can be depicted as yet another step in this progression, they are also experienced not merely as enabling technologies or connective networks, but as potential sites in their own right, with patterns and structures that often transcend, subvert or modify those of the physical city [5]. The superimposition of digital technologies upon the physical space of the city is restructuring the urban experience and overriding or altering urban semiotic systems and patterns. The digital layer of a city's infrastructure is causing a re-formulation of 'the urban' as a semiotic system. If 'urban' denotes the intensely networked, meaningful living-together and communication of large, heterogeneous groups of people, then the virtual network must be taken as an *a priori* fact of the urban condition in our time, and the most recent layers of spatial and relational experience must be seen as integral facets of the urban experience and the 'space' of the city.

The field of urban semiotics sees the city as a text built on grammars of spatial structures and patterns with semiotic significance. This paper does not pretend to offer a generalized theory of the emerging semiotics of the mediated city, but aims at demonstrating, by examples, the ways in which digital communications media are associated with radical change in the way cities are lived and symbolically understood. This modest demonstration shall concern itself primarily with the two most pervasive and commonplace of digital forums – the cellular phone network and the Internet – and is intended as a survey of actual present lived reality rather than a prognostication or manifesto as to where the trajectory of these trends will, or should, end up.

The analysis starts with observations as to how people 'use' the city, in the broadest definition of the term, and examines the most basic, categorical and generic semiotic structures and practices that come into play in urban life and how they are influenced by digital technologies. The semiotic structures and practices investigated are: addressing systems, wayfinding in the city, categories of urban space, and the space of community. Through examples drawn from the present, the paper demonstrates how digital technologies are transforming the semiotic landscape of cities and defining new criteria and dimensions for the 'legibility' of urban space.

2. THEMES
2.1 Address
An addressing system – be it for urban space or computer memory – is a semiotic tool that serves as an interface that allows for ease of control, navigation and access. Cities are overlaid with multiple addressing schemes, each of which 'formats' the space of the city in a different way to allow users to make use of it. In the 20th century city, street addresses and telephone numbers were the two systems of denotation by which city dwellers most habitually conceptualized and instrumentalized their interactions with urban space and, through it, with each other. Because this paper is not concerned with the semiotics of digital media in isolation but rather with the semiotic practices that arise out of their superimposition on the physical space of the city, the appropriation of the address metaphor for the Internet will not be explored in detail. Of direct relevance for the discussion at hand, however, is the way in which digital communications technologies, like many technologies before them, have symbolically and functionally structured urban space by adding additional layers of addressing upon the city.

While to say that digital technologies in the city – most predominantly the Internet and the cellular phone network – sever the link between an address and a location would be an oversimplification of the issue, the increased mobility, personalization and 'placelessness' of these new layers of addresses has changed the way in which the symbolic relationships between place, person and address in the city are lived and perceived. It is not technologies as such, but rather the patterns of their deployment and employment, that impress themselves upon the semiotics of lived urban space. Cellular phone networks and Internet-based communication are used in

ways that support and fuel an increasing focus on the individual, rather than the household, business or neighborhood as the primary social unit of the city. Digital communications allow this primary meaningful social unit to become the primary unit of connectivity [12]. Thus, imposed upon the text of the city as a set of locations (occupied by people) is another layer of addresses corresponding to people (occupying locations), and this latter layer is quickly becoming the space in which most urban dwellers find it useful and meaningful to live their lives and conduct their interactions with one another.

Urbanites increasingly use communications technology to address (speak to) another person directly rather than searching at a specific address (location) at which they hope to find this person. Whereas the typical opening question asked by a phone caller on a fixed line may have been "Is ___ there?", a caller to a mobile phone is more likely ask "Where are you?". Both questions aim at ascertaining the conjunction of a person and a place, but the primary frame of reference is switched. Far from relegating the physical location in the city to irrelevance, the cellular phone is used in ways that allows for real-time coordination of agendas and schedules of people in real-space. Addresses remain the interface to the space of city, but the flow of addresses *cum* people through space (as probes) replaces the fixity of address on a place. The spatial model of digital communications technologies defies definition by an abstract representation of the system, such as a street map or telephone book. Rather, it is contained in the millions of simultaneous locational-information-laden messages that define the state of the system at a given moment.

The conventions used in addressing within digital communications forums introduce other levels to the interplay between address and place. Because cellular phones typically take the area code of the city in which they are registered, users continue to be 'located' in the telespace of their home city, even if they are physically thousands of kilometers from home. Also, the 'at' (@) in Internet addresses introduces a type of *faux* locatedness. Increasingly, at any given time, a person is 'at' several addresses, with the "at" implying different degrees of personalization and locational fixity in each of the various addressing systems (see table 1).

Table 1. Conventions of Addressing

address type	Street address	Telephone number	Cell phone number	E-mail address
addressed entity	plot of land	household, or business	person	person
locational specificity	high (absolute location)	middle (city, district)	low ('base' only)	none
personal specificity	none	middle	high	high
mobility	none	middle (can move within area code)	high	high

Though addresses in any city are essentially abstract 'tags' denoting a location, they take on a second, connotative, level of signification through conjunction with the qualities of the city on which they are imposed. Streets, street addresses, post codes and telephone number prefixes come to signify not just a location in geometrical space but also carry connotative associations of status, function or history. One need only think of Beverly Hills 90210 in Los Angeles, 5th Avenue in New York or #10 Downing Street in London. Because they are not location-fixed, Internet addresses and cellular phone numbers do not have the potential to support this connotative level of signification. Without prior knowledge of a person, one can make no assumptions about them from their address.

With prior knowledge of a person, however, the digital address becomes connotative not as a stereotype but as a hieroglyph standing concretely and specifically for the person addressed. Addresses become much less like coordinates and much more like names. In a sense, the space of the city is collapsed to a single space, in which one does not have to search in multiple locations for a person, but just call the person's name. The extent of changes in the role-division between spatial semiotics and conversational semiotics as the languages of interaction with and within the city is a topic for another paper.

In a chapter of his book "the Empire of Signs" – a classic text of semiotics – Roland Barthes describes the street addressing system of Tokyo in which streets have no names, and addresses of buildings have no necessary relation to their spatial relations to one another. The rationalized, spatially sequential addressing system of Western cities provides urbanites with a cognitive 'filing system' of sorts, within which spatial locations and relations in urban space can be conceived in the abstract, removed from the actual physical fabric of the city itself. Finding a specific shop or residence in Tokyo, however, relies on experience, memory, engagement with the physical space of the city and exchange of information with other people. The relevance of street addresses as a means of identification in the city is suppressed and the fixed connection between address and relative location, taken for granted in the West, is exposed as imposed upon, rather than inherent in, urban space [1].

As conventional street addresses and fixed phone lines become less relevant and useful for the manner in which people use and understand the city, the phenomenological practice of inhabiting the city described in the case of Tokyo seems to apply increasingly to digitally mediated cities in general. In Barthes' Tokyo this arises from a city of fixed but essentially unaddressed locations. In the modern mediated metropolis, this is the effect of a city of addresses unfixed in space. Each person has become an address unto themselves and the experience of reading the city becomes one of constantly finding and re-finding one another.

2.2 Wayfinding

In "the Image of the City", Kevin Lynch proposed a basic grammar of urban space that he claimed was at the core of what makes urban space 'legible' to a user. His grammar of the city image was based on five basic classes of elements: paths, edges, districts, nodes and landmarks [9]. Gottdiener and Lagopolous criticized Lynch for implicitly reducing the city to the sum of its physical spaces and structures, and for constraining his understanding of the process of using or

experiencing the city to the act of moving bodily through the spaces of the city [3]. For all its acknowledged narrowness of scope, Lynch's approach is one of the clearest formulations of what may seem at once the most superficial (in the sense that it describes the clearly visible) aspects of urban semiotics yet also the most difficult to dismiss: the question of how people find their way in urban space and conceive the space of the city and their position within it.

Curiously, Lynch's urban vocabulary of paths, edges, districts, nodes and landmarks can be applied to the description of digital networks as well as cities, with the major difference that, when applied to digital networks, the description remains in the realm of the abstract, because it does not in any way describe the network as experienced by the user. These elements exist in an abstract world that is operated from outside, not a space *within* which one operates. However, it could be argued that, for some of our modes of interaction with the city, the physical space and structure of the city remains as abstracted from our experience of using it as the geometry of the digital network is from our experience of using the Internet or cellular phone.

While Lynch's elements certainly do make up a grammar whereby cities *can* be described, it is debatable whether they correspond to the most meaningful categories by which actual urban citizens *do* perceive and use the space of their city, at least in the modern city. City dwellers are certainly used to shifting between different modes and conventions of interface with the city, of which bodily movement between locations in the physical space of the city itself is only one option. Many of our symbolic navigations through the city take place in the space of abstract projections of the city rather than the streets and squares of the city itself.

As discussed above, we are continuously conditioned by our technologies to conceive and use the city as a set of discrete addresses rather than a set of locations. The Internet presents us with the paragon of the 'pure' address, not attached to any physical space or entity in any experiential sense, signifying itself and the path that leads to it, and the influence of the expectations represented by the use of Internet technology resemble the way contemporary urban citizens tend to cognitively structure their use of the city. The central question one asks in using the modern city is often not "where is it?" but rather "how do I access it?", in other words not where it is located in space but rather which 'path' one needs to call up to connect to it. A path is understood not as a line through urban space that one must traverse but a dimensionless connection between oneself and that which one wants to reach. Not only communications technologies as such, but also transportation infrastructure like expressways and subways, are designed as paths of this second type, with little or no contact with the urban space through which they pass, serving the sole function of joining a network of access points.

The cellular phone has been termed the "compass and beacon" of the users of contemporary cities [7]. By this analogy, the landmark takes precedents above the other categories of Lynch's city image. The landmarks by which one orients and guides oneself through the city are not fixed structures but fellow urbanites (with their cellular phones) who are themselves mobile. Townsend has hinted that navigation in websites may be a model for how people navigate the city "through intangible information cues" [11]. A web site is as much a logical experiential array of meaningfully-linked spaces as any example of architecture or urban design. Though

Townsend himself does not elaborate more specifically on the website metaphor, one could follow his lead to equate other cellular phone users in the city as potential 'hotlinks'. The digital mediation of the practice of wayfinding through the space of the modern city is, perhaps ironically, re-introducing an emphasis on the phenomenological and real-time (as opposed to abstract and fixed) dimensions of physical spatial experience. This gives occasion for a reassessment of the relevancy of schemes like Lynch's, which propose that meaning is generated and perceived in the visual and sensory experience of the user of the concrete physical spaces of the city.

2.3 Categories of Space

Although the urban experience is semiotically complex and many-dimensional, semioticians have suggested that the language by which cities signify – the semiotic essence of 'the urban' – can be distilled into terms of binary oppositions such as Ledrut's pairs of ethical, vital, aesthetic and functional values (liberty/constraint, well-being/uneasiness, beautiful/ugly and functional/non-functional respectively) [8] or Greimas' 'axiological micro-universes' (i.e. society vs. individual, euphoria vs. dysphoria) [6]. The suffusion of the physical space of the city with layers of digital technology can be seen to affect all of these oppositions in both subtle and drastic ways. However, I shall focus on two sets of terms that are fundamental to the way in which urbanites perceive the structuring of urban time and urban space, and by which they conduct themselves and lead their lives. These oppositions are those of work/home and public/private.

Each of these archetypes of place is associated with certain activities, rules and codes of behavior. Each place provides the context within which one persona of a person unfolds, based on his or her role within that context: a public persona and a private persona, a work persona and a home persona. A person's enculturation into the urban world is in part a process of learning to read the city by means of such categories and adjust one's expectations and behavior accordingly.

The categories of 'work' and 'home' are referents structuring the time and space of urban lives, in urban time and urban space. The 20th century was characterized by increasingly clear and absolute distinctions between the place of work and the home place, in terms of location, aesthetics, spatial temporal and social organization and roles. There was a space of work and a space of home, and a time at work and a time at home, constrained in space by zoning regulations and in time by the regulated workday, kept at a safe distance from one another in time and space by the necessary commute from one to the other through the space of the city.

Famously, the increasing number of people who work in the so-called knowledge industries, being tied neither to a fixed physical infrastructure nor a specific physical location by their work, make up a growing class of highly mobile professionals. Digital infrastructures, and the related gadgets such as fax machines, laptop computers and of course the ubiquitous cellular phone, play an instrumental role in enabling this lifestyle which has spawned new hybrid typologies of spaces such as the home office and the 'new office' and new spatial practices such as 'hot-desking'. The category 'workplace' ceases to be associated exclusively with a given place, space or position and becomes defined tautologically as the place in which one happens to be

working. Much more, it comes to be associated with a set of increasingly mobile and personalized tools and, intangibly, with a state of mind. 'At work' ceases to signify a place and remains as a signifier of a 'state' that could be anywhere and is, increasingly, everywhere. Work and non-work are modes rather than places: shifting qualities of people rather than fixed qualities of spaces.

The sociologist Ray Oldenburg has pointed out the importance of so-called 'third places', neither home nor work, that serve as social condensers in which modes of social interaction take place which are crucial to the maintenance of community and the formation of individual identity [10]. Bars, hairdressers and even prisons fall into this category. In lauding these spaces he also bemoans their disappearance from the urban space of the late 20th century America in which he was writing, due in part to zoning laws that encouraged spatial use segregation.

If the office phone is a metonymy for the workplace, and the home phone for the home, then the cell phone can be seen to constitute a type of 'third place' [7]. Physically, the third space is now potentially anywhere and everywhere: it has subsumed the first and second places as well as all the non-places between. However, the cellular phone network as a 'third place' comes at a price. With a cellular phone, one is potentially always on call. The time and space structure of the day can be interrupted and re-arranged at any time. The 'third place' becomes effectively a potential space of surveillance rather than retreat, reversing the accustomed relationship. The cellular phone also blurs the boundaries between a person's different roles. Certain personal calls would not be made to the office phone and one may hesitate to disturb someone 'at home' (i.e. on the home phone) with a work-related issue. However the cellular phone, being tied to a person rather than a place, presents the ever-present possibility of invasion of one role into the space of another role.

The effects of this become especially evident in the ostensibly 'public' spaces of the city, blurring and complicating the categorization of a space as unambiguously private or public. People in public space on cell phones are communicating, as one is expected to do in public space, but not with those in the same physical space [12]. Indeed, the interactions that they are having may be quite private in nature, of the sort that would not be deemed appropriate 'out in the open' of public space if the conversation were being held with someone standing next to them. In the traditional sense of the terms, public space is understood as the space of communication while private space is the space of withdrawal, but this type of non-co-located private communication in co-located public space is an illustration of the interference patterns caused in categories of space by the superimposition of digital/virtual and physical spaces of communication. It has been commented that public space is thus being fragmented into many private spaces, to the extent where it becomes a 'common living room' [7]. Like the role 'at work', the role 'at home' becomes a mode into which city dwellers may switch at any time, regardless of the space in which they currently find themselves.

2.4 Community
For Kevin Lynch, the district was a primary conceptual category by which one 'reads' the urban fabric [9]. A district refers to a spatially contiguous area within the city that forms a functional and social urban sub-unit, distinct from other districts around it. In common parlance, the word 'neighborhood' probably better captures the sense of identification the actual urban citizen is purported to feel for the district in which he lives and to which he thereby belongs. Even at the time of Lynch's writing, though, the neighborhood as a meaningful semiotic category of urban life was already fading, in that the ostensible 'districts' within many large cities and their growing suburbs no longer corresponded to a social or functional unit of the city. While the district perhaps remained tenable as a descriptive category of surface appearances, it was seen less and less to signify any meaningful social or functional unit.

Even decades before the advent of digital technologies, the typical city dweller would not have seen their social 'community' as identical with their spatially surrounding 'neighborhood'. A sense of community lies in affinity, not proximity, so technologies that enable one to seek, find and maintain meaningful multi-modal contact with far flung people with common interests will be used to the fullest extent of their capability. In the digital dimension, everyone on the network is nominally equally accessible. The group with which one associates becomes more a matter of choice than chance.

Networks of community independent of spatial proximity have always existed [4], but are now being brought to the forefront as the digital technologies that offer the affordances for these communities take up a central role as *sites* (not merely channels) of community interaction. As the physical neighborhood becomes drained of semiotic content, the website as an anchor for a virtual community of choice become (over)invested with it, while online forums such as chat rooms, bulletin boards and newsgroups, with the accompanying websites, form virtual 'third places' with a much higher degree of 'defensibility' against unwelcome incursion than the cellular-phone-as-third-place. While some of these online forums are 'home' to communities who rarely or never meet physically, many others are sites for the support or extension of the communications and interactions in physical space. A website performs the semiotic role in virtual space that the 'neighborhood' may once have performed in physical space. Namely, it presents an integral and self-contained visible presence that may be visited by outsiders but 'belongs' to members of the community that it simultaneously houses and signifies.

The point of access to the communication spaces of the Internet is typically from a computer within the private home, bringing the realm of (digital) community interactions into the (physical) home. This phenomenon is the inverse of the fragmentary privatization of public space by cell phone users mentioned above, with potentially similarly disruptive consequences. The extreme variant of this turning-inside-out of urban space can be seen in the proliferation of pseudo-neighborhoods, termed secessionary 'network spaces' by Graham and Martin [4]. Inward-looking and closed to their surroundings, these housing developments, office complexes, multi-use projects and other building typologies withdraw from interaction with the physical space of the city whilst opening themselves up to the elite neighborhood of similar enclaves around the globe. They are literally connected more to the networked worldwide infrastructure than to their surroundings through the privileged position in spatial patterns of distribution of access to digital networks. Digital communication technologies are certainly not the sole cause

of growing polarization in cities, but the distinction between the digital 'haves' and 'have nots' tends to reiterate and exacerbate previously established wealth relations in the city. The neighborhood of the favorably networked expands to a truly global elite neighborhood that exists in dimensionally transcendent virtual space.

3. CONCLUSION

Explorations in urban semiotics must acknowledge that a city is not, in any obvious sense, a message with a sender and a receiver. Ledrut reminds the reader that "the modern city is semanticized by the fact of its social production and use rather than by any communicational intention" [8]. However, it is becoming increasingly pertinent to see the constitutive fabric of the city as being composed of, and by, the exchange of uncountable messages in real-time. A visual bias still characterizes our way of perceiving and conceptualizing the world, supporting a lingering preconception of the city as a physical environment *within* which urban life unfolds rather than the space that unfolds in real-time as an emergent characteristic of more fleeting and less tangible patterns of urban life.

In attempting to formulate a general approach to urban semiotics, Gottdiener and Lagopolous discredited cognitive geography as a way to define the image of the city. They claimed that this method 'asked the wrong questions' and had no clear mechanism for building-up an idea of the communal image of a city from the collection of individual highly personal 'mental maps' [3].

Neither the substance and structure of the physical city nor the messages and forums of the digital urban fabric are sufficient, as stand-alone texts, as an adequate basis for the 'reading' of the contemporary city. As has been demonstrated in the examples above, the day-to-day construction of meaning between urban inhabitants and their city involves a constant interweaving of mediated and unmediated communications and interactions.

One could say that the semiotics of urban life in post-Second World War Western cities was based on one-to-many modes of mass-communication, both in the communications media, epitomized by television and radio, and the physical structures of cities, whose production was driven by programs of mass housing and the paradigm of urban planning as traffic planning. The cities of today are being lived, read and written according to a different media paradigm: the many-to-many structure of the Internet and the cellular phone network. More than any communications media of the past, the use of networks of digital communication are becoming inextricably interwoven with the use and perception of urban space, and vice versa, restructuring and redefining spatial and experiential continuum of urban life and reformulating the field of urban semiotics as cyburban semiotics.

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