Retrieving the Spatial Imaginary of Real-Time Cities

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Sarah Barns is a researcher and digital producer with a particular focus on mobile media, mapping and historical urban geography. She has recently been awarded her PhD through UTS for her dissertation titled *The Death and Life of the Real-Time City: Re-imagining the City of Digital Urbanism.* In 2008 she developed the ABC's first locative media project *Sydney Sidetracks* (http://www.abc.net.au/ sidetracks) which used maps and mobile interfaces to explore the documentation of urban activism in Sydney by the ABC. In 2011 she led the ABC's digital emergencies mapping project coordinating activity across ABC News, Radio and Innovation Divisions. She continues to explore the uses of digital mapping technologies for

The twenty-first century is widely recognized as the century of the city, and in this intensive phase of urbanization ICTs are set to play an increasingly central role. Technology-led 'smart city' growth paradigms are becoming an integral part of the language of urbanization policy, enabling global technology vendors such as IBM, Cisco, HP and Siemens to position their services as core enablers of urban innovation. As broadband networks become increasingly ubiquitous, and networked 'anywhere/anytime' devices proliferate, the experience of internet connectivity is changing dramatically, no longer a 'place to visit' but an increasingly pervasive, integral part of everyday urban life.

The proliferation of networked devices within everyday urban environments has given rise to a plethora of new spatial metaphors that attempt to grapple with the hybrid material/informational spaces of advanced mapping technologies – including, just to name a few, terms like 'everyware', 'augmented space', 'an internet of things', 'responsive environments', 'sentient cities', 'smart cities', 'locative media', 'situated urbanism', and 'network publics'. The concept of the 'real-time city' is another

of these spatial concepts, associated primarily with the work of practitioners of urban informatics, described by Foth as "a trans-disciplinary field that combines aspects of the social sciences, media and cultural studies, with urban studies (planning, design and architecture) and the computer sciences".[1]

In this paper, I'm specifically interested in how such emergent frameworks capture the space of the city not only in descriptive terms – in terms of the 'what is', whether that be current GPS-enabled bicycle trips or mobile phone usage patterns – but by projecting a kind of *anticipatory* urban imaginary which agitates for 'what might be', and in doing so, is implicitly critical of the status quo. Many claims about the effects of digital technologies in the city are highly future-oriented, where practitioners intervene in the present through an orientation towards a "proximate future"[2]. As visions or imaginings they depict *emergent* spaces, not yet fully realised by the present-day adoption of real-time technologies, whether due to contemporary technology limitations, such as broadband speeds, or device memory and so forth, or because they are held back by 'laggard' governance frameworks and socio-behavioural habits.

This anticipatory, positive orientation towards post-desktop computing might be conceived as a kind of 'digital urbanism'. Where the term 'urbanism' is sometimes used to denote a passionate interest in, or engagement with, the vicissitudes of urban life, 'digital urbanism' can be used here to capture a largely optimistic engagement in the potential for urban computing technologies to reform cities.

Dreaming Real-Time Cities

The sheer volume of new spatial concepts associated with post-desktop computing clearly evidences a return of sorts amongst digital media practitioners to the 'real' spaces of the material urban world. It was not so long ago – between the 1960s and the late 1990s – that the advance of ICTs was primarily associated with a desire for urban geographical, material transcendence. Such a desire propelled claims by those such as Marshall McLuhan, Nicholas Negroponte and Bill Gates that the dematerialised terrain of cyberspace would spell the end of cities. As a case in point, McLuhan claimed that "the city no longer exists, except as a cultural ghost for tourists".[3]

Today's digital urbanists, by contrast, are much more interested in being able to use digital technologies to *recombine* the physical, material properties of urban spatial experience with those of multi-scalar communications networks. Where previously the anti-materiality of this post-urban fantasy had looked to the Internet as a kind of utopia of pure space – where a virtual world of pure information served to 'decontaminate' natural and urban landscapes, annihilate geographical constraints and result in the demise of the city – today's real-time communications are enlisted in the task of *better representing* the complexities of urban

environmental behaviour. Advanced mapping projects make use of the widespread availability of GPS-enabled handheld devices and deployment of wireless broadband to teach us more about the infrastructural behaviours of the city.

This 'return' of sorts to the material conditions of the city sees digital practitioners champion issues more traditionally confined to the concerns of urban management – the uses of smart meters to monitor energy consumption, GPS for traffic monitoring, or the use of sensor webs to monitor the health of street trees, as examples. Many digital urbanists also champion technologies of real-time interaction to revive practices of urban citizen engagement. Practitioners want their mobile-equipped citizens to interact with their environments in new ways; inviting them to do novel things like publish their bicycle trips across the city using GPS,[4] or use their phones to collect environmental data, embedding sensors into garbage to track the movement of waste through the city.[5]

This kind of work is relatively nascent and experimental, and clearly politically-activist in orientation, but can be linked to the broader culture of digital participation associated with use of Web 2.0 social media services. Digital urbanists often build on ideas about online participatory culture to advocate the potential for networked, mobile users to disrupt not only mainstream, corporate media practices but also hierarchical, 'top down' modes of urban planning and development. Greenfield and Shepherd, describing the emergence of what they call "read/write urbanism", suggest that traditional urban, social structures are becoming radically reconstituted according to the "techno-social assemblages" associated with the participatory cultures of networked mobile use.[6] Mobile and web cultures are therefore championed as facilitating a more 'bottom-up', citizen-oriented planning process.[7] They herald the arrival of new "neographies" teeming with volunteer cartographers, whose participation in the co-creation of the 'geo-web' means the web user can now be positioned as an active participant in the design, planning and management of urban contexts.[8] In this way, mobile technologies are seen to promote a new kind of "architecture of participation".[9]

To practitioners like Dan Hill, pervasive computing networks are significant not only in helping to manage key urban infrastructures more effectively and efficiently, but are also, perhaps more fundamentally, *changing the way we view and understand cities*. By rendering urban spaces according to their everyday informational uses as much as their physical, built structures, Hill argues that the computational intensification of urban surfaces and activity can allow for a more "iterative, responsive field of 'urban acupunctures', rather than grand infrastructure plans which are hardwired into the urban fabric for subsequent generations, unable to flex to their unforeseen needs".[10] Premised on the fact that "the real-time city is now real", the SENSEable City Laboratory[11], a research

initiative at the Massachusetts Institute of Technology (MIT), also argues that "the way we describe and understand cities is being radically transformed – alongside the tools we use to design them and impact on their physical structure". The Lab "studies and anticipates these changes from a critical point of view", producing software applications that generate graphic representations of the dynamic data flows of urban behaviours, thereby recalibrating cities as objects of data flow and analysis.

For McQuire, as urban structures cede priority to seemingly immaterial media and communications flows, a new kind of spatial experience is able to dominate urban life; a "relational spatiality" in which "the horizon of social relationships has become radically open".[12] Research undertaken by the Institute for a Broadband Enabled Society (IBES) at the University of Melbourne also recognises the potentials associated with the shift from cyberspace to pervasive computing as opening up "new possibilities of social interaction in public spaces" while at the same time presenting "new possibilities of appropriation of public spaces which challenge the status quo of urban planning theory".[13]

Seminal here are the ideas of William Mitchell, who looked to the unmitigated potentials offered by 'networked links' to reform fundamental structures of the city. "The city", he argued in *e-topia* "as understood by urban theorists from Plato and Aristotle to Lewis Mumford and Jane Jacobs", is "finally flatlining". For Mitchell, the spatial syntax of networked information discloses a new spatiality: the widespread digitisation of material urban spaces underscores, he argues, the need for "imagining and creating digitally mediated environments for the kinds of lives we will want to lead and the sorts of communities we want to have".[14]

But while there is much that is indeed new about the technology capabilities of networked media today, it's worth remembering here that speculative interest in the future potentials of the city is anything but novel. Rather than focusing on the particular technologies and cultures of networked media and computing, we can also reflect on digital urbanism as it sits within a history of speculative urbanism.

Critical Reflections on The City of Digital Urbanism

As digital urbanists look to the potentials of real-time urban systems to generate new experiences and representations of public participation, I believe we need to ask: what *kind* of spatial imaginary of the city is being advanced here? This reverses a more typical approach to understanding the effects of technological change in the city, by giving priority to a normative or idealised conception of urban space, rather than emphasising the performative conditions of technological transformation.

While there has been much research to date investigating the uses of networked practices, sentient systems, mobile technologies and the like in cities, the particular spatial imaginaries projected

by these interventions are often, by contrast, hidden from view. We need reminding that cities are not only spatial territories transformed or indeed 'better revealed' by technologies, whether of speed, motion, or communications media; they also operate as imagined territories or "built thought".[15] While previous forms of technological innovation have played a central role in shaping the material spaces of the expanding metropolis, they are also deeply implicated in the very consciousness of time and space, including conceptual approaches to 'the city'.[16] If we think of emergent urban media spaces as incorporating and 'remediating' amalgams of past cities and their network formations, so too might we consider how contemporary spatial imaginaries and visions of the city contain continuities with past urban imaginaries.

Much urban sociological theory has been devoted to understanding the role of particular urban imaginaries in shaping idealised notions of the public sphere. Such work recognises that 'the city' does not in fact exist as a stable entity, but rather serves as an imaginary convergence point for the interaction of multiple publics, which can, in turn, be exploited by particular interests who might claim to act on behalf of a particular conceptual construction of the city.[17] Indeed the articulation of different and oftentimes contested imaginaries of the city has been central to the history of modernist thought. Boyer has thus described the city as "the underlying force or deep structural issue behind the discourse on modernism".[18] Often cast as the "site and symbol of modernity",[19] the city has been imagined both as an idealised space of utopia, or a dystopian space of upheaval, dislocation and disease, continually wrenched apart by the seemingly unstoppable forces of technological transformation. Exemplified by Baudelaire's response to Haussmann's rebuilding of Paris during the nineteenth century, it is through the "anguish" and "tragedy" of urban dynamism that modernism has often been defined.[20]

Much speculative interest in the space of the city reflects its centrality as a metaphor to discourses of utopianism. "The city" as Jameson reminds us, presents itself as the "fundamental form of the utopian image".[21] Its resonance as an idealised, normative space goes back to the Ancient Greeks, who looked to the space of the city to express the appropriate conditions of justice. As a *leitmotif* of the utopian imagination, the city has served to articulate hopes for a better society: the urban geography of the public sphere itself has itself been seen to express the ability for individuals to come together as a public or polity.

But the city has also been cast as the fulfilment of nightmare. Indeed it's the enduring conflict between these two impulses that has given rise to what Berman has described as the "heroism of modern life"; captured by Baudelaire's image of the *flaneur* locating the eternal and immovable within the maddening contingencies of the present.[22]

Here we recall how often the spatial imaginary of the city has been that of a contested space, one in which "one mode of modernism both energises and exhausts itself trying to annihilate the other".[23] This pattern of crisis is familiar to students of twentieth century urbanism, who learn of the 'David and Goliath' style battles between Jane Jacobs and Robert Moses in New York during the 1960s, as local communities turned against the ravaging effects of post-war modernist development in support of the conditions of locality and diversity. The radical or progressive response of those led by Jacobs in New York and people like Jack Mundey in Sydney challenged the emphasis on an abstracted or 'comprehensive' form of the city, and sought instead to articulate the political potentiality of the urban through a grounding in the everyday, the particular, and what Crary has called the "vicissitudes of social process".[24]

Critics emerging during the 1960s and 1970s questioned the disciplinary control associated with spatial and administrative order;[25] they resisted a formalistic appropriation of the city which ignored the socio-political contexts that gave rise to specific urban formations;[26] they despaired at the limited capacity for modern urban spaces to cultivate and nourish conditions for public participation;[27] and they called for a more "everyday urbanism" to open up new sites of utopian urban desire within the realms of lived, experiential spatial practices.[28] As Zardini notes, even though the themes of citizen participation in urban planning were not always explicitly referenced at this time, it is clear that this 'crisis' emerged from the growing expectation for a more democratic, grassroots approach to planning.[29]

If we consider the speculative approach to the city championed by digital urbanists in the context of this history, we start to notice how much depends upon the revelatory capacity of real-time networks to 'make the invisible visible'. In its approach to the city, this can in turn be seen to be engendering its own crisis of sorts, setting certain parameters around what can be 'seen' and what remains 'unseen'.[30] In their 2007 survey of the field of urban computing, Crang & Graham argued that embedded within the everyday life-worlds of digital, sentient cities is a "politics of visibility" that not only concerns the ways in which technologies are made visible to us, and how we are made visible to them, but is also underpinned by a "fantasy of pure vision" that harbours dreams of perfect spatial and urban transparency.[31] Williams, Robles & Dourish have also argued that the field of urban informatics relies on turn of the century scholarship about the metropolis, which construed the city as an economically and spatially distinct social form. They argue that an overreliance on research into mobile and positioning technologies, rather than specific urban contexts, means that many practitioners approach the urban environment as "no more than an appealing design resource".[32] Even more critical was Henri Lefebvre, who in his *Right to the City* essay lashed out

against the 'oppressive' conception of the city propagated by urban informatics – as a network of circulation and communications, or of information and decision-making – as "truth and total dogma", a dogma that enables the spatial planner, and the architect, to position themselves as "architect of the world, human image of God the Creator".[33]

By stepping back and reflecting on the contemporary vision of the city advanced by digital urbanists today, we also detect a kind of resurgent utopian formalism, what Harvey has called a "utopia of spatial form", which projects the spatiality of networked systems as enhancing the legibility of complex material, informational and cultural processes.[34] The problem with such spatial utopias, as Harvey spells out, is their relatively seamless conception of political agency, where the illumination of urban behavioural complexities by network technologies is expected *of itself* to activate new modes of urban governance and behaviour. With eyes firmly fixed on the legibility of urban systems, now mapped and monitored in real-time, there is an almost naive expectation among many digital urbanists that the power base of urban governance will shift away from the 'top-down' centralised planning bureaucracies. Writing of the potentials of real-time systems in the city, Townsend has noted that "real-time systems operate by using feedback from one part of the system to either induce or inhibit activity in another part of the system, pushing it towards an optimum stable state chosen by the designer"[35]. According to Batty, when cities are understood as complex systems, interventions in the form of top down planning, design, control and management, are in turn difficult and potentially dangerous, for "as we learn more, we become more wary of the effects of such concerted action".[36]

Recourse to systems theory to describe democratic modes of urban governance is not without problems. Such applications will meet resistance by those concerned with the application of biological metaphors to human socio-political environments. Wolin, for example, has described systems theory as a 'thoroughly technological way of thinking': "By a kind of transformative grammar, it divests words [such as alienation, existentialism] of their radical connotations". Without a concept of history, but only one of states such as equilibrium or homeostasis, Wolin has argued that systems theory thus could not address the "age old problems of social and political dominations".[37] Boyer also notes that within systems theory, self-maintenance of the system performs as the primary objective, thus reducing geographic entities to a universe of spatial forms and communicative flows that set up boundary maintenance as their primary purposive behaviour.[38] Along these lines the architect Peter Eisenmann recently decried practices associated with digital urbanism as a "new, virulent breed of formalism, more virulent because it [is] posed under the banner of a neo-avant guard technological determinism".[39]

Conclusion

Reflecting an attraction to the perennial newness of advanced digital networking capabilities, and accompanied by an enduring fascination with proliferating 'sentient', 'intelligent', 'augmented' and 'real-time' environments, the visions of digital urbanists seek to promote new cultures of urban participation and revived experience. But we should also remain mindful that such visions of the city can also inadvertently render the city as an empty, neutral container for action, waiting to be enhanced, revived, or decentralised by the presence of distributed, mobile communications systems. This vision risks over-determining the role of the technology device in shaping, or changing, an experience of urban public space, and encourages what Crang & Graham have called the "production and dissemination of technological fantasies".[40] It also allows for the uncritical adoption of systems metaphors to describe urban complexity, in a way that potentially divests the city of human agency in favour of technological efficiency. A critical orientation to the project of digital urbanism is therefore needed, which goes further than simply celebrating the revelatory capacities of advanced mapping technologies, and begins to play closer attention to their political and institutional implications.

Notes

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