ICT and the city

Tensions in the digital city

Given the continuing rapid development of the information society, city planners and managers need to reconsider their level of awareness– and their degree of control – of the impact of information technology on today's cities, says **Alessandro Aurigi**

The concept of the 'digital city' – an urban environment whose functions, management and regeneration processes were enhanced through the deployment of information and communication technologies – emerged in the second half of the 1990s. Digital city activities were initially centred on the development of web-based civic information systems and portals, as several municipalities and their policy-makers identified the internet as something that could revolutionise the way we manage and use cities. High-tech 'clubs' of cities like 'TeleCities' or the 'European Digital Cities' initiative were formed to exchange experience, ideas, and good practice, often running projects funded through EC Framework Programmes.

The relationship between ICT and regeneration was the focus of much media and academic attention throughout the later 1990s. On visiting Kuala Lumpur in 1997 Martin Jacques argued in *The Guardian* that *'modern planning is not just about roads and estates. It's about an 'intelligent network' linking our offices and homes.'*[1] Even relatively unimaginative initiatives such as simple websites promoting places were often hailed as symbols of great innovation, and studied eagerly.

Now, the hype is settling, but ever-developing and pervasive computing technology is increasing the potential for social and urban IT applications beyond what could have been envisaged just a few years ago. The city is indeed becoming more 'digital' by the day, with central and local governments in several countries now committed to increasing electronic service delivery. In the UK, for instance, local authorities are working hard to meet the national target of making 100 per cent of governmental information and services available online by the end of 2005.

But while IT use has become more embedded in everyday life,[2] the technology itself is in some ways becoming more concealed, and more likely to be taken for granted as a 'normal' part of our existence. But it is precisely because of the increasing embeddedness of IT in urban societies and cultures that the way the 'digital city' is being developed should be the object of a greater than ever deal of attention and careful research.

The information society is developing fast, but what degree of control – and what level of awareness – do planners and city designers have of its impact on the city?

Visibility versus invisibility, physical versus virtual

Aside from the inconvenience caused when roadworks are undertaken in installing cabling, digital infrastructure can easily go unnoticed. Most of it is underground or locked in rather anonymous buildings.

Past attempts to reify hidden ICT facilities have sometimes been more symbolic than meaningful or useful. Graham and Marvin, for instance, have noted how efforts had to be made *'to increase the visual and physical impact of telecommunications in cities, as when prominent satellite dishes are developed to boost the image of high-tech office developments and teleports. In one case, for example, such a dish has been proposed purely for cosmetic reasons, even though no satellite facilities were actually technically required.'*[3]

In similar vein, many of the civic websites developed in the late 1990s were, in effect, rather standardised, and unexciting, place marketing exercises designed exclusively to demonstrate the host cities' alleged innovativeness and competitiveness.[4]

The computer terminal stands as often the only the visible threshold to an otherwise invisible network. And the emergence of wireless networking and the increasing availability of small, mobile, and personal wireless 'terminals', such as GPRS (General Packet Radio Service) and 3G mobile phones, PDAs, etc., has reinforced the 'invisibility' of the digital 'bits' of the city.

This invisibility increases the difficulty of fully understanding the importance – and communicating the impacts, relevance, and benefits – of the use of ICT in the urban scene. A public administration would find it much easier to obtain consensus, for instance, on the construction of a series of new roads than on the extension of its metropolitan area broadband network or on the implementation of a new software-based system for job searching. Understanding the road system is still much more straightforward than making sense of what ICT can or cannot do for our cities.

It is thus crucially important to couple policy-making and development with research aimed at understanding and clarifying ICT's role within the wider urban environment – through studies that would help make the impact and roles of a largely invisible technology more visible and understandable.

Graham and Marvin[3] have argued that *'Urban studies and policy tend to be dominated by a concern with the visible, tangible and perceivable aspects of urban life.'* A study carried out by the author in the late 1990s[5] showed how urban planners in cities that were developing internet-based 'digital city' initiatives were scarcely aware, or interested, in these projects, regarding them as having little to do with land use, housing, or spatial planning in general. Their attitude tended to be reactive rather than proactive towards managing the 'digital' city, based on a deterministic way of looking at the development of new technologies as a linear process, in which planners were at the receiving end, intervening only if precise spatial problems showed up.

A more recent study on virtual city strategies in the cities of Newcastle and Antwerp[6] seems to demonstrate that nothing significant has changed, with most planners remaining interested in IT only for its potential to provide tools – such as GIS and related systems – to analyse traditional spatial problems.

ICT-based initiatives within local authorities usually seem to be dealt with by information systems personnel and experts or customer relationship offices. However, as these initiatives are often directed at aims in economic development, education, service delivery and city management, community regeneration, and making better use in general of the locale's resources, they should be embedded within strategic planning visions, This rarely occurs.

A new, cross-disciplinary approach to urban policy-making is strongly needed. Koolhaas and Mau have pointed out the deficit of openness and knowledge within the planning profession with respect to *'conceiving new modernities, partial interventions, strategic realignment'*.[7] Now more than ever before, a wealth of experimentation and ideas on technological interventions that will surely have a clear impact on urban management is emerging from the R&D activities of computer scientists and engineers. In Kyoto, Japan, for instance, a very active group of researchers is envisaging interfaces and solutions for the digital city of tomorrow, with apparently no active involvement or participation by urban planners.

It has been noted how important it is to acknowledge the increasingly hybrid, 'recombinant' spatial situation in which we now live[8] where physical and 'digital ways to live in the city merge in an increasingly seamless way. It is also crucial, though, to realise that to operate within it, and understand it, traditional barriers have to fall, to enable a more open-minded attitude to urban planning. 'Recombinant' space can only be dealt with by a 'recombined' discipline, which requires a 'holistic' conception of planning and management strategies for cities – one that does not interpret physical and virtual as two separate dimensions, but encourages the interplay (and the hybridisation) of physical and IT projects.

Far too many ICT-based regeneration initiatives in Western cities have been limited by a rather deterministic way of seeing IT's impacts on urban functions. Technological entrepreneurs have tended to believe that computers, networks, and software can act as a quick-fix for a variety of urban problems, by changing the rules the game is played by. Consequently 'digital city' initiatives have often been conceived and deployed in isolation, in the confident expectation that their innovative potential would be a catalyst for change. However, this approach has rarely proved effective, and there is a desperate need for such projects to relate more effectively and closely with urban spaces, established working practices and lifestyles, and all sectors of the local community.

Whole versus 'fragments'

The typical development control approach to the governance of urban space, modernist and rationalist in nature, finds itself unable to cope with such a liberalised, market-driven, hard to pin down, and highly fluid phenomenon as the use of ICT within the civic arena. What can municipal administrations do to play a significant, beneficial role? How should they respond to emergence of the information society in order to bring benefits and a higher quality of life to their citizens, and how can they limit any possible adverse impacts?

In the 1990s, organisations like Telecities and the civic networking movement were formed to help enable the public sector to influence positively the otherwise privately-driven world of emerging urban ICT, in effect contextualising IT, making it local, sensitive, and creative towards local issues and needs.[9] But the outcomes have tended to be initiatives that are 'centralised' in nature, frequently presented via a civic web portal – and that in the best cases are very articulate and offer services and facilities that go beyond the simple 'information online' site.

However, reflecting the wider tensions between centralised and more devolved governance, most civic internet-based initiatives (often driven by strict economic development and marketing imperatives) have tended to offer an image of the city as a tidy, harmonious, and rather unproblematic 'whole', and have not directed at increasing social cohesion by widen decision-making processes and offering opportunities for different 'fragments' within the city –

pressure groups, spontaneous aggregations of people, marginalised sectors of the community – to communicate with each other and be granted some form of public representation.

Service versus social (and clients versus citizens)

A further significant tension faced by practitioners and decision-makers, linked to the governance tensions considered above, relates to the ethos of the digital city. Should it be oriented towards improved service provision, and consequently better city management; or should it be focused on enhancing social and political links and boosting public discourse?

The simple answer would be that it should do both dimensions. Indeed, the provision of good-quality, interactive, electronically distributed, day-to-day services could help to encourage citizens to engage with the participative aspects of the online city. However, achieving this is a difficult task that requires policy-makers – and those working on regeneration strategies in general – to make constant efforts to balance interpretations of what the role of those who live and work in the city should be. Are policies – and technological initiatives – aimed at 'clients', 'an audience', and 'end-users'; or are they aimed at 'citizens', 'actors', and 'owners' of the city?

This is not simply a moralistic distinction between more or less liberal approaches to public administration: it is an important dualism that shapes the vision, trajectory, and indeed the effectiveness of high-tech projects in the city, and is often overlooked in the rush to engineer 'solutions' to problems.

An interesting aspect of this tension is the uneasy co-existence of different modes of use of online public or semi-public spaces. Service-driven environments – both physical and virtual – are rarely very social and tend to be used only when they are needed. They thus tend to be used in a selective way, with only the information, people, sections, or indeed spaces that are useful in certain circumstances being accessed. But public spaces, even digital ones, as Shapiro[10] has argued, work best if they are holistic and somehow inevitable and non-filterable. To this end, 'cyber' public spaces could be connected by 'virtual sidewalks': *'As on a real public sidewalk, a virtual pedestrian can try to ignore what's there and pass right by. Most probably will. But some will be enticed to listen and even to argue.'*[10]

While the clients versus citizens tension is not a new issue, and has not been generated specifically by the implementation of IT, it will only be reinforced by the emergence of the city as a digitally enhanced space. Are cities developing as 'digital' ones by means of institutions and projects managing to successfully articulate these two different ways of using urban facilities? Are ICT initiatives and strategies addressing the needs of inhabitants as both clients and citizens? Are service/client-oriented projects also facilitating and encouraging democratic participation and social cohesion, or are they promoting a type of high-tech individualistic city in which technology primarily enables people to 'push a button' – or 'swipe a card' – to get something? It has been suggested[11] that the shift of ethos from the initial pioneering phases of socially oriented civic networking to the service-oriented project-making found in most European municipalities has so far failed to address this problem of balance.

What next?

So what, then, is next for designers and policy-makers involved in digital city making?

Civic authorities have been engaging with important decisions on the wiring of the city – the installation of fibre-optic metropolitan area networks and related investments. However, as the physical infrastructure becomes both more widespread and 'soft' (through wireless networking, for example, and with broadband services accessible through normal telephone lines by DSL technology), city managers' and planners' attention could – indeed should – shift towards the 'softer' but crucial issues of filling the knowledge and expertise gaps.

Now that the hype of the 1990s is settling, planners need to think hard both how to grasp and interpret the complex changes that cities are going through in the information age, and how to turn this understanding into action, successfully addressing the problem of setting strategies for the regeneration of the increasingly 'digital' city. Such thinking needs to be underpinned by inter-disciplinary research. To date, a multi-perspective and collaborative approach towards digital city-making has been lacking.

In wealthy Western cities and countries, at least, achieving a critical mass of IT users or number of projects will soon no longer be an issue. The factor then most likely to be crucial in the emergent 'digital city' will be the ability – or lack of it – of municipalities and technological entrepreneurs in general to mobilise a wide spectrum of knowledge and expertise to address tensions such as those highlighted here. The digital city – too often regarded by some as satisfactorily provided by a quick-fix, technocratic approach – has to deal with complexity just as the 'traditional' city did.

Dr Alessandro Aurigi *is with the Architectural Informatics group and the Global Urban Research Unit in the School of Architecture, Planning and Landscape at the University of Newcastle upon Tyne.*

Notes

1 M. Jacques: 'Where the future is outrageous'. *The Guardian*, 22 Mar. 1997

2 C. Haythornthwaite and B. Wellman: 'The internet in everyday life: an introduction'. *In* B. Wellman and C. Haythornthwaite (Eds): *The Internet in Everyday Life*. Blackwell Publishing, Oxford, 2002, pp.5-6

3 S. Graham and S. Marvin: *Telecommunications and the City*, London: Routledge, 1996, London. pp.50-51

4 A. Aurigi and S. Graham: 'Cyberspace and the city: the virtual city in Europe'. *In* G. Bridge and S. Watson: *A Companion to the City*. Blackwell Publishing, Oxford, 2000, pp.496-497

5 A. Aurigi: 'Digital city or urban simulator?'. *In* T. Ishida and K. Isbister (Eds): *Digital Cities: Technologies, Experiences, and Future Perspectives*. LNCS (Lecture Notes in Computer Science) 1765, Springer-Verlag, Berlin, 2000

6 R. Firmino: *Building the Virtual City: The Dilemmas of Integrating Strategies for Urban and Electronic Spaces*. Draft PhD thesis, University of Newcastle, 2004, mimeo

7 R. Koolhaas and B. Mau: *Small, Medium, Large, Extra-Large: Office for Metropolitan Architecture*. Monacelli Press, New York, 1995, pp.965

8 W.J. Mitchell: *E-topia: 'Urban Life, Jim, But Not As We Know It'*. T Press, Cambridge, MA, USA, 1999; W.J. Mitchell: *City of Bits*. MIT Press, Cambridge, MA, USA, 1995; and T.A. Horan: *Digital Places: Building Our City of Bits*. The Urban Land Institute, Washington, DC, USA, 2000

9 D. Carter: "'Digital democracy or 'information aristocracy?' Economic regeneration and the information economy" . *In* B. Loader (Ed.): *The Governance of Cyberspace*. Routledge, London, 1997

10 A.L. Shapiro: 'Street corners in cyberspace'. *The Nation*, 3 Jul. 1995, p.12

11 M. Benini, F. De Cindio, and L. Sonnante: 'Virtuose, a VIRTual CommUnity Open Source Engine for integrating civic networks and digital cities'. Paper presented at the Digital Cities 3 Workshop, Communities and Technologies Conference, Amsterdam, The Netherlands, 2003. pp.496-497