

**ICT AND THE CITY**

**How do modern information and communications  
technologies influence urban development in the U.S.?**

Essay

by

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## **Introduction**

The introduction of new technologies has always been a critical element in the evolution of cities and society as a whole. Just as the steam engine, the car, electricity, the telephone, or the Fordist mass production system have effectively created their own epochs of economic and social development, so today's advanced information and communications technologies have propelled Western civilisation (and, increasingly, the entire world) into the information age (Knox and McCarthy, 2005). While rural areas are not exempt from this development, it is projected that by 2007 more than half of the world's population will live in an urban environment, and it is in those urban environments that new technologies first gain their foothold (United Nations, 2004). Any new technology of a certain scale also brings with it visions both utopian and dystopian of its potential to change the world (Graham and Marvin, 1996). This essay therefore focuses on the influence – economic, social, political, and spacial – information and telecommunications technologies have actually had on cities in the U.S., as well as discussing some future implications.

## **Economic Impacts**

Since the quadrupling of oil prices by the Organisation of Petroleum Exporting Countries (OPEC) in the early 1970s, the economies of the U.S. and Western Europe have shifted from being predominantly manufacturing based after the Second World War to service and information based economies (Knox and McCarthy, 2005). Today's higher paying jobs can be found in areas such as information technology, marketing, advertising, legal services, accounting, digital design, and others, all of which are increasingly dependent on the development and proliferation of advanced telecommunications technologies (Wheeler et al., 2000). As a consequence, Wheeler et al. (2000:5) argue, cities have undergone “colossal and permanent change”, with a small number of urban centres emerging as “global cities”, such as New York, Tokyo, and London. The connectivity within and between these global centres of commerce has shifted perceptions of the importance of geographical proximity towards a concentration on interconnectivity, or a “space of flows” rather than a “space of places” (Cairncross, 1995; Castells, 2000, 2004; Knox and McCarthy, 2005). Although this “space of

flows” is not limited to electronic communications systems, they are fundamental to it. Geographical location, however, has not ceased to play an important part in today's advanced economies. Especially for high-level decision making, face-to-face communication continues to play a vital role (Wheeler et al., 2000; Graham and Marvin, 2000). Boden and Molotch refer to this as the “compulsion of proximity” (cited in Gillespie and Richardson, 2000:233). This contradicts the utopian perception held by some that advanced communications technologies would cause the “death of distance” as the masses would be able to telecommute from their homes, rendering direct human-to-human interaction obsolete, with prominent media guru Nicholas Negroponte even claiming that the “transmission of place itself will start to become possible” (cited in Moss and Townsend, 2000:32; Castells, 2004; Warf, 2000; Wheeler et al., 2000).

However, larger concentrations of what could be called telecommuting exist increasingly as back offices in Edge Cities around urban cores, providing routinised tasks for global downtown headquarters. These back offices rely heavily on telecommunications technologies, as they often have direct, dedicated communication links with the main offices (Graham and Marvin, 1996). With increased proliferation of these technologies, this type of outsourcing can cross ever vaster physical distances across borders and entire continents. This, however, is contrasted by regional agglomerations of high-skill labour industries such as Silicon Valley, the Research Triangle, and Route 128, which feed off a “knowledge spillover” effect where close proximity of companies, university campuses, and other research and development institutions enhances the collective creative output. However, this effect, Audretsch and Feldman (2000) suggest, is spatially limited. Therefore, it can be argued that advanced telecommunications technologies have resulted in a dichotomy of centralisation and decentralisation in and around cities (Graham and Marvin, 1996; Wheeler et al, 2000).

As communications technologies become more and more vital for almost every type of business, office buildings need to provide those networking capabilities to stay competitive (Moss and Townsend, 2000). Consequently, real estate developers in the U.S. increasingly build global

connectivity into new developments to attract companies in the new technologies sectors (Graham and Marvin, 2001). This tendency presents an incentive for property (re-)development in city cores, as buildings can be updated with new telecommunications technologies that rival or surpass competing office complexes. Existing telephone, water, and sewage systems offer an advantage versus new Edge City developments, as their adaptation and utilisation for the laying of new telecommunications cables may be more cost-effective than building entirely new systems. In New York City, for example, a former headquarters of an investment bank stood empty for years before being renovated in 1995 to become the New York Information Technology Center (Moss and Townsend, 2000). Other unused industrial structures in Manhattan, San Francisco, Chicago, and Boston have undergone similar conversion into combined “work-and-live space[s]” providing the necessary communications systems to serve “home-based workers” (Moss and Townsend, 2000:37). On the other hand, the commuting and parking costs for employers are likely to be significantly higher in central business districts (Leigh, 2000). Furthermore, as city centres experience “renewed growth as interlinked [centres] of growing cultural industries”, business sectors such as computer software design and new media content production may see a shift away from the Silicon Valleys to those old city cores, where creative innovation is more sustainable due to a historically vibrant cultural environment (Graham and Marvin, 2000:78). Backed by local tax exemptions, New York’s Silicon Alley, for example, has developed as a nerve centre for new media companies by offering specialised multimedia centres providing “managed workspaces” and high-capacity broadband telecommunications (Graham and Marvin, 2000).

### **Social Impacts**

As with any new technology, it only benefits those who can afford it. With the passing of the Telecommunications Act of 1996, many new infrastructure companies were able to enter the now liberalised market, resulting in a strong impetus to further develop new broadband technologies while at the same time to reduce prices (Federal Communications Commission, 1996). Consequently, these new competitors concentrated on geographical agglomerations of affluent customers: wealthy urban

centres. Therefore, far from eliminating notions of distance by connecting everyone, thinly populated rural areas and urban slums are increasingly left behind. A report by the U.S. Department of Commerce (2004) states that, while the distribution of private Internet connections is similar between urban and rural areas (54.8 percent and 54.1 percent respectively), only 24.7 percent of rural households have broadband connections compared to 40.4 percent in urban areas. More than one-fifth of those rural households reportedly do not have broadband access because it is unavailable in their area. Within cities, this causes “splintering” or “capsularisation”, as high-capacity networks build electronic bridges from affluent district to affluent district, discarding the “redundant” users in between (de Cauter, 2004). This further advances the creation of guarded, private enclaves or “gated communities” within cities, often connected by private roads and passageways complementing and reinforcing the electronic connections, to link up with the “desirable” and disconnect from the “undesirable”, thereby reducing “unplanned encounters” (Graham and Marvin, 2001:247). De Cauter (2004) likens this trend to the fortress building of the Medieval Ages, where the castle walls protected the privileged citizens from the deadly wilderness outside. This trend is enhanced by the increasingly entrepreneurial nature of American cities competing with each other to attract global businesses along with the most affluent citizens, thereby bypassing and ignoring the poor (Graham and Marvin, 2001). As more and more aspects of social and public life move to the realm of the Internet, this technological segregation poses huge risks of social injustice and a further widening of the “digital divide” (Graham, 2002). Graham and Marvin (2001:288) even go so far to suggest that in today's “network societies” this exclusion from telecommunications infrastructure “is as central to the experience of poverty as lack of food, money or formal employment.” And as poverty feeds crime, de Cauter (2004:96) fears a future consisting of “*an archipelago of insular entities, fortresses, gated communities, enclosed complexes ... enclaves, envelopes, cocoons, in short capsules in a sea of chaos.*” U.S. President George W. Bush recognised this in a speech in 2004 when he called for “universal, affordable access for broadband technology by the year 2007” (Office of the Press Secretary, 2004). To achieve this, substantial political willpower is required, as, under the traditional operating procedures of the Internet, the private sector will not accomplish it on its own (Cohen-

Blankshtain et al., 2004). The peer-to-peer mode of distribution of electronic data that has gained considerable media attention through illegal file-sharing activities, however, could very well accelerate the distribution of broadband access. For, as the networks get more and more congested with the growing amount and changing nature of the information being transmitted, traditional down-streaming methods of electronic content distribution may become more expensive than the supplying of faster Internet access to the marginalised users within cities and rural regions, who would then act as virtual data distribution servers.

Nevertheless, it needs to be pointed out that advanced telecommunications technologies also have the potential to significantly increase citizenship participation in governmental issues (Turner et al., 2000). The Internet can be used not only to obtain information on government programs, but can also function as a communications channel for the community to directly connect with each other and their governments to discuss public issues on the local, national, or federal level. Today, “virtual cities” or “virtual governments” concentrate mostly on offering information rather than being fully participatory, but the technology for the latter does exist (Castells, 2000). Nevertheless, for the Internet to reach and sustain such a status as “democratic medium”, the aforementioned “digital divide” needs to be bridged. Therefore, as Turner et al. (2000) suggest, it is of utmost importance for urban planners to reduce “social exclusion” and redevelop “deprived neighbourhoods”.

The outsourcing of routinised functions to back offices in Edge Cities discussed earlier also has social implications. To further reduce commuting times and distances, “televillages” (e.g. “Blue Line Televillage” in Los Angeles) have been created along public transport lines as “liveable communities” where people can live, work, and do their shopping (Graham and Marvin, 2000). This reflects the growing entrepreneurial nature of cities and society, as an individual's life is ever more centred around the workplace rather than the traditional family unit.

The vast popularity of instant messaging applications and mobile phone text messaging has

also had a twofold effect on interpersonal relationships within cities. As people's "buddy lists" grow internationally, thereby widening their social networks across limits unimaginable only a decade ago, their local neighbourhood ties undergo dramatic change. Even though these new forms of telecommunication have not eliminated the desire for physical contact and face-to-face interaction, the old methods of social contact have suffered quantitatively, as people, especially the younger generations growing up in this interconnected world, spend more and more time engaged in virtual human-to-human interactions rather than real meetings. The increasing omnipresence in American cities of wireless access points stands to enhance this effect even further. Wireless technology, however, has the potential to help bridge the "digital divide" as radio waves are more or less indiscriminate of spatial segregation patterns. In San Francisco, for example, Mayor Gavin Newsom aims to provide his city with a free public wireless network in order "to bring technology to low-income and disadvantaged residents" (Mayor's Office of Communication, 2005). However noble such an endeavour may seem, it can be argued that universal wireless access is of no use for those at the lower end of the social spectrum if they cannot afford the electronic devices necessary to utilise it. Therefore, any concept of a socially just and "democratic medium" must include either the distribution of free devices or the setting up of "electronic soup kitchens" for the poor.

### **Political Impacts**

The entrepreneurial spirit and competition between cities results not only in lucrative tax exemptions for competing infrastructure providers, but also in city governments looking for new ways to raise tax revenue once the telecommunications structures have been installed. Even though the Telecommunications Act of 1996 prevents local governments from directly imposing regulation on telecommunications providers, it also affirms their authority to make use of and manage their public "rights-of-way". Consequently, as Grant and Berquist (2000:97-98) argue,

the traditional two-tiered structure of federal and state regulation of telecommunications is rapidly evolving into a three-tiered regulatory structure as municipalities firmly assert control over their physical rights-of-way used by the telecommunications industry.

Graham and Marvin (2001:302), on the other hand, perceive a “collapse of the coordinated public enterprise” of telecommunications infrastructure, and with it a tendency away from the “ideal of the cohesive, integrated and open city” to an entirely corporate urban world in which “you are what the market dictates for you.”

Because of the ever-increasing importance of telecommunications for every industry sector, city governments are in a race to provide and constantly update their infrastructure networks in order to gain and hold a competitive position to attract and retain vital businesses. Therefore, telecommunications infrastructure planning has become a key policy issue for urban governance, usually accomplished through public-private partnerships (Graham and Marvin, 1996; Grant and Berquist, 2000). Furthermore, city governments have another good reason to be interested in advanced telecommunications infrastructure: they are themselves among the largest consumers of these kinds of services (Grant and Berquist, 2000).

Moreover, as telecommunications networks become the very fabric cities are based upon, contingency strategies must be put in place if cities want to survive emergency situations such as natural disasters with their networks intact (Graham and Marvin, 2001).

### **Spatial Impacts**

The dichotomy of centralisation (through the agglomeration of the headquarters of multinational corporations within cities) and decentralisation (through the outsourcing of routinised tasks to back offices) together with the accompanying acceleration of urban sprawl results in the blurring of central business districts, suburbs, and Edge Cities to vast “polynuclear”, “splintered” metropolitan areas (Graham and Marvin, 2001). Thus, as cities grow horizontally as well as vertically, the delimitation between the urban and the rural becomes increasingly blurred, thereby challenging traditional classifications (De Caeter, 2004). While telecommunications networks are not the only contributory factor to this evolution, their immense influence on globalisation and therefore on the

growth process of cities cannot be denied.

## **Conclusion**

The evolution and increased proliferation of advanced telecommunications technologies into every aspect of contemporary urban life – economic, social, political, and spatial – can neither be denied nor avoided. If the current trends towards an electronic class division along with accompanying “gated communities” and “exclusionary zoning” is not counterbalanced by socially responsible policy decision making, the United States metropolitan areas face the dangers of increased crime and social unrest that accompany any sustained social inequality. Therefore, it is of vital importance that local governments act against the segregation caused by the liberalised telecommunications marketplace to enable the underprivileged to have their voice heard in an ever more virtualised governmental process. Enabling access, however, is not enough. The knowledge required for the use of the Internet and other advanced communications technologies must be easily attainable as well. Today, as Cohen-Blankshtain et al. (2004) argue, “urban [information and communications technology] policies are still in their infancy,” with many cities having “neither a clear strategy ... nor an explicit plan to address [such] a policy arena.” This will have to change if the vast metropolitan regions of the future want to uphold the “ideal of the city as a special place: the [centre] of democratic exchange and a place where every person can do well and even expect certain basic social services” identified by Boyer (cited in Graham and Marvin, 2001).

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