

Telecommunications, Spatial Infrastructure, and Spatial Interaction: Looking Through the Case of Seoul

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Abstract

Since the early changes in the social structure of individuals' lives engendered by telephone technology, the rapid evolution of telecommunications technologies influenced the transformation of cities and the communication patterns among people (Wheeler, Aoyama & Warf, 2000). As urban spaces became increasingly webbed with complex telecommunications networks, the impact of telecommunications on geographical space and boundaries has brought different views and interpretations. While some suggests the death of distance and the predominance of virtual spaces, some suggests the notion of physical space and face-to-face communication remaining at the center of human activities. This paper examines the phenomenon by focusing on the interactive mechanism between the spatial characteristics of cities and the patterns of changes brought by telecommunications from a multi-level perspective. The link between telecommunications development, spatial infrastructure of cities, and spatial interaction among people is viewed as inherently interactive and co-evolutionary, where each dimension influences each other in both directions and as a whole takes place in an open environmental space. Various types of urban spatial infrastructure and human interaction are examined as occurring at micro, meso, and macro level. The analysis includes a case study of Seoul which has gone through a remarkable transition in the penetration of new information communication technologies and infrastructure. Observation of the spatial characteristics of the city, the urban initiatives toward reconstructing the urban public spaces, and the pattern of human interaction grounded upon the physical space lead to the assessment that the notion of geographical space is still crucial in the urban landscape shaped by digital technologies.

Theoretical Approach: Telecommunications and Space

The history of telecommunications has often been regarded as "man's rebellion against barriers of time and space, and his success in overcoming them" (Oslin, 1999, p. 1). The way technology has changed the meaning of time and space in contemporary society has received spotlight from diverse disciplines including sociology, geography, urban planning, and communication studies. Cities and urban areas receive particular attention due to the point that they are often the first to be influenced by technological diffusion and therefore act as the agents of subsequent economic, social and cultural changes in other regions and nations (Kellerman, 1993; Bertuglia, Lombardo & Nijkamp, 1997). Discourses about the transformations of urban spaces, however, have often been approached from an abstract and speculative notion of space while leaving out the dynamics at the physical level.

Competing arguments exist regarding the impact of telecommunications on the transformation of space. Futuristic views often combined with technological determinism illustrate the picture where new electronic telecommunication technologies bring an end to geographical space and city. From this perspective, telecommunications networks are regarded as the force that transcends space and breaks down traditional geographical barriers by offering real-time, synchronous, ubiquitous, global pattern of communication. Metaphors such as "the global village" (McLuhan, 1994), "information superhighway" (Gates, 1995), and "the third transport revolution" (Cairncross, 2001) envision new borderless structure of cities and space with the advent of telecommunications revolution. In the extreme, literatures in the early periods of technological revolution suggested that advances in telecommunications technologies will cause economic decline of metropolitan centers, spread out the major functions of city, and lead to the dispersion of work without employees having to commute (Abler, 1970; Cairncross, 2001). Depictions of "the death of cities" have concerned the decrease of interaction at a given time at a given geographical space, due to the widening of transactions in electronic space (Negroponte, 1995). Most of the arguments suggest a society where electronic media free human from geographical obstacles and extend the range

of interaction and communication to a global scale. Often coupled with a technological deterministic perspective, these arguments have been built upon the assumption that the impact of telecommunications technology is direct and homogeneous, therefore bringing uniform changes to every city and region of the world that replicates the experiences in the Western society (Graham & Marvin, 2000). However, these simplistic viewpoints depicting the end of geographical space have received criticisms as ignoring "the complex, often contradictory, relations between telecommunications and urban form" (Wheeler, Aoyama, & Warf, 2000, p. 7). Speculations generated at the macro level have led to extreme emphasis on the information age, information society, and cyberculture, which tend to neglect the diversity of changes occurring at the physical level (Graham & Marvin, 1996; Graham & Marvin, 2000).

At the other end of the debate, countering viewpoints exist which maintain that space still holds value in contemporary society. The assumption lying under such perspective is that the social and cultural features of urban spaces cause heterogeneous patterns in the adoption and penetration of technologies. Emphasis is put more on surrounding socio-cultural environments than the technology itself, arguing that spatial and technological infrastructure of a city is crucial for creating path dependency in terms of economic, political and social environments. As Hearn, Mandeville & Anthony (1998) put, "the technological profile of society is not an accident" (p. 24) and is shaped by the environment. Along the line, Castells (1996) expresses doubt toward naïve technological determinism by addressing "the most striking paradoxes of the information age" (p. 377) where the supposedly placeless characteristics of the new electronic communication facilities are in reality mediated by the existing spatial inequalities to a great extent. In other words, the author draws attention to the phenomenon where "social processes influence space by acting on the built environment inherited from previous socio-spatial structures" (p. 411). Studies from such perspectives attempt to uncover the relationships between individual behaviors and social systems that take place in unique regional contexts. As a large part of emerging technology entails changes in the patterns of communication practices in both human-to-human and human-to-machine interaction, the impact of technology on the transformation of spaces has been regarded crucial in the communication patterns.

These concepts and findings are applied to explain both the pattern of cities in their heterogeneous adoption and diffusion of technologies and the pattern of human behavior and interaction in urban contexts. In this sense, although technology itself is neutral regardless of the environments, its value is determined by people in different spatial contexts and infrastructures. At the same time, technology can influence the characteristics of human networks and spatial interaction, as expressed by Graham (1999):

"Theoretical models which conceptualize the 'social' and 'technological' as being caught up in complex and recursive interactions, rather than in separate realms, are required. ... They must incorporate the fundamental indeterminacy of the technological futures of cities, the fact that social action and agency shapes these futures in real places. And they must recognize that complex 'patchworks' of different social/technological innovations and effect are likely to be a key characteristic of this phase of urban policy innovation and experimentation." (p. 26)

In other words, it is assumed that neither technological determinism nor social constructivist views are sufficient for explaining the dynamics of the spatial infrastructure and the impact of technology (Graham & Marvin, 1996; Hearn, Mandeville & Anthony, 1998; Graham, 1999). The analysis of the relationships between the diffusion of telecommunications and the spatial infrastructures in this paper carries on this viewpoint. It gives consideration to the multiple level and direction of interactions, taking into account both the different levels of analysis and interactive mechanisms among the levels. The two-directional influence between the spatial infrastructure and technology assumes the ideas of "the social shaping of technology" (MacKenzie & Wajcman, 1985), which emphasizes the social contexts in which technology develops. Existing spatial characteristics are important for understanding not only individual interactions but also regional and global forces influencing individual actors. It involves the examination of intrinsic features of the city such as the demographic characteristics, public spaces and functions, relationship between central areas and peripheral areas, telecommunication infrastructure, and its previous development path. These features influence the adoption and diffusion pattern of emerging communication technologies in the urban space, which subsequently reshape the spatial interaction

patterns in cities and urban spaces. New telecommunications services and infrastructure such as the Internet and the mobile phone networks in everyday life reorganizes individuals' lifestyle patterns, the nature of interpersonal contacts and social interaction, access to and use of information and media, and the perception towards urban spaces including nodes and hubs (Figure 1).

Figure 1. The interaction between the diffusion of telecommunications, spatial infrastructure, and spatial interaction

Upon these theoretical perspectives, this paper examines the case of Seoul, the capital city of Korea, to highlight the dynamics of spatial transformations in the unprecedented speed and range of the diffusion of new telecommunications technologies. First, backgrounds of the city are introduced to help understand the underlying infrastructures that influence the patterns of technological adoption and diffusion. Second, the paper moves to the examination of the process in which technological innovations, especially those of mobile telecommunications, stimulated the transformation of cities with the impact of new patterns of human interaction. Seoul in the year 2002 has experienced unique social phenomena where enormous social gatherings took place in urban public areas for demonstrating public opinions and collective behaviors regarding social issues. At the same time, Seoul has been showing an endeavor of restructuring to a sustainable city while incorporating both traditional landscapes and new technological evolutions. While looking at these events, a theoretical approach taken in the paper will be helpful for viewing the mechanism of how spatial infrastructure influences the rapid technological adoption and in turn, how these technologies influence the interaction among people based on the urban spaces. Observation will deal with issues including the change in the traditional geographical notions and urban spaces with the creation of new technological space, the way emerging communication technology transforms how people network and mobilize in the geographic space, and the implication of technological characteristics such as mobility, ubiquity and simultaneity in the human interactions in urban spaces.

Background Observations: Seoul with Unique Spatial Infrastructure

The worldwide evolution of electronic telecommunications led to the emergence of global cities penetrated with extensive communications infrastructure (Wheeler, Aoyama & Warf, 2000). Kellerman (1993) distinguishes cities into four categories: domestic cities, world cities, regional hubs, and global hubs. According to the distinction, Seoul can be categorized as both a world city and a regional hub with major international component in its economies and serving its own country and several countries in its region (p. 100). In a similar pattern, Castells (1996) describes cities of the world where there are global

cities such as New York, Tokyo, and London dominating the business and services in international scope. Other cities are classified as major centers and regional centers among the international network. Seoul plays a dominant role as a developmental and innovative hub of the country and has the most intense interaction with other cities of the nation. As one of the world's largest urban agglomerations according to the data by United Nations, 2002 (Castells, 1996), total population of Seoul is 10 million[1] which counts for more than one fifth of the total national populations of 48.15 million (Korea National Statistical Office, 2004). The urban populations live in the area of 605.52km², or 0.6% of the entire country.[2] Confirming the idea that cities are early adopters of technological innovations (Bertuglia, Lombardo & Nijkamp, 1997), Seoul has played a strategic role in the diffusion of technology supported by major telecommunications industries and functions it embraces. Castells (1996) mentions his findings about these sites of technological diffusion, that different from the United States where newly-formed strips as Silicon Valley and San Francisco Bay Area started as a technological incubator, "old metropolitan areas" (p. 66) are the sites of information technology revolution in some countries. Seoul is regarded as an example of such patterns where it is a "technopole" with synergy generated from the historical collection and networks of industrialization efforts. The notion of accumulated power is revealed from the fact that other cities have been strategically investing in IT industries recently but have not shown as high performance and important role as Seoul has.

The potential of Seoul as the center of diffusion of innovations and developments results from both social and cultural characteristics. From a social perspective, dense population, rapid economic developments, and social infrastructures are combined to create synergy. Since the "miracle of Han-river" in the sixties, Seoul has been regarded as a highly centralized city with urban populations and industrial functions concentrated in a single limited location. Most of the large domestic businesses and foreign industries have headquarters within the area of Seoul, which is one of the major characteristics of world city (Kellerman, 1993). In terms of economic developments and technological diffusion, Seoul shows a quite balanced status among regions. Cultural characteristics inherent in the Korean society play a role as well, including the homogeneity of populations, social networks, and frequent social interaction among people in the public places of everyday life. Issues related to ethnicity, nationality, immigration and regional inequalities have created less social conflicts than in other cities, which in turn encouraged interaction through interpersonal and social networks.

Metropolitan regions are at the forefront of adoption and diffusion of technologies in terms of both physical telecommunications infrastructure and its use in human interaction (Graham & Marvin, 2000). Recently, new telecommunication infrastructures have penetrated into the urban spaces with the support of government and local authorities for telecommunications-driven development projects. Government has taken initiative to invest in several projects such as KII (Korea Information Infrastructure) and Cyber21 programme that aim for creating advanced telecommunication infrastructure and transforming the urban places into a future digital city (Seoul Metropolitan Government, 2004). Seoul displays a high level of technological adoption, recording 108.44 of total telephone subscribers per 100 inhabitants. The world average is 32.42, with the average of upper middle income countries being 48.44 in which Korea belongs (ITU, 2002). The number of Internet users per 10,000 inhabitants is 5,106, while the world average is 820 and the average of upper middle income countries is 996 (ITU, 2002). These aspects of widespread telecommunications infrastructure tied with the geographical space have encouraged the adoption of multiple layers of information and communication networks. Major parts of urban places and networks such as cafes, restaurants, schools, and airports are equipped with broadband and wireless Internet networks. The remarkable speed and rate of technological diffusion creates unique spaces of social interaction as well, as can be seen in the burgeoning of Internet cafes called PC rooms in urban districts which are now surpassing 28 thousands nationwide (Ministry of Culture & Tourism, 2003). With the broadband backbone installed in major areas, new wireless Internet connections are rapidly penetrating as an emerging communication network. Bertuglia, Lombardo, & Nijkamp (1997) list factors that influence the diffusion of innovations in a spatial context, among which communication network is one. Along the line, Castells (1996) mentions the role of social networks for "ensuring the communication of ideas, the circulation of labor, and the cross-fertilization of technological innovation and business entrepreneurialism" (p. 391). As the distribution pattern of opinion leaders and early adopters matters for the speed and scope of diffusion, Seoul allows close interaction among people which lessens the transaction costs in communication with the support of heavily concentrated public and private urban

infrastructures. Opportunities for more intense face-to-face contact with both acquaintances and non-acquaintances increase the nodal points of interaction. The significance of existing communication infrastructure in the diffusion process of new telecommunications network is found in the increased density, centrality, and cohesion which determine the flow of information and goods into the existing networks of infrastructure.

Observation: Changes in the Spatial Interactions

The changes of the spatial perspectives of Seoul can be approached from both perceptual and behavioral perspectives. First, the diffusion of technology changes people's notion of geographic spaces and cities. The notion of connectivity and mobility has increased as the traditional barriers of communication and interaction have been weakened due to the technologies enabling communication across different regions. From a behavioral perspective, nevertheless, it is revealed that social activities based on tangible geographical spaces have not disappeared as shown in the examinations of spatial interaction followed. The urban initiatives have addressed both aspects by strategically promoting the physical development of advanced telecommunications infrastructure including the broadband network and mobile communications network, and at the same time, keeping the traditional forms of urban architectures and public spaces that enable human interactions.

Lifestyle patterns and interpersonal contacts

Communication technologies have brought change in the pattern of individual lifestyle by increasing mobility and ubiquity. While the human nature has been by and large understood to possess the desire to settle down and find dwellings in the past, it is considered that human nature is more tilted toward the possession of mobile or nomadic lifestyle in contemporary age. More functions in the everyday life are performed in a mobile context as can be seen in the trend of digital equipments being incorporated in mobile devices which transmit voice and data. Mobile devices are converging into a single technology with multiple functions, such as computer, telephone, camera and PDA. The increase of mobility implies that people do not have to be static at one location to be accessed by other people. With mobile phones and wireless Internet access, messages can be directly sent to and received by users almost in a synchronous and ubiquitous way anywhere and at any time (ITU, 2002), thus increasing the connectivity of people. Nevertheless, mobile lifestyle is not separable from the spatial contexts. Research findings show that geographical space still matters and individual connectivity is maintained even with the penetration of telecommunications technologies.

Patterns of social interaction

Information technologies have increased the social networks and interactions in cities among individuals, organizations, and the environment (Moss & Townsend, 2000). Telecommunications technologies are permitting "new combinations of people, equipment, and places," in turn leading transformations in "the spatial organization of activities" (Moss & Townsend, 2000, p.31). The downside effects of new technology have discussed as producing isolated people who are losing the real human contact and experience (Cairncross, 2001). Up until the late 1990s, it was regarded that people living in urban spaces were increasingly isolated from the physical space and linked to each other only through virtual space with the increase of new forms of leisure and entertainment functions such as video games, movies, the Internet, PC communications. From observing the case of Seoul, however, it is shown that "placed-based activities" (Castells, 2001, p. 237) have increased instead. Public spaces for social interaction and cultural activities have been developed as a location for people to gather around. The social mechanisms in 2002 displayed a unique combination of urban spaces and technology for mobilizing people to come out and form social aggregations, for example in three major social issues: supports for the Korean team in the Worldcup matches, campaigns for presidential election, and candlelight rallies against US militarism. New communication media, with the Internet and mobile phones in the center, have played a role in reinforcing communication networks and mobilizing people to gather in the public spaces. In other words, despite the enormous volume of information and communication transmitted via electronic means, communication through "being in one another's presence" has co-existed and even intensified face-to-face interaction and the agglomerations of humans (Wheeler, Aoyama & Warf, 2000, p. 6).

Patterns in the role and usage of media and technology

As above, new communication technologies such as the Internet and mobile phones have been mobilizing people toward more intense social contact, massive gatherings, and group behaviors than in the past. In the process, new electronic media showed interaction with traditional mass media such as TV and newspaper in the diffusion social issues and increase of participation. Social issues and opinions, starting from mass media such as TV and newspapers, rapidly become circulated among online communities and portal websites. Through bulletin boards, the perception on the issues became further diffused, often attached with individual opinions and evaluations of the issues. Expansion became faster with diverse technological devices such as mobile phone calls and text messaging services. Finally, these media expansion leads to meetings and aggregations in real geographical space. Contrary to the claim that the role of geographical space is at the end, it seems that urban space began to have different meanings and exert new roles for public interaction as it lies in contact with new communication media. The new telecommunications means are often leveraged by existing telecommunications infrastructure, at both the physical layer of backbone networks and the application layer of its use within human interaction.

Nodes and hubs in urban spaces

Patterns of spatial transformation related to urban functions such as the geography of innovation, regional clusters, and knowledge spillovers have been found in the case of Seoul. These clusters are based on the notion that the diffusion of knowledge and technological capabilities are promoted by the communication between individuals in the web of the institutional and organizational clusters (Saxenian, 1990). In other words, physical proximity and ease of communication counts as an enabling factor of such economies. The nodes or hubs in the urban context are found in smart buildings or intelligent buildings, defined as “those which have adaptive environments of high quality, energy efficiency, security and safety, permitting optimized internal and external communications” (Gann, 1992). Other newly emerging urban patterns generated through the widespread of telecommunications technology are those such as “information districts” and “urban televillages” (Graham & Marvin, 2000, p. 88). Information districts are defined as urban “milieux” that sustain the economic growth. It provides the opportunity of face-to-face contact while providing high-capacity online linkages to the wider world at the same time (Graham & Marvin, 2000). Similarly, televillages are defined as “an integrated urban place supported by a whole suite of ICT infrastructures and services” (Graham & Marvin, 2000, p. 88). Cities are composed of nodes and hubs which structure and coordinate key functions. In Seoul, these nodes and hubs have been transformed dramatically over the years. While central nodes of administrative and economic functions have been historically located in the northern areas of Han River, new nodes have been developed in the southern areas resulting from the transformation of the central business activities and services. For example, Samsungdong formed around Teheranro has become one of the major central areas of Seoul which emerged in the late nineties with the burgeoning of information technology and Internet businesses. Castells (1989) recognizes this trend of information technology industries concentrating in a few selected areas as the “milieux of innovation” (p. 82). Hubs, playing a role as the central points for the coordination of urban functions, are becoming increasingly complex with the emergence of new communication patterns as well. In the process, Seoul is seen as a location where the nodes and hubs of old metropolitan area with a long historical tradition are becoming revitalized with new stimulations from telecommunications networks and interactions. Introduction of sophisticated communication technologies both increases the number of nodes and hubs of a network and moves them to different locations. However, these changes are not made on an entirely novel base but rather within the boundary of existing infrastructure of a city, strengthening the established flows of network at the same time. On a global scale, analysis of the global traffic of information and communication reveals this phenomenon of new technologies maximizing the current asymmetry in the patterns of flows (Telegeography, 2004).

Public spaces

Among the components of urban spaces, public space offer places where people meet and share common experiences (Moss & Townsend, 2000). Major cities in the world regardless of both developed and developing countries are being restructured with the finest telecommunication infrastructure that can incorporate developmental and socio-economic goals. While a large part of investments are given to the

establishment of electronic spaces and functions such as e-government, online commerce and distant education, city agents are attempting to plan, regulate and shape urban place at the same time (Graham, 1999). The proposition that real places and real cities are not neglected holds true in Seoul, where both electronic and urban restructuring is actively performed under the catchphrase of "harmony of technology and tradition" (Seoul Metropolitan Government, 2004). Vision Seoul 2006, a four-year blueprint of urban planning established in 2002, includes twenty major tasks among which the restructuring of urban spaces takes up a large portion such as "construction of Seoul plaza," "Cheonggyecheon restoration project still 2005,"[3] "restoration of Hangang (river) ecology and natural environment," and "creation and expansion of culture zones." Plans for restructuring civic parks and plazas were copious since 1998 for expanding urban spaces for public activities. The area around the City Hall, the very location of social activities in the year 2002, is also being transformed into Seoul Plaza as it was recognized that urban public spaces can motivate social interactions in a positive way. In addition, technological innovations, especially mobile telecommunications technologies, spurred the transformation of cities by altering the pattern of human engagement in social interaction. Telecommunication technologies are being incorporated into new architectural landscapes as in the case of Nespot zone, a district with always-on wireless Internet connections available, serving as an unprecedented geographical space brought by the diffusion of technologies.

Patterns of centralization and decentralization

Centralization of a city is usually assessed by the population size and the locations of major political and economic facilities. Abrahamson (2004) states that concentration of services happens since urban functions are dependent on the flow of information and therefore on telecommunications networks. Abrahamson also links the concept of accelerated centralization in contemporary age to the argument that large scale businesses usually require enormous resources which are again consolidated in the urban areas. Davelaar and Nijkamp (1997) mention "the spatial concentration of information flows" and "agglomeration economies" as main locational factors of innovations (p. 27). While cities are following different patterns of centralization or decentralization, Seoul is one of the cities with high population density and rapid penetration of technologies including the broadband Internet and mobile communications. Although the expansion of the city has slowed down since the last administrative reorganization in 1973 (Seoul Metropolitan Government, 2004), qualitative functional consolidations are even more strengthened. Castells (2001) suggests that from the example of major world cities as San Francisco, New York, and Los Angeles, it can be concluded that the Internet content provision "follows a pattern of high spatial concentration" (p. 222). Interaction between cities is another form of space of flows suggested by Castells (1996). As the definition of space of flows is regarded as "the material organization of time-sharing social practices that work through flows" (p. 412), it is implied that the standardized spaces of world cities are tied into the global movements of goods, finance, information, and people. In addition to the idea that both centralization and decentralization simultaneously occur with the introduction of new information and communication technologies (Castells, 2000), the degree to which these patterns determine the spatial interactions depends on the qualitative characteristics of existing spatial infrastructure and interaction.

Conclusion

Seoul serves as a useful case for examination due to its features as a city rapidly imbued with the state-of-art communication technologies and businesses but unchangingly playing a strategic role in the nation's politics, economics, and social roles. The cityscape presents a mixture of cultural heritage and the restructuring of modern technological assets. While literatures with futurist viewpoints suggest that the traditional role of cities and space will vanish with new technologies, the transformation of Seoul exemplifies that geographical spaces are still crucial factors in individual behavior, social interaction and the larger function of urban spaces. As shown in Figure 1, the interactive mechanisms of both spatial infrastructure and spatial interaction are shown in multiple levels including individual, interpersonal and social actions. In other words, the underlying thought is that the notion of geographical space in a city remains an important axis in the midst of digital technologies driving people toward "virtual communities," "e-topia," and "cybercities" (Mitchell, 2000; Graham, 1999). Furthermore, it is shown that both social and cultural aspect inherent in the spatial infrastructure of a city influences the pattern of technological

adoption and diffusion. In other words, existing patterns of spatial infrastructure reinforce the impact of new telecommunications technology and at the same time, are influenced by the technological forces. Therefore, technological innovations become infused with existing spatial infrastructures rather than acting independently as a novel force in the contemporary age.

The mechanisms shown in Figure 1 and examined through the case of Seoul can serve as a theoretical framework to examine other cities of the world. Expanding the relationship between the spatial infrastructure of urban places and the diffusion of technology will help explain the differences found in the patterns of technological development in cities of the world. Tremendous differences revealed in the pattern of technological diffusion among the regions of the world show that geographical space and location operate as a factor that interplays with technology (Banerjee & Ros, 2004). In other words, locations are embedded with historical equities acquired from both social and cultural practices. Examining the infrastructure of cities is important when considering the influential power of city in diffusing developments, as acknowledged by Bertuglia, Lombardo, & Nijkamp (1997) when they argue that cities are "agents or incubators of economic, social, scientific, technological and cultural change" (p.7). In the sense that the diffusion of telecommunications technology follows hierarchical pattern where the infrastructure connects larger cities first and move to other regions thereafter (Kellerman, 1993), the interplay of spatial infrastructure and interaction found in the urban cities is influential for understanding subsequent spatial diffusion in a larger regional or national context.

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[1] Korea National Statistical Office (2004). Population data of Seoul is projected based on the population survey performed in 2000. When the growth rate of total nation's population is 0.54% in 2004, the increase rate of the population of Seoul is estimated to mark -0.22%, while Kyunggi province, the suburban area around Seoul, is 2.26%. (www.nso.go.kr).

[2] See www.e-seoul.go.kr, "About Seoul: Quick Facts" for detail

[3] Cheonggyecheon is an urban stream located in the northwest of Seoul and flowing from west to east converging the center of Seoul. With the motive of reviving Korea's historical and natural heritage, the project aims at creating a environment-friendly city space open to public.