

# The study of urban form in South Korea

**Kwang-Joong Kim**

Department of Environmental Planning, Seoul National University,  
1 Gwanak-ro Gwanak-gu, Seoul, 151-742, Korea. E-mail: [kjkim@snu.ac.kr](mailto:kjkim@snu.ac.kr)

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**Abstract.** *The growth and character of urban morphological studies in South Korea are described, giving particular attention to the formal aspects of cities and towns in Korea's long history, and examining the research approaches and findings. The influence of European morphological perspectives is considered. An attempt is made to encapsulate the state-of-the-art in Korean urban form studies. Owing to problems of access to information, the study of urban form in North Korea is not considered.*

*Key Words: urban morphology, urban form, urban landscape, Korean cities, South Korea*

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Though superficially similar to neighbouring East Asian countries, Korea possesses its own urban form and landscape resulting from a distinctive building tradition and city-making history. As in other countries (Conzen, 2001), 'urban form' is a broad and at times somewhat elusive concept in South Korea. It has been approached by many disciplines with different interests and methods, notably architecture, landscape architecture, urban planning, geography, history and archaeology. Electronic literature searches using the search words 'urban form,' 'urban landscape,' 'urban fabric / tissue,' 'historic cities,' and 'urban spatial structure' yield more than 500 studies (journal articles, books, reports and theses). These studies cover a wide spatio-temporal spectrum, ranging from ancient to contemporary and from individual buildings to entire cities and groups of cities. Yet, on inspection, many do not directly deal with form itself, at least in the sense of shape, size, dimensions, pattern, layout and structure. This paper concentrates on the works of major researchers based on the author's knowledge and the relevance of studies as judged by the titles appearing in

the electronic search. These works provided links to other relevant studies. A 3-year literature review undertaken by the author's graduate urban form class was useful in identifying additional studies. At risk of oversimplification, five categories of urban form study can be recognized: 1) historical urban form; 2) modern transformations; 3) contemporary urban form; 4) interpreting urban landscape; and 5) scientific inquiries. Each category tends to have a somewhat distinctive character (Table 1).

## **Historical urban form**

Although Korea's history extends over nearly 4.5 millennia, studies of historical urban form begin with the Three Kingdoms period (1st century BC - 7th century AD), followed by the Unified Shilla Kingdom (7th - 10th century), the Goryeo Dynasty (10th - 14th century) and the Joseon Dynasty (14th - 19th century). Even within later periods there are few studies owing to the lack of historical and archaeological information.

Table 1. Categories of South Korean urban form studies

Study categories	Descriptive	Explanatory	Interpretative
Historical urban form	●	□	□
Modern transformations	●	□	
Contemporary urban form	●	□	
Interpreting urban landscape	□		●
Scientific inquiries	□	●	

● strong focus      □ moderate/weak focus

### *Ancient capital cities*

Studies of ancient times are focused on capital cities in the period of the Three Kingdoms (Goguryeo, Baekje and Shilla) and the Unified Shilla Kingdom. The walled capital of Goguryeo (BC 37 - AD 668), Janganseong (now Pyongyang in North Korea) was discussed in general terms (H.-S. Kim, 2006), but there have been few other studies of this city, owing to its North Korean location. In the case of the Baekje period (BC 18 - AD 660), the location and layout of early capitals of Wirye (now south-eastern Seoul) and Woongjin (now Gongju) have been matters of conjecture as even recent archaeological excavations have yielded few findings (Choi, 2002). The third and last capital (538 - 660), Sabi (now Buyeo) has attracted more detailed treatment. The historical geographer, Park (1992), combining historical documents, archaeological findings and field survey, suggested that this walled capital took a gridiron form, comprising a series of square blocks of 44.5 by 44.5 m. She speculated that these unit blocks were framed by a larger unit of 356 m by 356 m, made up of north-south and east-west main-road axes. It was believed that Sabi was laid out according to a plan based on that of Chang'an, capital of China during its Tang Dynasty. However, little conclusion is reached about the degree of Chinese influence on city planning in the

Baekje capitals (Cha, 2002).

The most penetrating study of the form of an ancient capital was that of Gyeongju, a capital of the Shilla Kingdom (BC 57 - AD 935), now a UNESCO World Heritage site. It was in the period after unification of the Korean peninsula in the late-seventh century that the city underwent a particularly significant remaking. There are various speculations regarding the block size, city boundary and Chinese influence (Kim, 1997). It is widely agreed, however, that Gyeongju was laid out in a grid-patterned framework based on the *bang-ri* system of administrative hierarchy. The historian Yoon (1976) suggested the rectangular city area was of some 3.9 km (east-west) by 4.3 km (north-south), divided into some 360 *bangs*, each 140 m by 160 m. He believed that the city was divided into east and west sections by the 120 m wide north-south axial road through its centre. More recent study, however, questioned earlier findings on the city's area and overall layout. The historical geographer Lee (2007) speculated that one *bang* was a 162 m by 162 m block and Gyeongju was larger than previously thought, being up to 5.5 km in both north-south and east-west directions. He also argued that the city, within which about 1 million people resided, was not rectangular in form, but defined by natural constraints, not a city wall.

While many agree that there was Chinese

influence on the geometrical form of Gyeongju (Lee, 1984; Yoon, 1976), Lee suggested that Gyeongju was not entirely a new planned city like the Chinese model city of Chang'an or the later Japanese city of Heian (Morris, 1979). While some local cities, such as Jeonju and Namwon, had an original gridiron layout (K.-C. Lee, 2002a), no agreement has been reached on whether the grid-patterned *bang-ri* system was widely applied to ancient Korean cities (Yoon, 1987). Furthermore, some suggest the possibility that the *bang-ri* system did not originate in China, but in Goguryeo (K.-S. Lee, 1999), and that Chinese influence on ancient city planning has in general been over emphasized, insufficient attention having been given to specific Korean city characteristics (Lee, 2007).

#### *Medieval capital cities*

After the Unified Shilla Kingdom declined, Korea went through the late Three Kingdoms period (AD 892 - 936) before there was reunification during the Goryeo Dynasty (AD 918 - 1392) in 936. Owing to its North Korean location, the urban form of Gyeseong, the capital during the Goryeo Dynasty, has not been much studied. Some historians and urban form scholars briefly examined its location and general layout based on historical documents, old maps and drawings showing the topographical context and the position of the city walls, gates, royal palaces, major buildings and arterial roads (Kim, 1998; Park, 1996). It was evident that Gyeseong consisted of three 'layers', comprising the walled royal palace, the inner wall (4.7 km in length) and the outer wall (23 km in length). Unlike its ancient predecessor, it had an uneven site and organic form manifested in its irregular city walls and asymmetrical city layout responding to mountainous topography. Many agree that this organic form was a clear intentional departure from the geometrical form of the previous capital of Shilla. It is believed that the Chinese geomantic idea of *fengshui* influenced the building of this new capital.

More attention has been given to the capital

city of Hanseong (now Seoul) of the Joseon Dynasty (1392 - 1897) which overturned the ailing Goryeo Dynasty. Based on historical documents, historians suggest that Confucian pragmatism as well as the geomantic idea of *fengshui* were considered in choosing the location of the new capital (Ko, 2005; Lee, 1938; T.-J. Lee, 1994). Surrounded by a 19 km wall, its building took nearly 20 years (S.-K. Lee, 1994; J.-M. Sohn, 1977). Most studies recognize the influence of the Chinese ideas of *fengshui* and the Rites of Zhou in locating major components such as royal palaces, ritual sites, public buildings, the bell tower, markets, main roads, gates and the city wall. The city, occupied by some 100 000 people, adapted to the topographical conditions inside its irregular wall. Like Gyeseong, Hanseong took a unique organic form with rich geomantic meanings. The rectangular, symmetrical and axial nature of the form of Chinese capital cities, often moat-protected on flat land, was not found in Hanseong. The determinants of urban form were symbolic mountains, topographic constraints and capillary-like waterways. Some planners and designers believe that this creative adaptation to natural conditions resulted in a Korean urban form distinct from that of its neighbouring Chinese and Japanese capitals (H.-G. Lee, 2005; K.-M. Lee, 2002; S.-K. Lee, 1994).

The study of morphological change during the Joseon Dynasty has been rare, presumably due to the lack of information. The work of Kim and Lee (1998), revealing the emergence of strip-type commercial plot patterns in the eighteenth century in major local nodes around Hanseong, is one of the few examples. Kwon (2003) is also noteworthy as he examined various historical maps to uncover the transformation and expansion of Hanseong city-wide. From a cartographic standpoint, Lee's digital mapping of Seoul's medieval form (Seoul Metropolitan Government, 2004a) is of interest. After the digitization of a 1914 cadastral map and topographical maps, he produced, in collaboration with Seung-Woo Yang, high quality electronic maps showing nineteenth-century urban fabrics in relation to topographical conditions (S.-K. Lee, 2004).

### *Medieval regional and local cities*

The centralized kingdom of the Joseon Dynasty contained a hierarchy of administrative centres. Not all of these centres were walled (Ryu and Oh, 1992), but the walled ones attracted much attention. Referred to as *eupseongs* (walled towns) or *eupchis* (government towns), there were nearly 200 of them countrywide. Some of them originated in the Three Kingdoms era. Except in certain rural places that are now under government protection, most of the walls were destroyed during the colonial period and inner areas were subsequently replatted. Medieval *eupseongs* that have been studied include Daegu (Yae, 1998), Milyang (Yae, 1991), Jeonju (Chang, 1993), Ulsan (Kim, 1996), Unyang (Kim, 1996), Gyeongju (Shin and Yae, 2000), Naju (Sohn and Kim, 2006) and Nakan (Lee, 2008). Comprehensive countrywide studies were also conducted that dealt with the location, structure and form of walled local cities of the Joseon Dynasty (Huh, 2001; S.-K. Lee, 1984).

These studies show that in the earlier years, the sites of *eupseongs* varied from flat field to mountain slope. The alignments of their surrounding walls varied accordingly, some cities being rectangular in shape while others were rounded and still others were intermediate between rectangular and round, depending on topographical conditions (Huh, 2001; Kim, 1999; Lee, 2008). Locations against a mountain backdrop became increasingly popular in the later period of the Joseon Dynasty under the influence of *fengshui* which imbued the mountains with considerable symbolic meaning (Lee, 2008). *Eupseongs* had three or four gates in each direction and main roads linked these gates (S.-K. Lee, 1984). Inside the walls, there were administrative buildings at the centre surrounded by lay people's residences. Local nobles and farmers resided outside the walls. Where there was a mountain castle nearby, Korean *eupseongs* often did not have moats, and their walls were much lower than those of their counterparts in China and Japan (Lee, 2008). With more concern for ruling than defence, the organic form was deliberately planned to

maximize the king's glory and power through a series of visual experiences as people approached the government buildings at the centre (Lee, 2008). This suggests comparisons with the visual analysis of Japanese castle towns by Satoh (1997).

These studies are mostly in the form of written text. Though some old maps and drawings provide an impression of location and layout, there is little morphological information on town plans and building fabrics. Thus these studies, though dealing with forms, are more historical than morphological in nature. The more detailed formal study of Korean cities had to await the first systematic modern cadastral survey in the 1910s.

### **Modern transformations**

#### *European approaches*

There has been a sizable number of studies based on European approaches to modern urban transformations. In the 1970s, urban designers and architects began to show an interest in the notion of urban fabric in relation to analytical design method (Chu, 1975). Chong-Won Chu and his students at Seoul National University played a significant role in introducing British urban morphology into South Korean planning and architecture. A series of morphological studies was produced that drew attention to Conzenian research methods and theoretical perspectives. The works of M. R. G. Conzen and J. W. R. Whitehand were referenced in relation to Conzen's recognition of systematic form complexes such as town plan, building fabric, and plot pattern. There was also awareness of Muratorian theory – in this case as a result of Japanese writing. Later, some journal articles were solely devoted to introducing European morphological approaches as a promising means of understanding changes to urban form. Sohn and Han (1996) and Ryu and Lee (2001) introduced typomorphological methods. Referencing Moudon (1994), they compared the Conzenian and Muratorian schools. These

approaches were seen as valuable in the search for the cultural identity of Korean architecture and urbanism. Most recently, Yang (2000, 2002) introduced the tradition and genealogy of German urban morphology with its history dating back to the nineteenth century. Its influence on British urban morphology was also recognized.

On this basis, various morphological studies have been undertaken that have sought to understand the modern and contemporary transformation of Korean cities. Key areas of investigation have been Seoul's historical downtown, colonial concessionary areas, and local historical cities.

### *Downtown Seoul*

Seoul's downtown area (formerly inside the wall of *Hanseong*) has received the most attention from urban morphologists. According to S.-K. Lee (2004), Seoul was first surveyed in 1912-14 – at the beginning of Japanese colonial rule (1910-45), and a series of cadastral maps was produced at 1 : 600 scale, each covering 250 m from east to west by 200 m from north to south. Since Seoul's downtown underwent significant modification as a result of colonial planning, these first cadastral maps are widely accepted as having morphogenetic value.

The first systematic morphological investigation of the transformative process of downtown Seoul was by Chu and Yang (1991). Comparing city maps of the early-nineteenth century with those of the twentieth century, they identified a series of phases of change to the street network, spanning from the late Joseon Dynasty to the modern period, each having distinctive morphological character. Yang and Chu (1992) continued to investigate the process of change to plots, employing Conzen's concept of the burgage cycle. Based on cadastral maps of various dates between the 1910s and the 1980s, they identified four stages of development related to changing socio-economic and demographic conditions. They recognized various types of land-parcel division depending on the depth and width of

the plot and street pattern. It was found that until the late 1960s, plot division was more dominant than plot amalgamation, reflecting major population increase after the period of colonial rule and the Korean War. Plot amalgamation predominated in the 1970s when rapid economic growth occurred, followed by a more stable period in the late 1970s and 1980s. The illustrations accompanying Yang and Chu's study were schematic only.

A subsequent study by Yang and Chu (1995) presented more detailed morphological investigation of the plot pattern, converting the cadastral map of 1912 into a GIS database of 4504 parcels. This significant effort enabled them to examine the size, shape, orientation and width-to-length ratio of plots in this centuries-old historical core of Korea's capital. They found that 90 per cent of 4504 plots were of small size, averaging only 115.2 m<sup>2</sup>, and imbued the traditional urban form with a fine-grained character. Small plots occupied only 42 per cent of the land area, while large parcels, though much fewer, comprised much of the land in public and institutional use. The small plots were more regular in shape than the larger ones. The average width-to-length ratio was 1.47 and frontages orientated towards the south were in the majority. Quantitative analysis predominated and again there were few maps.

In a similar way, Sohn *et al.* (1996a) employed the Muratorian concepts of 'procedural typology', 'leading type' and 'synchronous variations' to interpret the transformation process of urban tissues. They used the cadastral maps of 1912, 1929, 1936, and 1992 to trace the changes in major street alignment, alleys within street blocks and plot processes. After identifying the different patterns of change in the northern and southern parts of the downtown, 547 sample cases were selected for further typological analysis. It was found that in 486 cases there had been simple parcel division, while in 61 cases the formation of alleys was part of the process. Three evolutionary typologies of alley were discovered. They termed this process the 'residential area cycle', referring to Conzen's

concept of the burgage cycle and Muratori's 'modularity'.

These studies during the 1990s focused on streets and plots, but did not consider buildings. This omission was rectified by more recent work. Focusing on selected downtown areas, field surveys of traditional buildings were undertaken. Selected historical residential quarters in downtown were documented by In-Ho Song and Sang-Koo Lee, sponsored by Seoul Metropolitan Government (2004a). Comparing the map of 1912 with current cadastral maps, they identified the original street network. Also identified were the original plot pattern and surviving traditional houses. A notable feature was measurement in the field of selected traditional houses. This enabled the production of a detailed map of a sample street block showing building floor plans associated with traditional plot and alley tissue. This was probably the first attempt to document the full spectrum of traditional urban form, showing the relationship between such fundamental morphological elements as room, house, plot and street. The interconnected nature of traditional form was delineated at urban tissue level.

Another traditional residential quarter, Bukchon in the northern downtown, was investigated by Song and Cho (2002) and Cho and Choi (2003). Comparing successive cadastral maps of 1912, 1929, 1967, 1989 and 2001, supplemented by aerial photographs and planning maps, these studies traced plot division and assembly over time and identified various types of urban tissues in terms of formal character and transformative processes. Sung and Song (2003) went on to carry out further detailed study of a nearby traditional residential area in Samcheong-dong. Focusing on a site of just over 3 ha, they investigated the piecemeal platting process that occurred between 1935 and 1943. They provided field-measured house plans and sections to demonstrate how traditional houses, plots and alleys were interrelated and how they responded to topography. This work confirmed that the integrated nature of traditional residential fabrics continued into

the colonial period during which this site was platted. In addition to morphological documentation, the study used such materials as media coverage, land sale records and building registers to understand the socio-economic and other factors influencing change. This research led by Sang-Koo Lee and In-Ho Song is arguably some of the most detailed and well-illustrated work at urban tissue level.

The Seoul Downtown Identity Study (Seoul Metropolitan Government, 2010b), headed by In-Ho Song and Sang-Koo Lee, documented how Seoul's historical core lost its original form. It chronicles the changes to the city walls, royal palaces, old streets and stream lines, and traditional houses and neighbourhoods. Other studies have investigated the changes to the form of downtown areas such as Donwhamunro (Hong, 2000), Gahoe-dong and Gye-dong (Park and Song, 2001), Myeong-dong (Sim and Kim, 2001), the southern area (Choi and Kim, 2005), and the northern area (Jin and Ahn, 2009). Research on the processes of plot development associated with old large estates is also noteworthy (Park and Yang, 2007).

#### *Colonial urban form*

A morphological approach has been applied to port cities with colonial origins by architects, planners and geographers. There were five ports opened during the late-nineteenth century in South Korea: Busan, Incheon, Mokpo, Gusan and Masan. Detailed attention has been given to the concessionary areas in Gusan and Mokpo by morphologists residing in their vicinity.

Gusan's gridiron colonial form has received intensive investigation by Kyung-Chan Lee (Lee, 2002b; Lee and Huh, 2005). Analysing and comparing cadastral maps and town plans from 1912 to 2001, these studies recorded plot processes in detail and identified many types of urban tissue. As shown by the work of K.-C. Lee (2004), post-colonial plot processes included the division into a variety of ownerships and these had a major influence on the differentiation of building façades.

Lee's study identified five building types and eight types of lot-building combination according to building shape, layout and open space within plots. Further study at the building level has shown changes to architectural elements, such as roofs, cornices, pillars, windows, entrances and materials, including decorations and styles deemed essential for preservation efforts. Yoon and Hong (2002) also investigated detailed changes to both buildings and plots.

Another colonial form, the old centre of the city of Mokpo, was studied by Cho (2005). The seashore of some 20 ha was reclaimed and planned in gridiron form. Based on twentieth-century cadastral maps, as well as old maps, building records and field survey, Cho traced the transformation of the urban landscape between 1897 and 2003. He found that there was a tendency for plots to be subdivided until the 1960s, but for amalgamation to have increased since the 1970s. K.-C. Lee (2004) found similar tendencies in Jeonju and Gunsan. Cho also found that plot processes and associated building arrangements took different forms in commercial streets and residential areas. He also showed how small, narrow plots accommodated Japanese-style colonial wooden houses.

Comparative studies of colonial Gusan and Mokpo were conducted by Song (2008). He found that two concessionary areas that were laid out with different plot and street-block orientations underwent similar transformations in later years. The concessionary area of Incheon, opened to foreigners in 1883, was also studied for its plot and building processes, and revealed similar transformation patterns to those identified in previous studies (Kang and Kim, 2002). Documents from Incheon Metropolitan City (2004a, 2004b) also provide historical drawings, maps, plans, photographs and aerial views from pre-colonial years through to the modern period.

### *Local cities*

Local cities with historical origins have been the subject of considerable morphological

research. Chu and Lee (1992) showed particular interest in the plot process in the downtown area of Jeonju (27 street blocks and 977 plots) over some 80 years (1912 – 1990). They found that the process of plot amalgamation and subdivision was reflecting changing socio-economic conditions and planning activities. They drew attention to the works of M. R. G. Conzen (1960), M. P. Conzen (1983), Slater (1990), Whitehand (1981) and a number of Japanese studies on similar topics.

Jeonju and nearby Gunsan and Iksan were studied by Ryu (1991) with reference to work within German cultural geography, which he argued unified urban morphology, urban geography and historical geography. He traced morphological change in the three cities, which had similar historical roots, mapping the structure of nineteenth-century and present-day urban forms. He found that each city went through a different evolutionary process, although they shared strong urban planning influences. He concluded that street networks and land uses were more persistent than buildings – the latter underwent almost total replacement during the colonial period.

The extensive research by K.-C. Lee (2004) also traced urban form change in these three cities. Using a number of cadastral maps surveyed between 1912 and the 1960s, historical documents, land registration records and field surveys, Lee found that the three cities had similar grid structures, but different present-day forms related to their different growth histories, including colonial influences. The 1950s and 1960s left a fine-grained morphological legacy in these cities upon which urban renewal took place in the 1980s. Plot subdivision was especially common in the downtown area, creating narrow street frontages. At the same time residential subdivision led to the creation of many small houses along cul-de-sac alleyways. Lee's study is distinctive in that he provided an explanatory dimension to morphological change which could form the basis for theoretical generalization. This was substantiated in his investigation of Korean local cities in the 1950s and 1960s (Lee, 2003).

Morphological research was also devoted to the central areas of Cheongju (Weon *et al.*, 2004), Gongju (Park and Chung, 2009) and Yeongsanpo (H.-K. Kim, 2006). The downtown area of Daejeon, a major but not historical city of the central region, was studied by Song (1989) regarding the plot and block pattern in this one-time boom railway city in the early-twentieth century.

Jeonju's traditional houses were studied by a number of architects (Sohn *et al.*, 1996b). Referencing M. R. G. Conzen and Whitehand, the study identified four types of house plan that were different from both those of Seoul and those in rural areas. Drawings of typical house plans and diagrams of house functions provided the basis for typological comparisons. K.-C. Lee (1999, 2000) also examined the alleys within the city's old residential area.

In the south-eastern region, Ha and Hwang (1995) studied traditional houses in the downtown area of Daegu, a city of 3 million people. They used cadastral maps from 1919 onward and aerial photographs to trace the morphological changes and, based on field surveys, documented the surviving traditional houses. For a sample of 15 traditional houses, field surveys provided detailed information on changes to floor plans and utilities. The authors found significant 'changes to, and a decline in', the number of traditional houses. Rather than taking a conservation perspective, they identified the cultural process to which particular house types were subject.

The downtown residential area of Daejeon, a major city of the central region originally platted in a colonial grid, was studied by Han (2004). He documented the morphological processes of streets, plots and buildings. Plot subdivision had predominated until the 1980s, but plot amalgamation more recently. Within selected street blocks, Korean traditional and Japanese style houses of the 1950s and 1960s continued to exist, although some plots were amalgamated to accommodate Western-style buildings. Han similarly documented street-block sizes and road dimensions.

In addition Han (2006) examined the typology of traditional houses remaining in the

city centre of Gongju, a historical city in the central region. Based on access, privacy and orientation of buildings and courtyards, eight types of residential tissue were identified. Particular attention was given to traditional houses surviving in the downtown area – here grid arterials were superimposed on the existing organic structure during the colonial period. Referring to the concept of typomorphology (Moudon, 1994), Han believed that housing types should be studied from a typological perspective within the context of urban structure.

A large number of studies, including Master's theses, employ European morphological approaches in studying Korean urban form. Some recent studies focus on 'micro-morphology', a term borrowed from Whitehand (2001), in that they emphasize the changes occurring within plots and buildings (Lee, 2002b; Song *et al.*, 2009; Yoon and Hong, 2002).

### Recent urban form

Research on urban forms created in recent decades has been less prolific than that on historical and colonial forms. S.-K. Sohn and his students continue to investigate typomorphological processes in Seoul's residential neighbourhoods (Sohn and Lee, 2000; Sohn and Shin, 2003). They have identified various types in terms of access, alley formation, and the ways in which streets, plots and buildings combine. Limited attention has been given to planning regulation as an agent of change in Seoul's increasingly densely built-up residential areas (Park and Choi, 2003).

As is the case of studies of urban form in earlier periods, building form has tended to receive the least attention. The work of Chang-Bok Yim (1988, 2000) is a rare example of the collection and documentation of the ordinary detached house types that prevailed in the residential landscapes of the 1970s to 1980s. Focusing on Seoul, he produced a rich and detailed record of plan types and house styles. With his colleague



Suh, he sampled five typical residential areas platted in the 1970s and 1980s (Yim and Suh, 2000). Changes of house types were traced based on building and land registers, building permit records and field surveys. It was found that many detached houses were converted into multi-family flats. Analysis of changes to floor area, number of storeys, building coverage, building density and building structure revealed that buildings have been getting bigger, denser and higher in most of Seoul's residential areas. Changes to residential culture and building regulations were identified as transformative forces. Changes to residential areas were also studied by Seoul Development Institute (1994).

A detailed land-use study by the urban historian J.-H. Choi is notable for the recent changes of land use and building grain that it shows in downtown Seoul. An initial survey was conducted in 1980 for the downtown urban design plan making by Seoul city government. In conjunction with the Cheonggyecheon stream restoration project, a subsequent survey (Seoul Metropolitan Government, 2004b), conducted by Choi, was the basis for digitized downtown land-use maps comparing fine-grained land-use change at ground-floor shop level in 1980 and 2003. The report also contains a number of photographs showing changes in the appearance of various parts of downtown Seoul. Also notable is the documentation of selected low-income residential areas of Seoul in the 1980s – in this case the dense fabrics of shanty houses and alleys were field-measured and recorded in detail (Yang, 1991).

More comprehensive documentation of contemporary urban form has been undertaken by the research organizations of city governments. In Seoul, the Seoul Development Institute sponsored an international urban form study that compared typical forms of residential and commercial areas in Seoul, Tokyo, New York, Los Angeles, Paris and London. In this work, Kim (2003) identified Seoul's five residential forms based on their history, methods of development and formal characteristics. Sample areas of each type were mapped and documented in terms of

street network, plot pattern, and information about buildings. More recently at the same institution H.-C. Park *et al.* (2009) conducted a comprehensive urban form study covering various functional areas of Seoul. Streets, plots and buildings were the main elements examined in the sample study areas, providing comparisons over time in some instances. This has contributed to CAD-assisted quality digital maps derived from the geographic information system of the Seoul Development Institute.

The Seoul Metropolitan Government (1996, 2000, 2006, 2010a) continues to publish *Urban form and landscape* at 5-year intervals. Based on a research manual on how to view the city, these photographic books record the changing visual appearance of Seoul. Incheon Metropolitan City (2010) started similar work in 2010, publishing 'Image of Incheon,' a photographic documentation containing basic city information and district maps.

### Interpreting and analysing urban form

Other approaches to the study of urban form in Korea can be divided into two broad types: interpretative approaches and scientific approaches. The former have been adopted mostly by researchers within the fields of landscape architecture and cultural geography. Often seeing their focus as 'urban landscape' rather than 'urban form', they attempt to understand the visual reality of the city and to interpret the underlying cultural forces and meanings, although the way in which they do this varies (Hwang *et al.*, 1993a; Im, 2003; K.-M. Lee, 2002). The latter investigate urban form in an empirical, quantitative manner. Such researchers tend to work within architecture, urban design and planning. They attempt to analyze the relationship between formal and non-formal variables.

Interpreting Korean urban form has been a consistent concern of K.-M. Lee (2002). Lee mostly relies on his personal views and experience in assessing why Korean urban forms look the way they do. He reviews the evolution of, and the ideas governing, the

urban landscapes of Korea's major historical cities such as Seoul, Gyeongju and Jeonju. He identifies a dualistic nature in the Korean cityscape, distinguishing organic Korean form, with its historical city-making principles, from the forms that have followed modernization. The work of H.-B. Kim (1998) is more historical in its approach. He argues that Korean cities, unlike Western cities, were created not according to aesthetic principles but on the basis of a cosmological 'yin-yang' world view that originates from ancient China. Thus ancient and medieval form has been distorted by modernization in which colonial and Western ideas have prevailed. Like Lee, Kim believes that the urban landscape should be seen as a cultural manifestation. The studies that fall broadly in this category include those of Incheon (Hwang *et al.*, 1993b), Gyeongju (Kim, 1994), Gyeongsan (Kang, 1998), Jinju (Kim, 2001) and Jeonju (K.-M. Lee, 2002). However, their interpretative perspectives vary from historical to visual to socio-economic.

Scientific inquiries into urban form show the recent interest in the relationship between urban form and various planning issues, such as air pollution, energy, bicycle use, walking behaviour and public health. In these studies, elements of urban form are quantified for the empirical analysis of causal relationships. These elements include land use, the dispersion of centres of activity, the density of road and public transit systems, and distances between facilities. Although the titles of such studies may include the term 'urban form', a concern for the visual character of form is often lacking. An exception is a recent study in which typologies of residential street networks are identified and illustrated in relation to the walking behavior of residents (Park *et al.*, 2008).

Another use of scientific urban form analysis entails the use of space syntax. Valuable in analysing linkage, access and the concentration of urban space, this method has been employed by architects and planners to serve various research interests, such as exploring the structure of historical street networks (Kwon, 2003), spatial integration

and legibility (Kim and Shin, 2004), pedestrian movement (Choi and Kwon, 2003) and the use of urban space (Chang, 2004). These studies focus on how urban form performs, rather than urban form itself.

## Conclusion

The study of urban form in South Korea is a sizeable field of research. Yet, despite the large number of studies of various aspects of urban form, the number that deal with such essential aspects of form as shape, size, pattern, layout and structure is quite modest. Though some cultural and historical geographers have an interest in urban form, they are more interested in history than morphology, and this is manifested in the virtual absence of cartographic representation in their work. In search of cultural identities and under the influence of European typomorphology, architects and planners are more involved in documenting and analysing the forms of historical cities, old downtowns, colonial quarters and recently developed districts. The contributions of some dedicated morphologists are remarkable in terms of their first-hand fieldwork, cartographic presentations and scholarship.

On the whole, however, studies of urban form in South Korea do not comprise a coherent body of knowledge. Various reasons can be offered for this condition. One is the low survival of structures from past periods: rapid modernization in the late-twentieth century gave little attention to traditional urban legacy. A second is the paucity of morphological information such as town plans, and cadastral and building records. Although there are notable works by dedicated morphologists who recognize the value of understanding urban form and its change over time, there have also been urban form studies that can be criticized for their unclear research questions, oversimplified description, illustrations of questionable value, typologies of insufficiently clear purpose, and inadequate linkage to a larger intellectual underpinning of urban form.

It is appropriate, therefore, to end this

review by underlining some challenges that face Korean urban morphologists. Since urban morphology is inherently about form, quality graphical representations are essential at whatever scale of investigation. More research is needed on morphological mutations and their socio-cultural basis. Korean urban form study also needs strengthening in respect of its theoretical underpinnings. Perhaps most importantly, individual case studies need to be woven into a larger body of morphological knowledge both within a Korean framework and cross-culturally.

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