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in Major Asian Cities

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Abstract:

The purpose of this study is to review representative cases of green space development and to view its direction in major Asian cities. For this purpose, I describe the characteristics of green space distribution and outline the genealogy of city planning based on green space development. The findings of this study can be summarized in the following three points.

- (1) The Green Belt concept was promoted in Japan in the latter half of the 1930's, South Korea in the early 1970's, and Beijing in China in the latter half of the 1950's. However, the Green Belt was converged into an urbanization control area in Japan in 1968 when the New City Planning Law was enacted, and the lifting of Green Belt control has been performed step-by-step in South Korea in recent years. In Beijing, although the maintenance of the Green Belt ran into difficulties, the detailed plan for the Green Belt was revised from the middle of the 1990's, and the Beijing municipal government has promoted it.
- (2) Singapore launched the Garden City Movement to promote green space development to cope with rapid urbanization and development after independence in the latter half of the 1960's. Beijing developed a Garden City based on the Singapore model, and Shanghai is also aiming at the development of a green city. Kuala Lumpur has developed the Lake Gardens, a man-made lake and large green spaces, and it now aims to construct a new administrative center as a Garden City in a man-made lake.
- (3) The results of previous studies and this study show that there are two major directions in such green-oriented city planning. One direction is the establishment of the concept of multi-regional development, while the other has resulted in the concept of an environmentally symbiotic city based on the Garden City concept.

Key words

Green Space, City Planning, Green Belt, Garden City, Green City, Major Asian Cities

1. Introduction

Most large cities in Asia are considerably high-density compared with their counterparts in Europe and North America. An acute lack of green spaces in metropolitan areas in Japan, in particular, has given rise not only to problems in land use but also to deterioration of the quality of the urban environment (Yamamoto, 2006). Quite apart from the problem of environmental conservation, green spaces fulfill a number of diverse functions for recreation, disaster prevention and local topography, and are thus one of the most important elements in urban areas. Furthermore, in Japan, the potential danger of

high-density cities was made very real in people's minds in the Great Hanshin Earthquake in 1995, and several proposals have since been made strongly arguing for the necessity of disaster prevention city planning based on the provision of green spaces (Yamamoto, 2000).

The idea of city planning based on green space development is not at all new, having its origins in 17th and 18th century Europe. The construction of modern urban parks began as early as the 19th century. In recent years, securing green spaces has become an indispensable element of urban development. Among previous studies on green space development in the academic field of city planning and regional planning, a particularly large number have focused on examples in the United Kingdom and the United States, but there have been no case studies of Asian countries nor studies on the history and mutual relevance of green space development throughout the world.

Based on the viewpoints described above, the purpose of this study is to review representative cases of green space development and to examine its direction in major Asian cities. For the purpose, on the basis of the results of literature research and field surveys (2002-2007) in addition to interviews (2002-2007), comparing major Asian cities, I describe the characteristics of green space distribution and outline the genealogy of city planning based on green space development.

2. Case Study Cities

In this study, 9 Asian major cities are discussed as case study cities: Tokyo, Nagoya, Osaka and Kobe in Japan; Beijing and Shanghai in China; Seoul in South Korea; Kuala Lumpur in Malaysia; and the city state of Singapore. Table 1 shows the populations of the case study cities.

Table 1: Outlines of case study cities

Nation	City	Population (Person)	Area(km ²)	Population Density(Person/km ²)
Japan	Tokyo(23 Cities)	8,641,764	621.8	13,898.0
	Nagoya	2,235,103	326.5	6,845.6
	Osaka	2,643,366	222.1	11,901.7
	Kobe	1,530,295	552.7	2,768.8
China	Beijing	14,930,000	16,808.0	888.0
	Shanghai	18,670,000	6,340.5	2,945.0
South Korea	Seoul	10,356,202	605.3	6,573.0
Singapore	Shingapore	4,353,893	698.0	6,283.0
Malaysia	Kuala Lumpur	1,800,000	243.7	7,386.1

Note) Population and area data are taken from the websites of each city.

3. Characteristics of Distribution of Green Spaces in Case Study Cities

3-1. Japan

Photographs 1-4 show the central parts of the metropolitan areas in Japan. Photograph 1 shows Yoyogi Park and Meiji-jingu Shrine, which are located near the Shinjuku sub-center of Tokyo. In the central part of Tokyo, except for these, there are no large-scale parks and green spaces, and the high-density urban areas continue to the suburbs.

Photograph 2 shows Nagoya's city center and Central Park as seen from the TV Tower in the central district of the city. Although urban density in the central district of Nagoya is high, there still remain several open spaces even within the city center. The wide roads running through the city center and the relatively modest presence of high-rise buildings – as compared with the other two metropolitan areas – are the major characteristics of the Chubu metropolitan area. Also, suburban areas in the Chubu

metropolitan area have more forests and farmlands than those in the other two metropolitan areas (the Tokyo metropolitan area and the Keihanshin metropolitan area).

Photographs 3 shows Osaka, Japan's second largest city, and Photographs 4 shows Kobe which has the second largest harbor. In the center of Osaka (Photograph 3), the urban density is the highest and there are very few open spaces. Furthermore, except for Osaka Castle, Osaka Castle Park, etc. in the central part of the city, there are very few parks and green spaces. In Kobe (Photograph 4), a major earthquake occurred in January 1995, and reconstruction work is still continuing. However, since there is very little flat ground in the city, high-density urban areas have been formed in narrow areas and housing developments have been progressing in the mountains and reclaimed land in the port area.



**Photograph 1: Shinjuku sub-center in Tokyo
(November 2006)**



**Photograph 2: Central Park in the central
Nagoya (March 2007)**



**Photograph 3: Umeda district in central
Osaka (April 2007)**



**Photograph 4: Motomachi district in central
Kobe (April 2006)**

3-2. China

Photograph 5 shows Tiananmen Square as a representative urban park of Beijing, and Photograph 6 shows a small park in Shanghai's city center. Beijing and Shanghai are under the control of national government. The former is the center of national politics and the latter is the economic center.

In Beijing, there are a lot of gardens, not only Tiananmen Square (Photograph 5) but also those of the dynasty period, and green space development is being promoted in preparation for the 2008 Olympic Games. In Shanghai, many foreign-affiliated firms have offices and there are clusters of skyscrapers, especially in the central commercial districts. However, as can be seen in Photograph 6, there are parks

and green spaces with abundant greenery in the city center. Moreover, since an international exposition is going to be held in Shanghai in 2010, the international exposition meeting place is being developed centering around the Huangpu Jiang, the mother river of Shanghai.

3-3. South Korea

Photograph 7 shows the city centers of the capital Seoul in South Korea. Although Seoul has one of the highest urban densities in the world shown in photograph 7 and unipolar concentration in Seoul is high as in Tokyo, its green coverage rate is comparatively high among major Asian cities due to the many gardens around palaces and religious facilities in the city center.

3-4. Southeastern Asia

(1) Singapore

Photograph 8 shows the harbor area of the southeastern part of the city viewed from Mount Faber Park, one of Singapore's representative urban parks. As this photograph shows, there are middle- and high-rise buildings even in the harbor area. However, as mentioned above, many very large urban parks such as Mount Faber Park are distributed all over Singapore. In addition, since not only parks and green spaces but also wide roads with plentiful roadside trees have been developed, Singapore is described as a Garden City as explained in detail in Section 4.

(2) Kuala Lumpur in Malaysia

Photograph 9 shows KLCC Park and the city center viewed from the Petronas Twin Tower. This photograph shows that, even in the city center, there are many green spaces as well as large-scale parks like KLCC Park, and that there are not so many clusters of high-rise buildings. Together with rapid urbanization, large-scale parks were developed in Kuala Lumpur, which is categorized as a Garden City like Singapore, as explained in detail in Section 4.

4. Representative Cases of the City Planning Based on Green Space Development

4-1. Green Belt Concept: Comparison between Japan and South Korea

First, let me compare the Green Belt concepts of Japan and South Korea. Like the U.K., both Japan and South Korea considered the establishment of green spaces as a Green Belt to prevent the disorderly sprawling of the metropolitan areas.



Photograph 5: Tiananmen Square in central Beijing (October 2004)



Photograph 6: A small urban park in central Shanghai (June 2005)



Photograph 7: Central Seoul (January 2004)



Photograph 8: Harbor area in southeastern Singapore (May 2002)



Photograph 9: KLCC Park and the city center (November 2007)



Photograph 10: Miyashita Park near JR Shibuya Station in Tokyo (October 2007)

(1) Japan

According to Ide (1997), Japan's green space development can be broadly classified into three phases. The first phase is the period of some 35 years from 1932 to 1968, during which the Green Belt concept was introduced in Japan and efforts were made toward its realization. The second phase is the subsequent period of about ten years from 1968 to 1977. In this period, the New City Planning Law was enacted whereby the Green Belt concept was replaced by a new concept, the Urbanization Control Area. The third phase covers the period from 1977 to the present. In this phase, the urban green space planning system was established and a Master Plan for Parks and Open Spaces was formulated whereby greening on a small district level became subject to planning.

Of these three phases, let me examine the first and second phases in more detail. With the launching of the green space plan in Tokyo in 1939, the Green Belt concept was introduced in Japan. In 1946, the Law for the Conservation of Suburban Green Zones in the National Capital Region was enacted. However, due to strong opposition from landowners, the Green Belt plan was turned into a feeble program that managed only very modest development of green spaces. Within the Greater Tokyo Metropolitan Area in particular, there was a plan to develop green belts in areas some 20 kilometers away from the center of the city but it was realized only partially. Miyashita Park (Photograph 10), a very small park near JR Shibuya Station in Tokyo, is said to be a remnant of the Green Belt developed at that time.

The Green Belt concept changed with the enactment of the New City Planning Law in 1968. The law introduced a demarcation system dividing the city planning area into two types of areas, the Urbanization Promotion Area in which urbanization is promoted and the Urbanization Control Area in which urbanization is restricted. Of these, the Urbanization Control Area inherited the idea of the Green Belt concept in that the designation of such an area was aimed at preventing the sprawling of urban areas. However, because the Urbanization Control Area was also defined as a candidate for future development, the original purpose of the Green Belt concept was lost. Then, in the third phase, the whole scope of a city was made subject to city planning to promote the greening of urban spaces – including those under private ownership – on a small district level, rather than trying to develop green spaces of a certain designated scale or greater.

(2) South Korea

Referring to the study results of Suto and Koshizawa (2004), let me now will review the Green Belt concept in the cities of South Korea, particularly Seoul. First, I need to outline the development of the South Korea's city planning, which is closely related to the Green Belt concept. From around the mid-1940s, Korea began to promote city planning primarily under the initiative of the government. The revision of the City Planning Law in 1981, however, underlined the importance of citizens' participation in city planning. This resulted in the implementation of public hearings as part of the decision-making process to ensure that public opinion was reflected in city planning. In the initial stage, there was lack of understanding of the importance of citizens' participation and various problems arose, such as insufficient efforts to disseminate information on the part of the authorities and indifference on the part of the general public.

In South Korea, the city planning areas are sub-classified into six categories: the restricted zone, urbanization control zone, detailed planning zone, multi-regional planning zone, development control zone, and prospective development zone. Of these, the development control zone corresponds to the Green Belt. South Korea began to designate Green Belt areas in 1971 and today a total of 166.8 km² within the Seoul Metropolitan area are designated as such. South Korea's Green Belt control is implemented to prevent the disorderly sprawling of urban areas as well as to secure favorable living conditions for urban dwellers by preserving the natural environment in the outskirts of urban areas.

In recent years, however, South Korea has begun to release some areas from Green Belt control amid the rapid expansion of the Seoul Metropolitan Area. By 2020, a total area of 100,000 m² will be gradually released from Green Belt control and become an area subject to adjustments, thereby paving the way for residential development. Furthermore, under multiregional urban development plans and urban development master plans, areas released from Green Belt control are defined as those subject to development.

4-2. Garden City Construction: Comparison between Singapore and Malaysia

Next, let me compare the garden city construction of Singapore and Kuala Lumpur in Malaysia. The garden city concept originated with a proposal by the British urban planner Ebenezer Howard at the end of the 19th century. Combined with the comprehensive residential estate idea systematized by Clarence Arthur Perry in the first half in the 20th century of the U.S., the Garden City concept became one of the important ideas for new urban construction in the 20th century.

Singapore and Malaysia were the same nation until Singapore became independent in 1965. Because these two countries had been British colonies from 1789 to 1957, they had been greatly influenced by British city planning. However, Malaysia, including present-day Singapore, adopted the zoning

systems of the U.S. and Europe into the Town Planning and Zoning Act of 1923.

(1) Singapore

Based on the study results of Ide (1997) and Marutani (1995), let me examine Singapore as one of the world's leading examples of Garden City construction. Among Southeast Asian countries located in the tropical zone, Singapore is perceived to be the most advanced in terms of the greening of urban areas. However, being a small island country with half of its land urbanized and roughly 90% of the population living in apartment complexes, Singapore is also an extremely urbanized city state. Following its independence from Malaysia in 1965, Singapore launched the Garden City Movement in 1967 under the strong initiative of the government. The purpose of this movement was to promote the greening of urban areas focusing on city-wide greening activities and green space development as a means of coping with rapid urbanization and development.

Singapore also protects green spaces in cases of development under the Park and Tree Law enacted in 1975. At present there are 39 urban parks with a total area of 1,300 hectares, and the national government aims to secure more than of 8m²/person of urban parks. There are many very large urban parks in Singapore, and they employ various means to provide wetlands and bird sanctuaries.

Garden City construction in Singapore has been cited as one of the most successful green policies undertaken in a tropical city. The most distinctive characteristic is that Singapore, through the implementation of this scheme, sought to enhance the attractiveness of the country as a tourist spot in addition to improving the living environment for its people amid rapid urbanization. The fact that Singapore is a small city state – a situation which makes it easier for the government to exercise centralized control – has been cited as one big factor behind the success of the scheme. Therefore, it is necessary to take this success of Singapore as a special case that has been made possible in a very distinctive political and economic environment, rather than being a typical case representing Southeast Asian countries. Meanwhile, it is said that Beijing, in preparation for the 2008 Olympic Games, is trying to promote Garden City construction modeled on Singapore.

Singapore formulated the Concept Plan as a long-term program for the entire city and, based on this, the Green and Blue Plan for laying out a park and greenery system was drawn up. The Green and Blue Plan, which incorporates the idea of a park connector network, is aimed at building a water-and-green network with well-landscaped waterways and green open spaces over the entire area of the city state. With this, Singapore has been acclaimed not only as a successful Garden City but also as a role model in creating an environmentally symbiotic city in a humid tropical environment as well as in greening tropical cities. The plan is also perceived to be one of the most innovative in the world in that it seeks to conserve the environment as a living space not only for human beings but also for wildlife.

Photograph 11 shows Orchard Street, the largest street in central Singapore. From this photograph, we can see that Singapore attaches great importance to the planting and maintenance of roadside trees as well as to the placement of green spaces.

(2) Kuala Lumpur in Malaysia

On the basis of the results of the City Planning Institute of the Japan Kyushu branch office (1999), Ikuta and Matsuzawa (2000) and Ikuta (2001), let me now look at the example of Kuala Lumpur. The Malaya Federation became independent from the U.K. in 1957, and the Federation of Malaysia was born in 1963. In 1974, Kuala Lumpur became a federal special ward under the direct control of the national government. Urban area redevelopment including many huge projects have been promoted

through the wealth of the capital which has rapidly flowed from foreign countries such as Japan on a large scale since the middle of the 1980's. In 2006, a green space protection plan will be included in the Kuala Lumpur structure plan that determines the urban development plan until 2020.

Through the beautification movement that aimed at the urban area redevelopment and the creation of a modern beautiful city space, Kuala Lumpur has become a modern city, although the traditional Kampong (Malay village) still exists inside the city. In addition, a very large-scale green space around the Lake Perdana, a man-made lake, was developed in the latter half of the 19th century in the hilly areas to the west of the center of Kuala Lumpur. In this area known as the Lake Gardens, the Hibiscus Garden, Bird Park, and Butterfly Park are located.

Based on the Putrajaya plan adopted in 1996, Kuala Lumpur is aiming at the construction of the new administrative city of Putrajaya by 2010, and the prime minister's official residence and the Ministry of Finance have already taken the lead by moving in 1998. Putrajaya (Photograph 12) is being built as a Garden City in the man-made lake developed by infilling the wetlands the left by the vermilion mine, and a unique city planning project is being carried out.



Photograph 11: Orchard Street in central Singapore (May 2002)



Photograph 12: Putra Lake, Putra Mosque and the prime minister's official residence in Putrajaya (November 2007)

4-3. Green Space Development as the National Strategy of China

Thirdly, on the basis of results of a study by the City Planning Institute of Japan Kyushu branch office (1999) and Ueda and Furusawa (2002), let me examine the example of China. China places great importance on tree planting in urban areas, and is positively promoting the expansion of the area of green spaces per population and the green coverage rate. Moreover, evaluation based on the objectives of a "garden forest city" and "hygiene city" has been performed. For example, it is required that the green coverage rate in cities and the green space rate in newly constructed urban areas should not be less than 35% and 30% respectively.

In China in recent years, large-scale green space development has been conducted as a national strategy for national enterprises such as the Beijing Olympic Games (2008) and the Shanghai World Exposition (2010). The 1st China Urban Forest Forum was held in 2004, where the objectives of China's city forest plan were decided. The short-term goal is to increase the forest coverage rate to more than 30% and green space rate to more than 35% in 70% of all cities so that the public green space per population becomes more than 10m² in cities overall and more than 6 m² in the city centers.

In Beijing in particular, a dispersed cluster-type city structure was proposed in 1959 just after the Beijing Master Plan 1958 was completed. This proposal was mainly made under the influence of the Great Leap Forward, but the following reasons can also be cited. By adopting a dispersed cluster-type city structure, (1) the city structure could flexibly cope with frequent changes in city planning scale; (2) the rapid expansion of continuous urbanization could be halted and green belts kept outside urban areas; and (3) environmental conservation and ecological balance could be promoted. Since the development of green belts ran into difficulties and the area scale of green belts was revised downward whenever the Beijing Master Plan was changed, its scale was reduced from about 300km² in 1958 to 240km² in 1993. However, the detailed plan for green belts has been revised from the middle of 1990's, and the Beijing municipal government has been positively promoting it.

Moreover, Beijing has recently been developing a garden city based on the Singapore model as mentioned in section 4-2 and a forest coverage rate of up to 50% by the Beijing Olympic Games in 2008. In the 662 urban administrative divisions, the total population was 480,000,000 as of 2004. In these divisions, the green space rate was 23.7% and the public green space per population was 6.8m², both are considerably lower than the above-mentioned short-term objective. By accelerating forest maintenance in urban areas and including it in the development plan for urban areas, Beijing is promoting the developing of green belts in urban areas and their environs and the maintenance of forests in outer cities with the aim of creating a safe, beautiful, natural and comfortable residential environment.

Shanghai has been authorized as a "national forest city" by the national government and aims to establish a framework for developing a green city by 2010. In Shanghai, because the green space area was less than 10 hectares before the 1990's, urban redevelopment including the construction of a zoo and large-scale parks was conducted through the 9th 5-year plan (1996-2000, known as the "95"). As a result, 30 parks covering a total of 4,155 hectares were constructed in 2003. Moreover, green space development has been energetically promoted. As of 2004, the green space rate was about 30%, the green coverage rate was about 35% and the green area per population is about 20m². About 1,800 hectares of green space such as parks and promenades are planned to be newly developed along the Huangpu Jiang and the Suzhou River, and the target for the tree planting coverage rate was 36% by the end of 2004.

5. Direction for City Planning Based on Green Space Development

In this study, I have discussed city planning based on green space development while introducing case examples in Asia. Based on the results of both this study and those of Yamamoto (2006), Mike Jenks, Elizabeth Burton and Katie Williams (1996) and Gert de Roo and Donald Miller (2000), I have examined city planning based on green spaces. From these results, I found that there have been two major directions in green-oriented city planning: the establishment of the concept of multi-regional development and the birth of the concept of an environmentally symbiotic city based on the Garden City concept.

First, let me focus on the multi-regional development concept. The Green Belt concept and the Garden City concept, which emerged mainly in the U.K. in the 20th century, merged with the American concept of a park system established in the 19th century to develop multi-regional urban planning in the 1920s. According to Ishikawa (2001), the contents of multi-regional urban planning are clearly shown in the declaration of seven articles in the 8th International Residences and City Planning Conference held in Amsterdam in 1924. Based on the premise that infinite expansion of large-scale

cities is by no means desirable, this declaration adopted three principles: the construction of satellite cities, introduction of green belts, and solution of traffic problems.

Next, let me take a look at the birth of the concept of the environmentally symbiotic city, which evolved from the Garden City concept. Here the emphasis has been shifted from the Garden City concept to the Green City concept based on green space development, which was then influenced by the Beautiful City Movement in the U.S. in the 19th century, giving birth to the concept of the environmentally symbiotic city was born. As mentioned above, Singapore is the representative case of an environmental symbiotic city in a humid tropical environment, and its remarkable characteristics depend on seeking to conserve the environment as a living space for many kinds of wildlife by building a water-and-green network. The term “environmentally symbiotic city” is synonymous with “sustainable city” and “compact city” - the ecopolis which Mike Jenks, Elizabeth Burton and Katie Williams (1996) and Gert de Roo and Donald Miller (2000) have already proposed.

Based on the above-mentioned consideration result, I compare the Green Belt concept and the Garden City concept. As mentioned in section 4-1, the Green belts concept has been mainly adopted to prevent the disorderly sprawling of the metropolitan areas. In garden cities, as mentioned in section 4-2, it promotes the greening of urban areas focusing on city-wide greening activities and green space development as a means of coping with rapid urbanization and development. It is impossible to keep green belts in large cities and the suburbs where the urbanization pressure is tremendously strong, as seen in the cases of Tokyo and Seoul. In such cities and the suburbs, it is essential to control land use severely and adopt garden city concept to conserve urban environment. Especially in Japanese large cities, it is extremely difficult to create new green spaces within the existing urban districts there. It is thus necessary – and important as a way to alleviate the heat island phenomenon and to conserve urban environment – to promote the greening of urban areas, not only public land but also land under private ownership, by means of rooftop and wall gardening of buildings.

6. Conclusion and Future Research

The purpose of this study is to review representative cases of green space development and to view its direction in major Asian cities. For this purpose, comparing major Asian cities, I describe the characteristics of green space distribution and outline the genealogy of urban planning based on green space development. The findings of this study can be summarized in the following four points.

- (1) The Green Belt concept was promoted in Japan in the latter half of the 1930's, South Korea in the early 1970's, and Beijing in China in the latter half of the 1950's. However, the Green Belt was converged into an urbanization control area in Japan in 1968 when the New City Planning Law was enacted, and the lifting of Green Belt control has been performed step-by-step in South Korea in recent years. In Beijing, although the maintenance of the Green Belt ran into difficulties, the detailed plan for the Green Belt was revised from the middle of the 1990's and the Beijing municipal government has positively promoted it.
- (2) After it became independent in 1965, Singapore launched the Garden City Movement to promote green space development to cope with rapid urbanization and development after independence in the latter half of the 1960's. Beijing developed a Garden City based on the Singapore model, and Shanghai is also aiming at the development of a green city. Kuala Lumpur has developed the Lake Gardens, a man-made lake and very large green spaces, and it now aims to construct a new administrative center as a Garden City in a man-made lake.
- (3) The results of previous studies and this study show that there are two major directions in such

green-oriented city planning. One direction is the establishment of the concept of multi-regional development, while the other has resulted in the concept of an environmentally symbiotic city based on the Garden City concept. In large cities and the suburbs where the urbanization pressure is tremendously strong, since it is impossible to keep green belts, it is essential to control land use severely and adopt garden city concept to conserve urban environment.

One possibility for future research might be to examine cases in areas other than Western and Asian countries and to take a view of city planning based on green spaces after determining global trends.

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