

Comparison of Nature Restoration Projects in Urban Areas of Japan, China, and Korea

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ABSTRACT

We examined three nature restoration projects in urban areas of Japan, China, and Korea. A prefectural park(29ha) has been under construction since 2005 on an abandoned industrial site in the southern part of Amagasaki City, Hyogo Prefecture, central Japan. Shanghai Central Park(28ha) was redeveloped in 2002 on a site that was formerly the old downtown in central Shanghai. Seoul Forest Park was developed as a large urban park(116ha) in 2005 in Seoul. All three parks were developed as urban parks by local governments. Citizen involvement is common to all three examples. One of main purposes of the Hyogo prefectural park and the Seoul Forest Park was the reuse of unused or abandoned areas. One goal in Hyogo, Shanghai, and Seoul was to restore the urban ecosystem and preserve the environment. We discussed the meaning of nature restoration in urban areas.

Key Words: Nature Restoration, Urban Area, Park, Heat Island, Citizen Involvement

I. Introduction

After the collapse of the 'bubble economy' in Japan in the 1990s, many Japanese cities experienced an increase in the amount of abandoned and unused land because many large corporations moved their facilities and plants into other developing countries. Although the price of land has recently been rising in Tokyo, the increase in unused areas is still a serious problem for many cities, and redevelopment of these urban areas is a priority in Japan. Some projects in Japan have worked to redevelop some of these areas through restoring natural areas. Although the economic and social circumstances differ, nature restoration in urban environments is also being widely observed in metropolitan areas of China and Korea.

In this paper, we compared three nature restoration projects in Japan, China, and Korea from planning and management perspectives. We examined Amagasaki Chuo Ryokuchi,

a prefectural park in Amagasaki, Hyogo, Japan; Guang-chang Park in Shanghai, China; and Seoul Forest Park, in Seoul, Korea. All three are examples of large urban parks that have aimed to restore nature in metropolitan cities. At last, we discussed whether the projects could restore 'nature' or not.

II. Hyogo Prefectural Park in Amagasaki City

1. Background

Amagasaki is a typical metropolitan city located between Osaka and Kobe. The southern part of the city is in the Osaka Bay area and has been used by heavy industry since the 1960s on reclaimed lands. Presently, there are many abandoned industrial sites in this part of the city.

The government of Hyogo Prefecture has begun imple-

menting the 'Amagasaki Forest Plan for the 21st Century' project, which aims to increase the vegetation cover from 4% to 30% over the next 100 years in the southern part of the city (Hyogo Prefecture 2000). The project will cover an area of about 100 ha and the prefectural park represents the first part of the project. Work on the park began in 2006 at a 29-ha site abandoned by the iron and steel industry.

2. Hyogo Prefectural Park

The park consists of four zones (Figure 1): the Sports Forest Zone, the Broadleaf Deciduous Forest and Grassland Zone, the Lucidophyllous Forest Zone, and the Seacoast Zone. The Sports Forest Zone is a sports park located in the northern part of the site. It was completed in 2000 and is already in use. A Private Finance Initiative was adopted in this part of the park, which is managed by private companies.

A highlight of the park is the natural restoration and afforestation taking place in the other three zones. The stated aim of the Amagasaki forest plan is to afforest the entire area. There was, however, no discussion of what type of forest should be restored. In this plan, the word "forest" may really

be a symbol of a new urban plan. Because the area was tidal flat and coast before reclamation, a forest is not the area's natural state. Nevertheless, the plan stated that forests would be restored in the area, and the prefectural park was designated as the first site. The prefectural government established a special committee in 2004 to design a planting plan for the park, which was chaired by Dr. Tamotsu Hattori from the University of Hyogo.

The planting plan was completed in March 2005 and has three remarkable points (Tsuji *et al.*, 2007). (1) Species planted in the park will reflect the natural and semi-natural vegetation in the southern part of Hyogo. (2) Seeds and seedlings used will be chosen from within the watersheds that the site belongs to and from the Osaka Bay area to avoid adversely affecting genetic diversity. (3) Local residents will be involved in the planting.

The site is located near the end of the Inagawa and Mokogawa Rivers. Thus, plants for the Lucidophyllous Forest Zone were selected from those that grow naturally in watersheds of the Inagawa and Mokogawa Rivers. Some of the vegetation types selected for the Seacoast Zone originate in the Osaka Bay Area.

Because the planting area is 20ha, a huge number of seedlings is needed, and most of the species being planted are not distributed in normal markets. In order to reduce the number of seedlings initially needed and avoid introducing genetic disturbance, a new planting method was used. At first, high trees, shrubs and herbs were planted in core areas, similar to the way they would be distributed naturally. The core areas were 100m² and located at intervals of 200m. Over time, birds will disperse seeds and seedlings will sprout. This type of ecological planting method is unique in Japan.

About 200,000 seedlings will be needed from 2005 to 2015, or about 20,000 seedlings per year. Birds alone will not achieve this magnitude of dispersal—human support is also necessary. A local citizen group, called Ama-forest, was established in 2005. Over the course of a year, members of the group learned basic planting techniques through seminars provided by the government of Hyogo Prefecture. The group now helps produce and plant seedlings on part of the site.

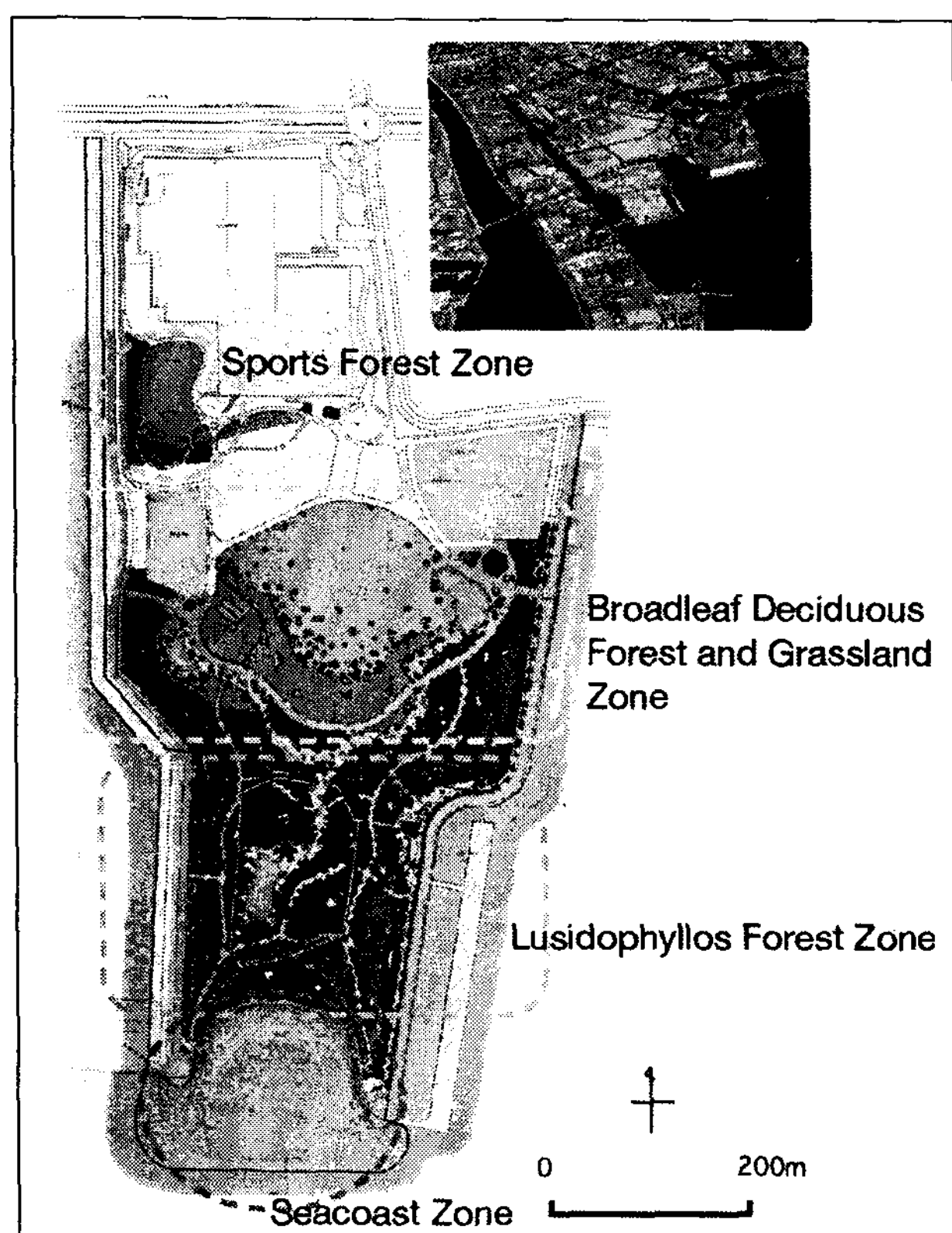


Figure 1. Plan of Hyogo prefectural Park

III. Guang-chang Park in Shanghai

1. Background

Shanghai covers 6,340km² and had a population of more than 17 million people in 2006. The local economy grew quickly in the 1990s, and rapid urbanization has caused many problems. Heat islands have become particularly serious in the city center. The city government began to implement a plan to increase green space in the city in the 1990s. As a result, the percentage of green space increased from 8.2% in 1980 to 22.2% in 2000. The city government drew up a plan, known as the 'Green Open Space Master Plan of Shanghai City', in March 2002. The Planning Bureau, Landscape Management Bureau, and Agricultural Management Bureau worked together on the plan, with the goals of achieving 10m² per person of green open space in the city center and a 30% green coverage for the city as a whole.

2. Grang-chang Park

Grang-chang Park is located in the center of Shanghai, and land prices in the surrounding area are the most expensive in Shanghai. The park site was formerly a mixed residential and commercial area with an underdeveloped infrastructure. The city government designated the area as in need of improvement, especially in terms of deteriorating buildings. The area also was the worst heat island in Shanghai. The government drew up guidelines to improve the city center area in 1998, and after a year of discussion, decided to develop a large park on the site.

An international design competition was held, and a sche-

matic plan by the WAA Institute in Canada was adopted in 1999. The Shanghai Landscape Architecture Design Institute then created an execution drawing (Figure 2). The original planning area was 10 ha, but the plan changed many times over the next year, and the area increased to 28ha. The construction of the first part (7.5ha) of the park began in February 2000, and work was completed in June 2000.

The park quickly became very popular, with many people coming from beyond the 5km catchment area that had been estimated in the plan. The average daytime temperature decreased by 0.6°C compared with the value before construction; thus, the park had also improved the urban climate.

To date, the total cost of the park has been 3.5 billion RMB (52.5 billion yen). The largest expense was in relocating former residents. The government paid from 120,000 to 180,000 RMB/m² for each family relocated. After construction of the park, land and rent prices in the surrounding area increased.

The city has tried a new system to reduce the cost of management. Private companies or associations can apply to maintain plants and trees in a part of the park. If the application is accepted, the companies then help defray the cost of managing these sections of parkland. If they manage more than 3000m² for at least 3 years, they can name the open space and have priority in holding their own events in the park.

IV. Seoul Forest Park

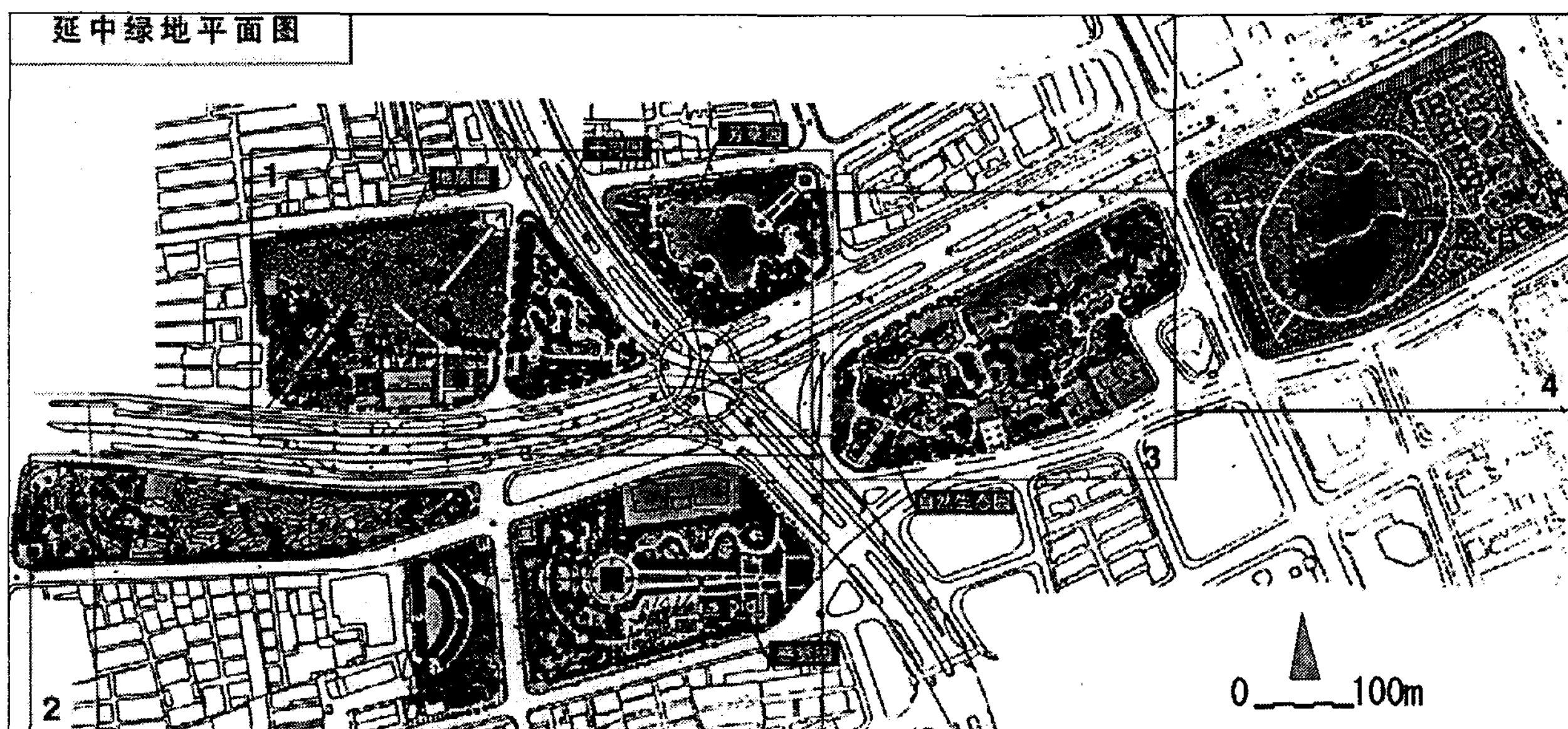


Figure 2. Plan of Grang-chang Park

1. Background

A new act concerning national territory was enacted in 2003 in Korea. The act states that the most basic principle of land management is the sustainable development of land. Conservation and restoration of the natural environment and landscape are defined as important principles. Since the act was put in force, the Korean government and local authorities have executed various plans and projects for the conservation and restoration of natural areas.

There are five core projects in place to help Seoul become 'A Clean, Attractive and Global City'. Two of the five projects concern restoration of the environment and nature: one is the Han-gang Renaissance, which aims to restore the Han-gang River to improve the value of the surrounding land, and the other is 'Clear and Green Seoul', which aims to improve air pollution and create new green spaces.

2. Seoul Forest Park

Seoul Forest Park is located on the junction of Han-gang and Cheonggyecheon Rivers, which was formerly a sandy floodplain in the Chosun Period. River banks were built up and a filtration plant was constructed in 1908, as were an amusement park in the 1940s, a race course in 1954, and a sports park in 1986. At first, a plan called for developing a residential area on the site at an estimated profit of 4 trillion Won (500 billion yen). The city government instead decided in 2003 to develop a large park because there were few parks and open spaces in the central part of the city. To date, the city has spent 235.5 billion Won (30 billion yen) on the project.

The Seoul Forest Park plan is shown in Figure 3. The park plan was developed using five core concepts: ecological design, cooperation with the Cheonggyecheon River project, reuse of existing historical facilities, creation of new recreation opportunities for local residents, and involvement of local residents in the planting. The Cheonggyecheon River project is the most well-known nature restoration project in Korea. The river formerly ran under a highway, like a sewer. Seoul's mayor enacted a bylaw in September 2002 to remove the highway and restore the river as he had pledged to do. After much discussion, the river restoration was completed in November 2005.

Development of the park began in January 2003, and work was completed in May 2005, a few months before the Cheonggyecheon River project was also completed. The total area of

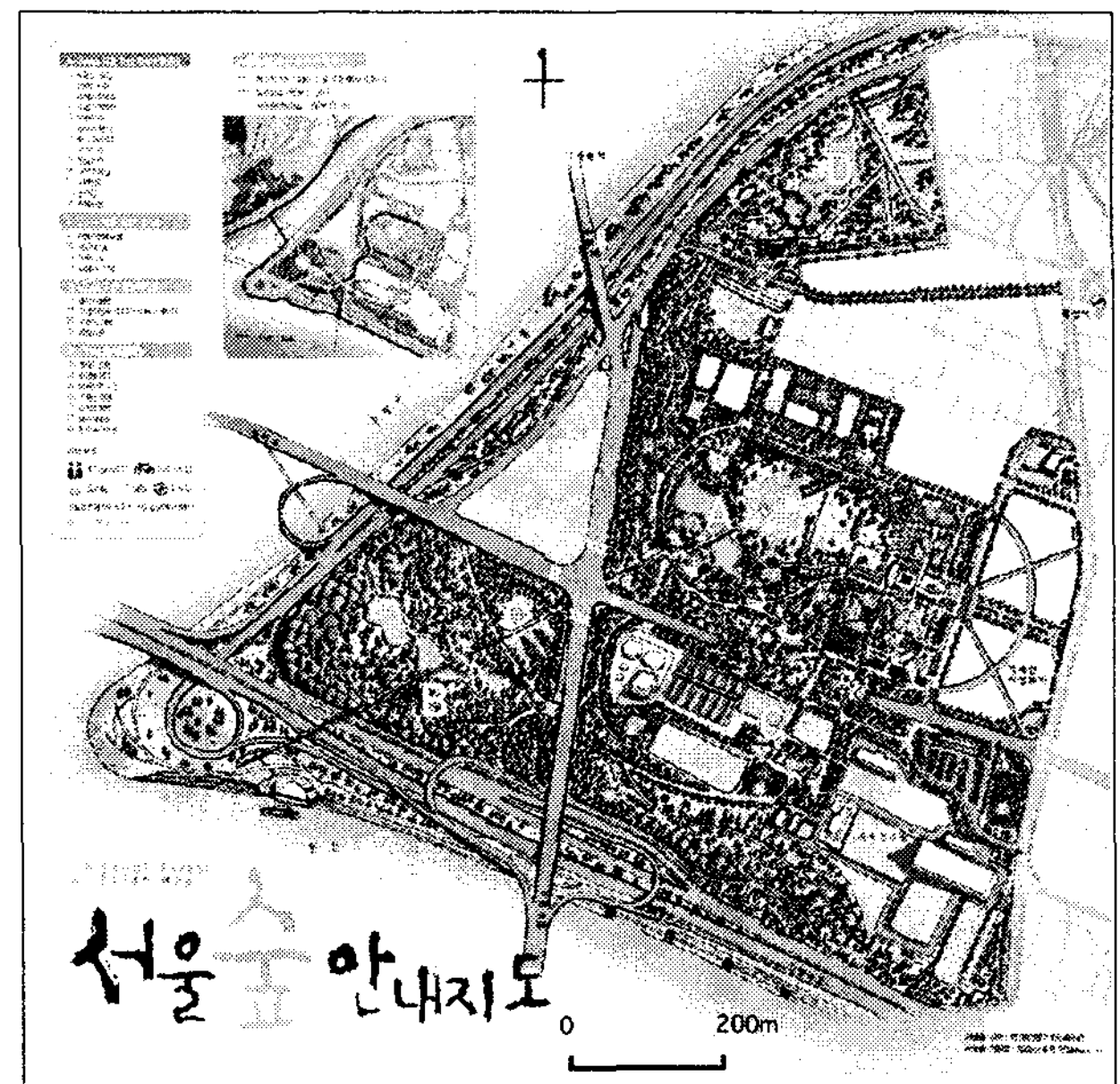


Figure 3. Plan of Seoul Forest Park

the park is about 116 ha, consisting of five parts: the Culture and Arts Park (22ha), the Eco Forest (16.5ha), the Environmental Education Park (8.5ha), the Wetland Park (7ha), and the Han-gang Riverside Park (6.6ha).

Seoul Forest Park is the first Korean park managed by local citizens. The Seoul Green Trust was initially established in partnership with the city. The trust established a fund for park development and management, organized volunteers for planting and park management, and managed environmental education programs. Currently, an affiliated association of the Seoul Green Trust, the Seoul Forest Park Conservancy, manages some of the park's programs and public relations. The trust has collected 5.5 billion Won (682 million yen) from 10 private companies and a huge number of citizens. About 14ha of the park was developed with this funding and with the help of volunteers for planting.

The park has encountered some problems. The original plan called for the city to manage park facilities and for the Seoul Forest Park Conservancy to manage funding and some programs. The city still manages a few programs, and some conflict has arisen over park management. It is not clear whether the Conservancy can secure enough funding and volunteers to adequately run the programs.

V. Comparison of the Three Projects

All three parks were developed as urban parks by local

governments. One of main purposes of the Hyogo prefectural park and the Seoul Forest Park was the reuse of unused or abandoned areas. Guang-chang Park, however, is a redevelopment project in the central part of Shanghai. This difference might reflect economic and land ownership differences between the three countries. China is in a high-growth period, while Japan and Korea are faced with declining populations. Because of public ownership of land, it is possible to redevelop a large park in central Shanghai. It is much more difficult to obtain agreement from former inhabitants in Japan and Korea.

Citizen involvement is common to all three examples. The Japanese and Korean experiences in this regard are the most alike. For example, similar to methods of public involvement in Europe and the United States, Japanese and Korean citizens have been involved both in planning and managing the parks. The Seoul Green Trust helps manage other parks in Seoul, and the Seoul Forest Park Conservancy plays an important role in Seoul Forest Park. The government of Hyogo Prefecture plans to build a similar system for Hyogo prefectural park, but that is an ongoing process and the government sometimes was the primary organizer for the activities of citizen groups. Japanese planners and administrators can learn a great deal from the experiences of Seoul Forest Park.

One goal in Hyogo, Shanghai, and Seoul was to restore the urban ecosystem and preserve the environment. Close attention has been particularly paid in Hyogo to the ecological process. Seeds and seedlings are strictly controlled for planting to avoid adversely affecting genetic diversity. Since the Invasive Alien Species Act was passed in June 2004 in Japan, disturbance by non-native species has attracted public attention. Thus, the planning method for parks and open spaces was also changed to emphasize natural ecological processes. Shanghai's Guang-chang Park plan also addressed ecological processes, but the most important environmental concern was the heat island.

At last, we have to discuss whether the three projects could restore 'nature' or not. As we mentioned, the project area of Hyogo prefectural park was tidal flat and coast before reclamation. The other project areas are also located in the floodplain and wetland. It is clear from an ecological viewpoint that the main type of habitat to restore would not be forest in the three projects. On the other hand, we don't have to forget that these projects have been carried out in the metropolitan cities. People request more open spaces in urban areas of three countries. Even if we can restore wild nature, people could not access it easily and it would be very difficult to maintain it in urban environment. Kowarik(2005) proposed the 'four natures approach' to urban nature. He defined four types of nature: 'first nature' is the 'original' nature, 'second nature' is the secondary nature by agriculture and forestry, 'third nature' is the urban greenery by horticultural plantings and maintenance, and 'fourth nature' the natural development that occurs independently on typical urban-industry sites. Our three projects created neither third nor fourth nature. These forests have been developing not independently, but maintained according to ecological processes. We don't know if they should be called as 'fifth nature', but it is obvious that the future of three projects depends on citizen involvement, because the 'nature' needs ecological maintenance. It should be said that they are a big challenge to create new urban nature with citizen.

References

1. Hyogo Prefecture(2000) Amagasaki Forest Plan for the 21st Century.
2. Tsuji, H., Tamura, K., Hattori, T., Nakase, I., Ichinose, T., Tachibana, T., Hayashi, K, and Doe, H.(2007) Ecological forestation plan in Amagakinomori Central Green Tract of Land. Technical Reports of Landscape Architecture 4, pp. 20-23.
3. Kowarik, I.(2005) Wild urban woodlands: towards a conceptual framework. In Wild urban woodlands (I. Kowarik and S. Körner, ed). Springer, Berlin Heidelberg New York, pp. 1-32.