HYBRIDIZING OLD DOWNTOWN SUWON CITY:
HOW NEW URBAN FABRIC MAY SAVE THE PAST

BY

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THESIS

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ABSTRACT

In response to paradigm shifts of environmental, social and economic methods at the local and global scales, new approaches are required for creating alternative urban models which emphasize sustainability and landscape productivity. The Old Downtown of Suwon City, South Korea, which is encompassed by the Hwaseong Fortress and designated by UNESCO as a World Heritage Site, is currently experiencing challenges between preservation and development – past and future. This thesis investigates sustainable and productive urban tactics to mediate this conflict. The primary focus of these tactics is the re-organization of land use towards more efficient and productive models born of contemporary science, technology, and culture, while simultaneously embracing and preserving key aspects of the city’s heritage.
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Chapter 1: Introduction

Today, all globalized urban areas are going through paradigm shifts of environmental, social and economic processes at the local and global scales. Primary factors provoking global-scale shifts are energy cost and scarcity, destruction of the environment by overconsumption of fossil fuels and natural resources, and global climate change and food security crises which are additional symptoms of the aforementioned problems. At the local scales, issues such as economic decline, re-use of post-industrial areas, increase of urban vacancy and extremely overpopulation, are the primary motivations for new approaches to future planning. Therefore, many theorists and practitioners have suggested and tested futuristic urban models emphasizing sustainability and landscape productivity as strategies for overcoming these challenges.

The Old Downtown of Suwon City studied in this thesis is simultaneously undergoing this type of complicated local and global challenges. Though this region has established a well-defined cultural identity via the Hwaseong Fortress, designated by UNESCO as a World Heritage Site in 1991, it also causes socioeconomic urban conflict between groups that are split between the conservation of the past and development for the future. To prevent modifications to the fortress from reducing its historical and cultural value, the Old Downtown is off limits to redevelopment. On the other hand, urban areas outside Old Downtown are already economically developed. As a result, the heritage site has continuously been isolated from the surroundings and the economic gap between the Old Downtown and the surrounding areas is widening. Indeed the overall plan of Suwon City focuses not on saving environment and energy but on economic development. Natural resources and ecological systems are destroyed by
expanding the urban areas over the city in an energy consumptive pattern of urbanization. As a result, this region is not well-prepared for shifting to more sustainable and productive city forms just yet.

This thesis investigates sustainable and productive urban tactics for the Old Downtown; particularly, re-organizing land use programs towards more efficient and productive models while increasing the utilization of valuable resources such as the region’s historical heritage and natural resources. This will be accomplished through two primary design strategies: 1) establishment of agriculturally productive landscapes and 2) integration of recreational infrastructures.

First, urban agriculture is proposed to establish the productive landscape in order to raise the level of food self-sufficiency in this area, which also increases the economic balance between the Old Downtown and the surrounding areas, and creates greater sustainability in these urban areas.

Second, integration of recreation infrastructures provides new opportunities for resolving the ongoing tension between the preservation of heritage and the need to engage processes of globalization to maintain a competitive economy. Social and cultural values are produced, as a result, by integrating both tourism-based programs and daily-life programs, both of which have developed independently before now.
Chapter 2: **Site Background**

2.1 Site Description

The site for this thesis is the Old Downtown located in the center of Suwon City, South Korea. Suwon City is a satellite city of Seoul, the capital of South Korea, and the provincial capital of Gyeonggi-do. The urban form of Suwon City ranges from the historical to the highly industrial. The city has significant historical heritage centered on Hwaseong Fortress (1794-1796), which was designated by UNESCO as a World Heritage Site in 1997. Hwaseong Fortress is located in the center of Suwon City, and the neighborhood of the fortress is called the Old Downtown. Outside the fortress, many factories and research centers such as Samsung Electronics Complex and Bio contribute to the city’s industrial sector (Figure 2.1).

![FIGURE 2.1 Hwaseong Fortress and the Industrial Areas in Suwon City. First and second photos are taken by author. Third and forth: original image from http://www.google.com](image)

In terms of size and location, Suwon City is approximately twenty miles south of Seoul (Figure 2.2). The number of inhabitants in the city is over one million and the area is approximately thirty thousands acres. Compared to Chicago, Illinois, the area is one fifth that of Chicago while the density is double (Figure 2.3).
In terms of land use in Suwon City, there are four streams crossing the city and several reservoirs. One of these streams extends through the Old Downtown from north to south, providing water for human drinking and agriculture irrigation in the eighteenth century when Hwaseong Fortress was built. However, in the twentieth century, it was seriously contaminated by considerable sewage from the nearby residential and commercial areas. More recently, Suwon City has made efforts to clean up the stream through ecological approaches. There are several mountains north and west of the city which function as natural boundaries with adjacent cities. However, such green spaces have been gradually converted to urban areas in response to increasing urban demands. Consequently, it is threatening natural environment system of the city. Additionally, total area of rice paddy fields have been reduced and very little
of rice paddy fields remains on west of the city comparing to most areas outside the Hwaseong Fortress as agricultural fields in the eighteenth century (Figure 2.4).

![Hydrology and Land Use of Suwon City](http://www.ngii.go.kr/index.do)

**FIGURE 2.4** Hydrology and Land Use of Suwon City Based on the Numerical Map of Suwon City from National Geographic Information Institute

The Old Downtown is situated in the center of Suwon City. The size is approximately 1.1 sq miles (704 acres). Residential areas occupy almost half of the current land use. There is a linear open space along the Hwaseong Fortress which varies in width from 60 to 760 feet. Some parts of the open space are used for public parks and some remain as small forests. Two commercial blocks are built along the Suwon Stream which is one of the water bodies crossing the city. There are several ceremonial places like the Hwaseong Haenggung(temporary palace), the historical museum and the parade court (Figure 2.5). Consequently, the composition of the Old Downtown is a heterogeneous mix of elements from the past and the present.
FIGURE 2.5 Current Land Use of Old Downtown in Suwon City
Based on the Numerical Map of Suwon City from National Geographic Information Institute
http://www.ngii.go.kr/index.do, modified by author

2.2 Hwaseong Fortress: Historical Meaning and its Function

The early history of the Suwon area occupied by inhabitants began after the Paleolithic period (700,000 years ago). In the late eighteenth century, Suwon City was built as the first plan-based city by King Jeongjo of the Joseon Dynasty in Korean History, and the Hwaseong Fortress was built in that period. Situated in the center of Suwon City, its construction lasted twenty-eight months from 1794 to 1796. The fortress consists of several structures including
four gates – one on each of the north, south, east and west sides – and a wall encompassing the Old Downtown and other secondary structures for observation and defense. The whole wall is 3.57 miles (5.74 kilometers) in length and 13 to 20 feet (4 to 6 meters) in height (Figure 2.6).

**FIGURE 2.6** Aerial View Photo and Site Photos of the Hwaseong Fortress
First: original Image from Naver Map http://map.naver.com/, modified by author
Second to forth photos are taken by author
This fortress was constructed for political and military purposes like many fortresses of this era. The Suwon area was located 20 miles (30 kilometers) south of Hanyang (Old name of Seoul) in order to keep the capital safe from southward attacks. After construction, King Jeongjo housed the remains of his father in Suwon City. Crown Prince Sado, father of King Jeongjo, was killed by engaging in political party conflict, and Jeongjo visited the city often as a result.

Additionally, King Jeongjo took part in a birthday party of his mother and other major activities at that time. This was partly because King Jeongjo had additional big ideas for the city such as an era of new capital in order to eradicate political party conflict and strengthen his political position. The center of his new capital was Hwaseong Fortress. Though his dream was not to come true due to his sudden death, Suwon City remained the first plan-based city in Korean history. One of the aims for constructing this fortress was to construct the new capital in the Suwon area. Contrary to other fortresses built on high hill or mountains for military defense, the Hwaseong fortress was built on extensive plains for supporting commerce and agriculture as well as military defense for a self-sufficient city. As for the technique and materials of the fortress, the wall was made of brick, which made maintenance work easier than for stonewalls. Practical building equipment, such as pulleys and cranes were introduced for the first time, which made the construction period shorter than in the past.

Although Suwon City was introduced to commercial industry in the early eighteenth century, most people were engaged in agriculture at this time. Therefore, King Jeongjo made a 57 acre reservoir called Manseokkeo and experimented with various agricultural systems. One such experiment was the multi-functional management of land use with military training and
agriculture on the same field. Utilized in all four seasons - seeding and cultivating during spring and summer, and harvesting and military training during fall and winter – the idea was to maximize the efficiency of limited landscape space. Additionally, the fastest transportation in this period was horse which meant people would travel from city to city to acquire supplies to meet their needs for many days and nights. Thus, the city was expected to provide most of people’s needs similar to a self-sufficient city. In this way, the period of the early eighteenth century could be referred to as a fully ‘localized’ era.

2.3 Present Urban Conflict

FIGURE 2.7 Urban Conflict of Suwon City

Today, Suwon City is facing tension urban conflict between the preservation of the past and the development of the future (Figure 2.7). Hwaseong Fortress (1794-1796), the significant historical feature of the city, is located in the center of the Old Downtown, and due to the limitation of development to protect the fortress, this area is experiencing economic decline. Consequently, most buildings located in the Old Downtown remain in their original condition with three to four floors. Traditional markets which are difficult to find in other cities in Korea today, are still open for business and many traditional ceremonies related to the Hwaseong Fortress are performed across the Old Downtown. On the other hand, Suwon City is
economically developed and has multiple urban development goals for the future. Many districts created by the new development policies have been constructed in various parts of the city. In response to these developments, many people begin to move in and live at the expense of natural resources and historical areas. Many parts of the nearby mountains and remaining agricultural fields are transformed to urban development districts. As a result, the heritage site has been isolated from the surrounding urban areas which continue to expand their territory without adequate forward planning. In the twenty-first century, reconciliation and coexistence between the past and the future becomes the primary task for the future.
Chapter 3: Theoretical Framework

3.1 Heritage Management

Considering the issue of tourism as it applies to urbanism, Nezar Alsayyad states his idea of manufacturing heritage and consuming tradition of the twenty-first century in his essay, “Global Norms and Urban Forms in the Age of Tourism: Manufacturing Heritage, Consuming Tradition” in the book Consuming Tradition, Manufacturing Heritage (2001). Alsayyad opposes conservative views towards heritage, which argue for the preservation of cultural values. Instead, he considers the function of travel and tourism in an economically competitive world as a strategy for economic survival in poor and rich countries. Without considering the authenticity of the heritage, cultural and historic heritage is manufactured and manipulated deliberately in relation to economic and political issues to benefit the tourism industry and national identification. He illustrates three types of manufactured heritage for commercial consumption. The first type is a dream landscape such as the ‘Wizard of Oz’ or ‘Disneyland’. The second is a re-made real historic site with a true history because the original had become marginalized. The last type is an environment to exploit cultural heritage like the city of Las Vegas. The cultural and historic reality is of secondary concern and the goal is to make tourists consume it in the built world. Alsayyad suggests that heritage and tradition are not only objectives for preservation - they are continuously generated and invented for the satisfaction of contemporary political and consumer interests.

As illustrated above, his general idea is that, beyond preservation, historic heritage could be consumed and invented in order to fulfill a culture’s contemporary demands. This argument supports the direction of my research, which is to transform the Old Downtown
including its historic heritage - to a hybrid urban form while maintaining a strong connection with the past. In this manner, the heritage site preserved for the tourism resources could be manipulated as multi-functional spaces for local peoples’ recreation and enhancement of landscape productivity; consequently, it could establish a new recreational infrastructure by integrating existing recreation programs and raise the level of food self-sufficiency by introducing urban agriculture in the Old Downtown, which is a new approach to consume our heritage site.

3.2 Resilience and Infrastructural Urbanism

In the twenty-first century many practitioners and theorists offer opinions about how to re-organize and create urban systems for flexibility and resilience in the face of rapidly changing circumstances.

Julia Czerniak, in her essay, “Legibility and Resilience” in the book Large Parks, defines resilience as “the ability of a system to adjust in the face of challenging conditions”. An ecosystem’s resilience is a useful tool for planning, designing and managing large parks or other complex landscape systems (Czerniak, 2007). James Corner refers to a strategy for contemporary landscape, and cities, that is a dynamic, long-term process. Either too strict or too loose strategy and a strategy is unworkable. Corner explains that a resilient system must be both robust and open. In the landscape, resilient processes are essential for the creation of contemporary landscape design and planning strategies in order to adapt to considerable environmental challenges in a dramatically changing world. (Corner, 2004).
The notions, referred to above - that landscape systems should be planned based on an open process for adaptation to contemporary challenges, correspond to seven propositions about infrastructural urbanism offered by Stan Allen. Allen argues that contemporary infrastructure should be flexible and anticipatory - adjustable to shifting urban conditions. Additionally, it should function for accommodating local specificity (Allen, 1999). Allen’s ideas reinforce other more recent ‘productive’ urban models, which are proposed as new approaches to overcome contemporary challenges such as that of the Old Downtown in this thesis. Such urban models are accomplished by converting current urban infrastructures to productive ones based on long-term processes. In this thesis, such adaptive processes as landscape productivity and a new approach to the preservation through hybridization of historical, cultural and economical values are produced in practice.
Chapter 4: Project Proposition : Towards Productive Landscape

In the industrial era, people have continuously manufactured products while consuming natural resources. In many instances such products were consumed in the pursuit of what appears to be increasingly unsustainable forms of urban lifestyle. Eventually, such consumption results in the depletion of environmental resources. This project proposes a model of ‘Productive Landscape’ as an alternative urban planning concept in order to balance our consumptive lifestyles with more productive ones – a necessary shift if we are to make urban areas sustainable and productive in the future. ‘Productive Landscape’ is a plan to produce food by introducing agricultural systems. To create such a productive landscape, consumptive urban fabrics are converted to productive ones while saving and re-utilizing existing environmental and cultural resources. To accomplish this ‘Productive Landscape’, an urban agricultural system is proposed, which provides both economic and ecological values via re-organizing land use and creating new programs. Beyond food production, this plan for the Old Downtown will further develop social and cultural values in conjunction with the Hwaseong Fortress. The linear open spaces built along the fortress to preserve its original features are transformed to new recreational infrastructures by expanding their area and integrating tourism-based programs with recreation programs for residents (Figure 4.1).
FIGURE 4.1 Paradigm Shifts of Lifestyles and Heritage
Chapter 5: Data Collection and Analysis

In this study, urban agriculture and a new way of engaging heritage are proposed as sustainable, productive landscapes. This process is predicated upon the analysis of two key issues of the Suwon metropolitan area. First, various agricultural research topics such as food security, Korean daily intake amounts and estimates of the food self-sufficiency of the Old Downtown are conducted. Second, existing recreation programs and their networks are researched in order to understand the relationship between recreation and historical heritage for future planning efforts.

5.1 Urban Agriculture

5.1.1 International Food Security and National Status

The Food and Agriculture Organization (FAO) produces a food security ranking of thirty Organization for Economic Co-operation and Development (OECD) countries by their food self-sufficiency rate. Ranked first on this list is France, which secures almost 3.3 times more food than is required for their needs. Germany is ranked fourth place with approximately 1.5 times its needs produced, and the United States is ranked ninth - producing 1.25 times more than required. South Korea ranks twenty-sixth with a self-sufficiency rate of only 25 percent (Figure 5.1). This suggests that Korean agriculture markets and its overall economy are intensely affected by fluctuations in the international grain supply – a fact that has been demonstrated over the last few years (Figure 5.2). Since food security is increasingly a matter of national security for many countries, South Korea should attempt to maximize its food self-sufficiency as
much as possible in order to achieve a more economically, environmentally and socially sustainable future.

**FIGURE 5.1** Global Food Security presented by FAO  
Based on FAO Food Security Information, modified by author

5.1.2. The Typical Korean Diet

Though many parts of their daily diet are increasingly westernized, Koreans still consume considerable amounts of vegetables accounting for 29.4 percent of their total daily intake. The staple food of Koreans is rice, which accounts for 28.3 percent of the national diet along with other grains such as potato, sweet potato and soybean. Intake of fruits is 17.9 percent, and when all these figures are combined, we see that vegetables, grains and fruits constitute a majority of Korean’s daily intake - 75.6 percent to be exact (Figure 5.3).
5.1.3. Regional Capacity for Feeding People

The total area of Suwon City was divided into commercial, agricultural and military areas after construction of the Hwaseong Fortress in 1794 to 1796. Most commercial and residential areas were placed in the inner fortress and areas outside the fortress were used primarily for agricultural and military purposes. However, in the city’s post-globalization era, most farmlands were transformed to residential, commercial and industrial areas to accommodate increased population. Accordingly, only 3,060 acres remain as rice paddy fields versus approximately 18,500 acres in the eighteenth century. This thesis proposes that the Old Downtown should be transformed into a productive urban fabric for establishing a greater degree of food self-sufficiency for Suwon City residents. This section demonstrates how many residents could be fed by remained agricultural lands

Assuming the average South Korean adult essential daily energy as 3,000 calories, the number of people fed by an acre field growing rice, sweet potatoes, corn, apples and Korean cabbage have been calculated by the Korean Rural Development Administration (RDA). According to the above calculations, 8.2 people can be fed per acre when harvesting rice. An acre of sweet potato can feed 10.2 people, and an acre of corn can feed 5.3 people. Approximately 3,065 acres remain in agricultural production in Suwon City. Based on these calculations, the total number of Suwon residents fed by this agricultural field can be estimated. For example, assuming rice production in the designated areas, approximately 25,300 people can be sustained. This estimate is achieved by multiplying the number of people fed per acre (8.2) by the agricultural land available for production of this sort (3,065 acres). The total population of the Old Downtown is approximately 20,000, thus, the ratio of total number fed to
total population of Suwon City is 2.3 percent. Using similar calculations, food production for other crops and acreages can also be calculated. By comparing these rates with the average Korean food self-sufficiency rate (25.6%) produced by the FAO, one clearly sees that the food production rate in Suwon City is much less than what is required by the average Suwon resident.

![Figure 5.4 Regional Feeding Capacity Based on Korean Diet Information and Food Productivity presented by RDA](http://www.aftn.co.kr/detail.php?number=11971&thread=66, calculated by author)

5.1.4. Feasibility Test

As calculated above, the food productivity of the Old Downtown compared to what is required by its population is negligible. In order to enhance the food productivity of this area, a feasibility test, which calculates the area of agricultural land required to achieve definitive food self-sufficiency for all residents of the Old Downtown, is conducted in this section. According to research done on the Korean Daily Food Intake researched by the Korea Centers for Disease Control and Prevention (KCDCP), the amount of daily Korean grain intake is 283 grams which produces 425 calories. Assuming adult daily essential energy as 3,000 calories, one acre of rice can feed 8.3 people. If people take 425 calories from the rice paddy fields, 58 people can be fed by one acre. Since the population of the Old Downtown is 20,000, the amount of land required for producing such grains is approximately 345 acres, which is 49.7 percent of the whole town. Using these methods, we find that the land required for producing vegetables and fruits is 48 acres and 130 acres respectively (Table 5.1).
From these calculations, we find that the total amount of land required to achieve self-sufficiency for this portion of the population through urban agricultural methods is 76.1 percent. (Figure 5.5)

<table>
<thead>
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<th>Adult Daily Essential Energy</th>
<th>3000 cal.</th>
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<td>Area of Old Downtown</td>
<td>1.1 sq.miles (704 acres)</td>
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<td>Population</td>
<td>20,000</td>
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<td><strong>TABLE 5.1 Quantitative Data for Estimates of the Food Self-sufficiency</strong></td>
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<tr>
<td>Based on Korean Diet Information and Food Productivity presented by RDA <a href="http://www.cdc.go.kr/">http://www.cdc.go.kr/</a> , calculated by author</td>
<td></td>
</tr>
<tr>
<td>Korean Daily Intake (g)</td>
<td>Cal.</td>
</tr>
<tr>
<td>Grain</td>
<td>283.0</td>
</tr>
<tr>
<td>Vegetable</td>
<td>287.5</td>
</tr>
<tr>
<td>Fruit</td>
<td>175.7</td>
</tr>
</tbody>
</table>

**FIGURE 5.5** Feasibility Test for Food Self-sufficiency

5.2 Current Recreation Infrastructures

In the Old Downtown, several tourism-oriented programs are centered on interactions with the Hwaseong Fortress. Heritage trails are built along the wall of the fortress that connect all historical structures. Additionally, the Hwaseong Haenggung (temporary palace) has been preserved and its original features are open to the public. Many historical ceremonies are performed here in order to commemorate the Hwaseong Fortress.

As for the programs of daily life, several small public parks are built on linear open spaces which are constructed along the Hwaseong Fortress to protect its original structures.
The heritage trail also runs through these open spaces. These spaces function not only as a buffer to protect the fortress against surrounding urban developments, but also as public parks. Additionally, there are a few playgrounds in school zones and bike roads built along main roads (Figure 5.6).

![Map of Suwon Recreation Infrastructure]

**FIGURE 5.6** Current Recreation Infrastructure of Old Downtown
Based on Suwon Recreation Information [http://eng.suwon.ne.kr/], modified by author

However, both tourism-based programs and daily-life programs are developed independently and in a mono-functional way for purposes like sightseeing, celebrating and exercising. The heritage site is primarily occupied by touristic activities and, consequently, local residents have largely been excluded from the benefits of this cultural amenity. Therefore, further planning efforts should work to integrate these recreation infrastructures in multi-functional ways open to both tourists and residents.
Chapter 6: Design Process

6.1 Three-dimensional Land Use

As shown in the above calculations, this thesis proposes that 76 percent of the land in the Old Downtown would need to be converted to urban agriculture to achieve food self-sufficiency for the approximately 20,000 Suwon City residents. In addition, currently existing programs including residential and commercial areas and school zones should also be maintained for 20,000 residents and over 1.3 million tourists that visit the site each year. Future planning should also work to preserve historical and natural resources such as the Hwaseong Fortress, Hwaseong Haenggung (temporary palace), Mt. Paldal and the Suwon Stream. However, it is impractical to attempt to satisfy all these parameters via traditional urban planning methods. Instead, meeting the parameters laid out in this thesis requires a radical re-organization of urban, ecological, and social fabrics (Figure 6.1).

FIGURE 6.1 Current Land Use and Newly Required Land Use
6.2 Design Tactic: Stacking and Scraping

The primary design tactics implemented in this study are ‘stacking’ and ‘scraping’ in order to expand the land in a three-dimensional way. The basic concept involves condensing programs at several spots (stacking) and introducing new programs on the newly voided land that is cleared (scraping, Figure 6.2). This method can maximize the efficiency of the land by expanding land horizontally and vertically beyond traditional land use strategies. Before applying this design tactic in the Old Downtown, it should be determined which programs will be moved to the stacks and which will remain or be ‘preserved’ as productive landscapes.

At first, valuable urban areas and artifacts need to be determined for preservation. Examples are the Hwaseong Fortress, Hwaseong Haenggung, Mt. Paldal and the Suwon Stream, all of which contribute to the enhancement of cultural and environmental values in the town. Residential and commercial areas and school zones are to be removed and stacked since they are regarded as relatively less valuable. Though these programs are moved to new places in new forms, it doesn’t mean they are entirely without value. People lived in these areas while building towns in this area and before constructing the Hwaseong Fortress. The current urban structures have been formed by the passage of time and are not without historic and cultural meaning. However, in considering a long-term shift as is proposed in this thesis, urban forms are transformed continuously in order to meet people’s contemporary lifestyles given the various contextual conditions of any era. Today, in response to the global challenges by caused primarily by the overconsumption of resources, it is time to begin raising landscape productivity for the future. Accordingly, the scraping and moving of relatively invaluable programs is the process for achieving such productive and sustainable urban models.
Productive programs such as urban agriculture and new recreation infrastructures are created on newly void land after scraping valueless urban fabrics (Figure 6.3). These newly created urban forms - condensing programs and proposing new productive programs - are referred to as Urban Ground when they are horizontal urban systems and Urban Piles when they are vertical urban systems.

![Condensing Programs](image)

**FIGURE 6.2 Conceptual Process of Design Tactic**

![Transformation of Urban Fabrics](image)

**FIGURE 6.3 Transformation of Urban Fabrics based on Design Tactic**

### 6.3 Generation Systems

#### 6.3.1 Vertical Production by Urban Piles

Newly constructed urban piles are the model for maximizing energy efficiency, saving natural resources and producing food. Programs stacked vertically make the physical distance...
between them shorter – simultaneously improving transportability and creating energy saving effects. Additionally, on each floor, harvesting systems as forms of terraced farms and vertical farms are proposed to produce food, as a result, residents can be supplied with considerable amount of produce. Storm water is harvested from roof gardens and treated through purification systems in the basement along with grey water from residential and commercial functions. This water is then recirculated in order to provide water for farm irrigation and toilet flushing. Moreover, green space in the urban piles such as roof gardens, and vertical and terraced farms help moderate extremes in interior temperature fluctuations from season to season. As a whole, these systems contribute to achieving sustainability and landscape productivity (Figure 6.4).

**FIGURE 6.4 Conceptual Urban Piles**
6.3.2 Horizontal Production by Urban Ground and New Recreation Map

Urban Ground is created on newly void land as a productive model for establishing urban agriculture and new recreational infrastructure. Most open spaces are allotted to urban agriculture for food production in order to feed the entire residents of the Old Downtown. Terraced farms situated on the foot of Mt. Paldal are also planned to raise the level of food self-sufficiency and maximize the efficiency of the limited landscape resource. To supply fruits, an orchard along the Suwon Stream is built. These agricultural fields are associated with other programs such as heritage/recreation trails, outdoor activity places, the city’s historical heritage and newly built urban piles. Agricultural irrigation is supplied from the stormwater/greywater system of the urban piles and from the Suwon Stream which runs through the town. Wetlands proposed along the Suwon Stream work to purify water polluted from contact with agricultural lands, recreational landscapes and urban piles. Integration of several types of urban agriculture, recreational and environmental systems is the ultimate purpose of implementing the Urban Ground system (Figure 6.5).
For the creation of new types of recreation infrastructures, a ‘recreation zone’ is created in the Old Downtown. This circumnavigates the entire town and integrates current tourism-based programs with other recreation programs for residents. This helps to establish the recreation system as a self-sufficient model at the local scale. The linear green spaces, which were constructed along the fortress as protective buffers, expands for building new outdoor activities such as jogging, strolling, biking, and outdoor gyms. The heritage trail and other historical ceremony places remain intact for both tourists and residents to visit and study or celebrate the area’s rich history. Eventually, this landscape strategy expands beyond the Old Downtown as a unique green infrastructure interconnecting with other such metropolitan systems (Figure 6.6).
6.3.3 Gross Production

The following diagram shows one possible scenario for the amount of production that could be achieved by the Urban Piles and Urban Ground approach. Horizontally, 4.4 percent of land is used for transportation which is the same as current infrastructure, 8.6 percent of land is used for Urban Piles condensing various programs such as residential, commercial areas and school zones. 1.6 percent of land contributes to heritage sites and the newly created recreation zone. The rest of the land uses 87 percent, consisting of existing natural resources like Mt. Paldal and Suwon Stream, newly built wetlands, agricultural fields, orchards and terraced farms for food production.

In the vertical land use system, 42.5 percent of the urban piles are used for traditional residential programs, 21 percent are used for commercial areas and 4.5 percent are used for school zones. These proportions are calculated based on the total size of current land use:
residential, commercial areas and school zones, and the size of each floor of urban piles. These urban piles also produce food via vertical and terraced farms and green houses situated on the first floor, which count for approximately 20 percent of the total area of urban piles - 12.5 percent as green house and 8 percent as vertical and terrace farms (Figure 6.7). This both vertical and horizontal land use provides food for sustaining residents of the Old Downtown and new recreational infrastructures for residents and tourists while maintaining existing urban programs.

FIGURE 6.7 Gross Productions of Urban Pile and Urban Ground
Chapter 7: Reshaping Old Downtown

7.1 Master Plan

Most open spaces in the Old Downtown are planned as agricultural fields for food production. Linear spaces constructed along the fortress circumnavigate the entire town and provide recreational programs - outdoor activities such as jogging, strolling, biking, outdoor gyms, and historical ceremony places. These are in addition to the current historical landmarks which are the Hwaseong Haenggung (temporary palace), the historical museum and the parade court. Suwon Stream, running across the Old Downtown, supplies agricultural irrigation to orchards and agricultural fields, and the water is eventually purified by wetlands constructed close by.
FIGURE 7.1 Master Plan of the Old Downtown

1. Urban Farm
2. Terraced Farm
3. Orchard
4. Suwon Stream
5. Wetland
6. Mt. Paldal
7. Recreational Trail
8. Outdoor Gym
9. History Ceremony Place
10. Hwaseong Fortress
11. North Gate
12. South Gate
13. East Gate
14. West Gate
15. Urban Piles
FIGURE 7.2 Photomontage of Urban Ground and Agricultural Fields

FIGURE 7.3 Photomontage of Urban Pile and Vertical Farm

FIGURE 7.4 Photomontage of Integrated Recreational Programs
7.2 Sections

7.2.1 A – A’ Section

This section primarily shows terraced farms situated on the foot of Mt. Paldal and extensive agricultural fields. These terraced farms are constructed while utilizing natural slopes of the mountain. Irrigation for terraced farms and agricultural fields is mainly supplied by storm water and grey water, which are harvested and purified in urban piles.

FIGURE 7.5 Section of Terraced Farms and Agricultural Fields

7.2.2 B – B’ Section

This present the typical section of orchard built along the Suwon Stream and newly constructed wetlands. The stream supplies agricultural irrigation to orchard and nearby agricultural fields, which is circulated and purified by wetlands.
7.2.3 C – C’ Section

Hwaseong Fortress, a heritage trail and outdoor gyms are located in the recreation zone, which shows their networks and variety of recreational programs.
Chapter 8: Conclusion

This thesis explores how globalized cities could be transformed to more sustainable forms by achieving greater landscape productivity. In the future this is likely to be a critical task for all globalized cities to manage.

Additionally, tensions will always be present in such cities between cultures and traditions of the past and the demands of the present and future. This tension is foregrounded in Suwon City due to the presence of the Hwaseong Fortress which is highly valued from an historical perspective. Its existence represents the primary conflict for future planning of Suwon City which is between preservation and development – past and future.

In this thesis, sustainable and productive urban tactics are experimented with to resolve this tension. Two primary design strategies of agriculturally productive landscapes and integration of recreational infrastructures are proposed. Based on the cultural and historical values of the city and its residents, some current urban programs are erased and moved, and new programs are introduced as Urban Piles and Urban Ground.

One could raise questions about the feasibility of such a proposal while considering the economical, political, and cultural issues. It would take considerable time to experiment or project such feasibility. Despite such challenges, this study could contribute to the establishment of a sustainable urban scenario for other globalized cities going through similar tensions by adjusting the degree of the urban fabric’s conversion based on each urban condition. If this scenario is experimented with a resilient and long-term way, this would be a highly valuable study and widely applicable to other cities for accomplishing sustainable urban models.
References


