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Suggestion of the necessity of urban redevelopment combining cooperative planning theory and urban form characteristic analysis

Abstract: Cities that have been created for thousands of years have different characteristics depending on the culture, environment, and race of each city. It is impossible to control such complex and diverse cities with a single rule or framework. Nor can there be any supreme rules for a good city. Therefore, it can be said that it is most important to clearly understand the characteristics of each city and to make a plan that emphasizes the strengths but complements the weaknesses. The ultimate goal of urban redevelopment is to improve the functions of the city, provide a better environment, and improve the quality of life of city residents. Therefore, a more practical and active approach that reflects the characteristics of the city and combines social and physical approaches is needed.

Keywords: Urban Morphology, Governance, Urban redevelopment, Quality of life, Busan, Yeongdo.

Introduction

Urban redevelopment is a process of urban design in which part or all of a deteriorating city is physically and physically redeveloped to restore its functions socially and economically. Urban redevelopment involves destroying and demolishing the devastated slums in the existing city area, then creating a new site, selling it, and then building it. In the process, the existing small-scale residents were faced with involuntary migration, and after the redevelopment, the middle class moved in, raising social problems. In addition, in the past, urban redevelopment has been carried out in a way that all buildings in the area are demolished and newly developed. As a result, there are frequent cases in which the significance of the physical elements and the spatiality and historicity of the space are lost. Therefore, what is the ultimate purpose of urban redevelopment in the ever-developing modern society, what has been overlooked in urban redevelopment so far, and what is the direction of urban redevelopment suitable for the increasingly complex and diversified modern city? Therefore, through this study, we intend to suggest a direction for redevelopment that can positively influence the improvement of the quality of life of residents by considering the morphological characteristics of Yeongdo and suggesting a direction for urban redevelopment in which residents can participate.

Research method and boundary

Background

The spatial scope of this study is the area for redevelopment of an aging shipyard in Yeongdo, Busan, and the residential and commercial areas. Yeongdo, an island belonging to Busan Metropolitan City, performed the role of a natural breakwater in the original city center and an evacuation anchorage port due to its location. Before the opening of the port, it was a secluded island, but after the port was opened, the Japanese used it for private ownership and military purposes.

After liberation, it served as a hinterland support area along with the original downtown, and became the center of Korea's fishery, logistics, and shipbuilding industries. It is also the birthplace of the first modern shipbuilding industry, the first drawbridge, the first cathedral, and the first dock of the shipyard. However, in recent years, it is experiencing a period of stagnation due to the decline of the existing downtown area, and it is being neglected in the revitalization and planning of the new original downtown area implemented by Busan City. Accordingly, new urban regeneration and reconstruction plans are being implemented within Yeongdo but there are no results that positively affect the quality of life of city residents or generate economic benefits. It is considered that the establishment and implementation of an urban redevelopment plan that fully considers the characteristics of the city is essential.

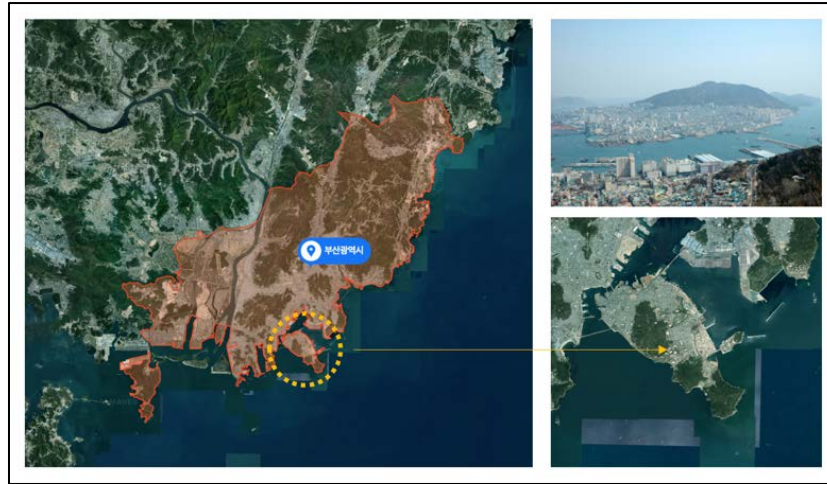


Figure 1. Research Area, Young Island
Source: unknown.

Research theory

Urban form theory

Urban planning is a field that deals with spatial organization, management of land and property rights, and provision of urban public services. Also, in order to understand urban planning, it is necessary to study the history of urban forms from the Greek and Roman times, through European city-states, to large cities in industrial or post-industrial societies.(Munford 1961) This is because urban planning is the act of managing the spatial organization of an urban area by considering all of the city's products, physical form and form, and topography.(Healey 1997) In this context, the shape of a city can be said to be an important physical factor to know the characteristics of the city, and it is thought that urban redevelopment for development only can affect the loss of the city's historicity and identity. Morphology has been interpreted differently in different continents, languages, and cultures over a long period of time, and as it moves from one field to another, a gap has been created between different interpretations. Therefore, morphology is called typology, typology, etc. by scholars in various fields of study. In this study, the morphological characteristics of the harbor space were analyzed based on the methods of typomorphology that have been studied by geographers.

Typological morphology is a field derived from the study of typical spaces and structures, and is a study of urban forms. Morphological theories are largely represented by the Versailles School of France, the Conzen School of England, and the Muratorian School of Italy. Conzen's morphological theory analyzed cities in a flat manner, and his theory can be said to be a pioneering urban morphology theory based on the theories of other scholars. Also, the urban morphology theory of the Versailles School is the only school that combines the analysis results of cities with the urban design theory. In particular, it was argued that, for the Versailles School, the urban form does not simply mean a superficial structure, but contains the locality, spatiality, and identity of the space.

Table 1. Urban morphology theory

| School of morphology | Origin country | Core contents |
|----------------------|----------------|---|
| Saverio Muratori | Italy | It is, defined that the urban form and urban structure are the sum of many ideas and sun tag activities expressed in the existing building and its surrounding space. Judging the typological process by urban form and structure as a tool to understand urban construction. Research on urban form is an essential preparatory stage for urban design |
| M.R.G. Conzen | England | Excluding the normative dimension of planning and design Focus on the process of creating urban forms Emphasis on the importance of analyzing the pattern of urban plan, building organization, site and building use. Focused only on the city plane |
| Versail | France | The only school that combines urban analysis results with urban design theory Criticizing modern methods of construction and house production Claims that the spatiality of urban space is lost and a space without diversity is produced due to uniform buildings and cities |

Source: unknown.

In this study, based on the morphological theory of the Versailles School, urban redevelopment in modern society is not an action to produce a uniform space, but a place that can have a positive effect on.

Pasty Healy's theory of Collaborative Governance

Her theory of cooperative governance began with the perception of planning as an interactive process. Later, the cooperative governance theory was established by understanding this plan as a governance activity occurring in a complex and dynamic institutional environment formed by broader economic, social and environmental factors. He also focused on the development of plans and policy alternatives related to maintaining and enhancing the quality of places and domains. Judging from the background of the birth of these theories, the cooperative governance theory cannot be said to be a simple reference object in the study of urban planning and urban design. This can be said to serve as a basic theory for rationally and correctly establishing and implementing the plan.

In fact, in the 20th century, physical development plans and rational plans had a great influence in structuring planning discourse and practice. In other words, the implementation of spatial planning in the cooperative governance theory is part of the governance relationship for a country, region and place. Implementation of planning for space is not a pure, value-neutral activity. Planning and execution is very political, carries values and expresses power. For this reason, it may be impossible to establish and implement a rational plan due to power. However, he argues that planning and implementation in his governance theory must be adopted within a specific mindset and organizational style, and form a unique culture of expression and communication through which the plan must be implemented.

Therefore, in this study, it was investigated and analyzed whether the decision-making structure in which residents, the public and the public can cooperate in the redevelopment process of Yeongdo-gu. Afterwards, the direction of redevelopment that can have a more positive effect on the improvement of the quality of life of the residents in the future was suggested.

Derivation of morphology characteristics of Yeongdo

Criteria for morphological characteristics analysis of Yeongdo

The criteria for analysis for deriving urban form characteristics claimed by the Konzen school theory are the urban plan, building organization, and patterns of site and building use. Similarly, the Versailles School mentions that the shape characteristics of a city should be derived through the street, lot, and the shape of the building. Accordingly, based on the theoretical contents of each school, the analysis criteria were established as follows within the scope that can be analyzed through the current status analysis of Yeongdo and the urban form characteristics of Yeongdo were derived accordingly. 'Field form' corresponds to the urban plane in the Conzen school theory and the street in the Versailles school theory.

Although Yeongdo was a quiet island in the past, it has been gradually developed over the years, but development has not been carried out enough to radically change the city's plan. Building height and shape were mentioned as objects to be analyzed for deriving urban form characteristics in both the Conzen and Versailles schools, and were analyzed through a complete survey of the current building heights in Yeongdo. Land use is the pattern of land and building use in the Konzen school, and the part corresponding to the lot in the Versailles school. Accordingly, urban form characteristics were derived based on the contents of the current land use plan of Yeongdo.

Table 2. Criteria for urban form analysis

| Analysis criteria | Contents | Analysis method |
|--------------------------|---|--|
| Field form | Field shape | Visualization of lot shape through numerical topographic maps |
| Building height | Building height | Total building height survey Visualization of building height based on objective data |
| Land use | Land use according to the land use plan | Visualization using the land use plan of Yeongdo |

Source: unknown.

Analysis of morphological characteristics of Yeongdo

Field form

In order to derive the lot type characteristics of Yeongdo, it was visualized through a numerical topographic map of the Yeongdo shipyard, where redevelopment plans are currently being established in Yeongdo and residential, and commercial areas located at the entrance of Yeongdo.

As a result, the residential and commercial areas behind the Yeongdo shipyard showed that the development plan could not be implemented for a long time due to the locational characteristics and the buildings were located on the naturally occurring lot of the past.

On the other hand, in the area at the entrance of Yeongdo, which is directly connected to the old town through the Yeongdo Bridge, the grid-shaped lot created in 2002 when residential facilities were located has been maintained until now.

In the area behind the shipyard, from the past to the present, naturally occurring lot forms have been predominant, and the areas developed for residential purposes have formed a typical grid-type lot of development area. So far, it has been analyzed that there are many lot types naturally formed according to the passage of time, rather than the ratio of development areas based on urban planning and complex planning within Yeongdo.



Figure 2. The analysis of Yeongdo field form
Source: unknown.

Building heights

As for the number of floors of buildings in Yeongdo, one-story buildings accounted for 63.4% (17,431) the most, and there were many low-rise buildings with four stories or less. In addition, as for the age of the buildings, 64.5% of the buildings were older than 30 years, indicating that the deterioration of the buildings was serious. The proportion of buildings 20–30 years old was 20.5%, and the proportion of buildings less than 10 years old was only 6.3%.

Table 3. Analysis of building heights in Yeongdo

| Height | Composition ratio | Number of Buildings |
|--|-------------------|---------------------|
| 1 st floor | 63.4% | 17,431 |
| 2 nd floor | 25.9% | 7,115 |
| 3 rd floor | 5.8% | 1,588 |
| 4 th floor | 2.4% | 664 |
| 5 th floor and above – less than 10 th floor | 1.8% | 488 |
| Over 11 th floor | 0.7% | 202 |

Source: unknown.

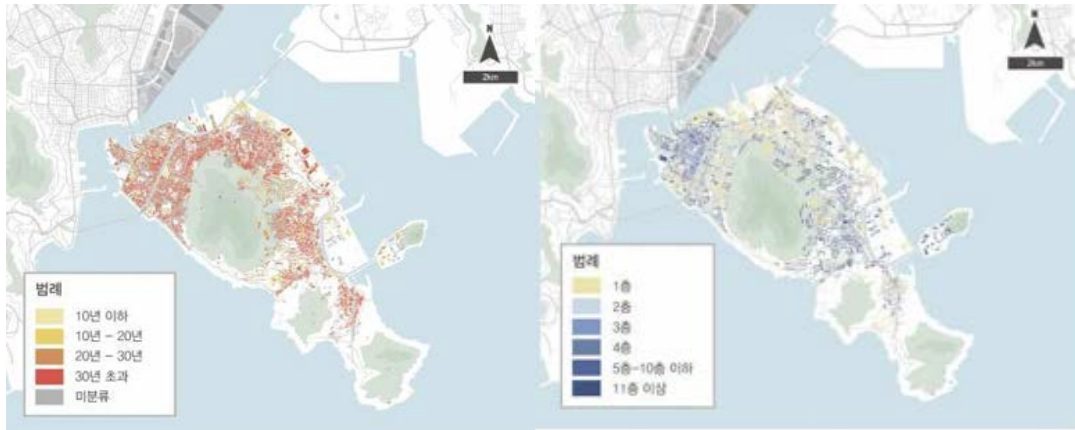


Figure 3. The current status of building heights in Yeongdo
Source: Yeongdo office data.

Land use

To analyze the current state of land use in Yeongdo, the map of the use area of Yeongdo presented in the mid-to long-term plan of the Yeongdo Office was used. The use area of Yeongdo is designated as green 45.5%, residential 37.9%, industrial 11.0%, commercial 5.5%, and unspecified (sea surface) 0.1% area. In the past, Yeongdo was a secluded island, and after the Japanese colonial period, it was developed to perform functions such as shipbuilding and port.

Accordingly, land use planning has continued without major changes from the past to the present. However, considering changes such as the population growth rate of Yeongdo and the creation of marine-related research complexes, it is judged that the land use plan needs to be supplemented.

Table 4. Yeongdo land use ratio

| Land use area | Ratio (%) |
|------------------------|-----------|
| Green area | 45.5 |
| Housing area | 37.9 |
| Industrial area | 11.0 |
| Commercial area | 5.5 |
| Unsoecified(Sea level) | 0.1 |

Source: unknown.

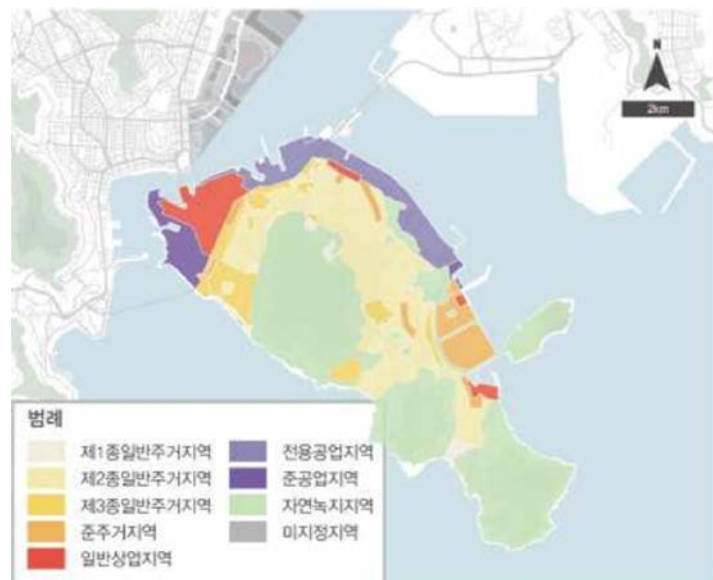


Figure 4. Yeongdo Land use status
Source: Yeongdo office data.

Derivation of urban form characteristics

The form characteristics through the analysis of the lot shape, building height, and land use status in the study site are as follows. The lot form was formed in a naturally occurring form and in a grid form according to the characteristics of each space use. Due to geographical characteristics, the entrance to the island, where many people come and go, was developed in 2002 and formed in a grid-like shape.

On the other hand, the hinterland where the shipyard was located has not been developed for a long time due to the characteristics of the related industries, and has been transformed naturally without change in shape from the past to the present. As for the height of the buildings, low-rise buildings were centered on the whole of Yeongdo, and in particular, all the buildings in the target site were less than 10 stories tall. Despite the fact that the study site was a densely populated area of commercial facilities, it was characterized by low-rise buildings rather than high-rise buildings. Land use was characterized by commercial and industrial facilities. Due to the geographical characteristics of the area, the proportion of industrial areas was high due to the facilities related to the port industry, and the areas adjacent to the inland showed characteristics of densely populated commercial facilities.

Table 5. Derivation of urban form characteristics in Yeongdo

| Division | Morphological characteristics | Contents |
|-----------------|---------------------------------------|---|
| Land type | Naturally occurring form Grid type | Due to the geographical characteristics and the characteristics of related industries, the gap in lot type between the developed area and the undeveloped area is very large. |
| Building height | Low floor | Most low-rise buildings with less than one and five stories tall |
| Land use | Commercial area Industrial area | Concentration of commercial facilities due to geographical characteristics linked to inland Industrial areas related to the port industry |

Source: unknown.

Yeongdo redevelopment process and resident participation

Regeneration and redevelopment projects implemented throughout Yeongdo include 7 urban and residential environment planning areas, 8 cultural and tourism planning areas, 4 environmental and green areas planning, 4 transportation plans, and 8 social welfare and lifelong learning plans, reaching five areas of urban safety planning.

Among them, the site of the Yeongdo Shipyard corresponding to the study site has a scale of 260,000 hebe and has contributed greatly to the revitalization of the local economy and is a space of great historical significance. However, the area was rather narrow to be used as a shipyard, and the production environment was very poor. Moreover, experts are of the opinion that the effectiveness of each project can be reduced if it is linked with the North Port redevelopment and Yeongdo regeneration projects that are currently under redevelopment (2017, KMI). As a result, the site was redeveloped, but as a residential redevelopment plan was established on the site of the existing shipyard, friction between local governments and residents is being created. In the residential area around Namhang-dong, reconstruction of old buildings is currently in progress, and at the same time, it is trying to revitalize the local economy by creating ocean resorts and parks. However, only one project is currently under way among the details planned.

Table 6. The status of the redevelopment project in Yeongdo

| Division | Contents | Situation |
|---|--|-------------------|
| Yeongdo Shipyard hinterland | - Creation of a residence | - Planning |
| South Port residential and commercial area. | - Revitalization of old rental housing | - Non planning |
| | - Use of free space | - Partly planning |
| | - New town redevelopment project. | - Planning |

Source: unknown.

In particular, none of the contents of the project plan in the current or planned research site took into consideration the geographical and environmental characteristics of the space or reflected the historicity and identity of the space. In particular, as claimed in this study, the process of establishing a development plan that reflects the opinions of local residents is also not systematically prepared. In the process of establishing the comprehensive development plan of Yeongdo-gu, only a survey conducted for a total of 311 residents over 12 days was presented as the only process for citizen participation.

Suggestion of direction for redevelopment of Yeongdo

Proposal of redevelopment direction considering the characteristics of urban form

The urban form is a physical element that can represent the historicity of the region, and can change naturally according to the flow of time. However, in the case of total redevelopment due to human intention rather than spontaneous change, it is judged that at least it is necessary to investigate and study whether it is worth preserving or conserving the urban form that shows the uniqueness and historicity of the area. However, the current redevelopment process in the area does not include the consideration of urban form. In this regard, first of all, weaknesses in the redevelopment plan currently being implemented in the site and the ongoing project progress were derived.

Table 7. Weakness of Yeongdo's redevelopment project

| Division | Redevelopment project | Weakness |
|---|---|--|
| Yeongdo Shipyard hinterland | Residential development project | No direction for redevelopment considering geographical characteristics. |
| South Port residential and commercial area. | Revitalization of old rental housing Use of free space New town redevelopment project | Only 10% of businesses are in planning. Missing the process of reviewing historical value and significance Building demolition |

Source: unknown.

In the case of the Yeongdo shipyard redevelopment project, the biggest cause is inefficiency due to insufficient land size to be used for related industrial purposes. In the case of a space that inevitably loses its functions according to the flow of time, it is judged that it is necessary to include processes such as harmony with the surrounding area and consideration of the identity of the space rather than the unconditional location of residential facilities. The average height of buildings in the old town near Yeongdo and the North Port redevelopment area currently under development is 15 stories or higher. It is judged that it is necessary to implement a development plan that can visually harmonize the urban landscape according to the age of the building and the height of the building.



Figure 5. Development status around Yeongdo

Source: Yeongdo office data.

In the 2040 Busan Urban Basic Plan established by Busan Metropolitan City, which includes the redevelopment of the Yeongdo shipyard, 10 cores and 5 linkages, unlike the 2020 plan that set the urban spatial structure as 2 city centers, 6 sub-centers, 2 regional centers, etc. It was reorganized into a base and four major innovation growth axes (tourism MICE base, international business economic innovation, new industrial innovation, and airport complex city growth axis). It is a change in the spatial structure of the entire city, and more objective evidence needs to be prepared for the purpose of reorganizing the entire spatial structure.

In addition, projects such as revitalization of old rental housing and vacant space utilization projects were planned in the southern port residential and commercial area clusters, but the new town project is the only project that is currently being implemented. Old things are not unconditionally of historical value. However, the old housing area around Yeongdo Bridge has historical significance as it is also a place where the traces of the

refugees from the war have settled and lived. It is believed that the urban redevelopment process needs to be a process that can create a better future based on the historical and identity of the region rather than aiming only to improve the quality of life of people living in the present era. Therefore, we would like to suggest the direction of redevelopment as shown in the table below, focusing on the matters that need to be included in the urban redevelopment process of the region in the future.

Table 8. Suggestion of direction for redevelopment of Yeongdo (Urban form)

| Division | Redevelopment project | Suggestion of direction |
|---|--|--|
| Yeongdo Shipyard hinterland | Residential development project | Consideration of geographical characteristics facing the coast Finding ways to prepare for natural disasters Consideration of harmony with surrounding development areas |
| South Port residential and commercial area. | Revitalization of old rental housing Use of free space New town redevelopment project. | A Study on the Value and Significance of Old Houses Analysis of the cause of empty house and investigation and analysis of practical needs Finding ways to solve traffic problems caused by the creation of large-scale residential areas due to the nature of the geographical location |

Source: unknown.

Suggestion of direction for redevelopment based on resident participation

It is not easy for residents to directly participate in the process of urban redevelopment, but the reason that residents' opinions must be reflected is that the purpose of urban redevelopment is directly related to improving the quality of life of residents. There is still no systematic system for the process of citizen participation. Regarding the redevelopment project of the Yeongdo Shipyard, one of the research sites, opinions differed between residents and local governments, and conflicts have arisen as a result. The process of reflecting the opinions of residents in the actual spatial plan is not simple.

The opinions of residents are not a specialized process for establishing actual spatial plans. However, first of all, it is necessary to draw out what physical factors, social factors, historical facts, etc. are recognized as the uniqueness of the area for the residents. After that, it is judged that it is necessary to derive it through experts to find a way to practically keep it. In addition, it should be the responsibility of local residents to continuously manage and preserve the space after development. This is because it is a process for the smooth management of sustainable management of the space, and it can have a positive effect on the revitalization of the local economy centered on local residents. Accordingly, the direction of redevelopment based on resident participation can be summarized and presented as shown in the table below.

Table 9. Suggestion of direction for redevelopment of Yeongdo(Governance)

| Division | Contents |
|------------------------------|---|
| Planning process | Collecting residents' opinions Clear distinction between conservation and development factors Establishment of a development plan by experts reflecting the opinions of residents |
| Management and preservation | Seeking sustainable management plans for spaces worth preserving Promoting sustainability through management and preservation centered on local residents |
| Revitalize the local economy | Seeking revitalization of the local economy in connection with management and conservation activities centered on local residents |

Source: unknown.

Results

The ultimate goal of provincial redevelopment is to improve the quality of life of residents by changing a part of an aging city in line with the changing trends and demands of modern society. In this process, it is necessary to preserve the uniqueness of the region that has existed since the past, that is, the physical elements and historicity.

Yeongdo, a secluded island in the past, has a history such as a base for logistics movement during the Japanese colonial period, a temporary shelter for refugees, and a group quarantine area for patients with incurable diseases. Currently, there is a marine and fishery-related research complex, which is playing a role as a major core space. However, there is a lot of interest in the redevelopment of this area considering that it will be affected by recent large and small developments. Therefore, in this study, the urban form is viewed as a physical element with

a unique historicity and identity, and the necessity of urban redevelopment considering the derivation of urban form characteristics is suggested.

Furthermore, it was suggested that a redevelopment plan that actively reflects their opinions needs to be prepared by examining the identity and historicity of Yeongdo unique to the indigenous peoples for a long time. Modern cities are changing at a very fast pace, and in the process, there are many cases where even traces of the past cannot be found. Since cities have been created by humans according to human needs, the physical form and major social elements can be said to be the identity and uniqueness of the region. Therefore, for sustainable urban growth, rather than pursuing unconditional development, it is judged that it is necessary to clarify what needs to be maintained in the future and what redevelopment direction should be prepared based on this.

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