A study of the urban tissue design for reorganizing urban environments
- A case study of the Shimbashi areas of Tokyo

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Abstract
The author studied the areas along the city planning road “Ring Route 2”, also known as MacArthur Road, in the Shimbashi - Toranomon district of Minato-ku, Tokyo, in an effort to draft a district plan and design guidelines that embody aesthetic urban planning and environmental design. The aim was to establish a design method for reorganizing an existing urban environment by unifying the architecture, city planning, civil engineering and landscape design. Design guidelines for the area were drafted and their effectiveness was tested by using them in a schematic design. It is hoped that the results of this study will be utilized in local city planning and district design guidelines in the near future.

1. Purpose of the study
The economic growth that occurred in Japan after the end of World War II has led to the emergence of cityscapes dominated by huge high-rise buildings, but often without beautiful scenery and community spaces. This is because architecture, city planning, civil engineering and landscape design have become too specialized and there has been no integrated, holistic approach to the design of urban environments. The author studied the areas along the city planning road “Ring Route 2”, also known as the MacArthur Road, in the Shimbashi - Toranomon district of Minato-ku, Tokyo, in an effort to draft a district plan and design guidelines that embody aesthetic urban planning and environmental design (Fig.1).

Fig. 1 Map of the MacArthur Road in The Shimbashi -Toranomon area today

It has been common for the areas adjacent to a new city planning road to be developed haphazardly without any coordination between architectural design and civil engineering design, with the inevitable result of inferior public spaces and greenery. By reflecting on conventional environmental design, the author aimed to establish a design method for reorganizing an existing urban environment by unifying the architecture, city planning, civil engineering and landscape design.
2. Methodology

The geographical and historical characteristics of the area were studied using old maps and aerial photographs, and the development process, changes in the industrial structure and demographics of the area were analyzed. The present situation of building stock was investigated using account books and fieldwork and a database was made which suggests buildings that may be suitable for reuse.

The Shimbashi - Toranomon district, which is located between the Kasumigaseki governmental district and the Shiodome business district in Tokyo, is expected to become a new business zone after the completion of a new city planning road. The future potential of this area for business and residential functions was analyzed based on three-dimensional perspective views and models of the blocks that were created to study various alternatives for future city spaces. During the course of this study, interviews were conducted with local government representatives, university researchers and people who live and work in this area to obtain a variety of opinions.

3. Analysis of the study area

3.1 The analysis of the characteristics of the study area

Studies were made of the geographical characteristics, historic development process, changes in the industrial structure, and characteristics of the residential areas of the Shimbashi - Toranomon district. The historical development process of the city was analyzed using old maps and aerial photographs. Residents, workers and visitors to the district were interviewed to get an understanding of the everyday life of the local people.

1) Area characteristics observed in the field work

A. The charm of the district: Lively atmosphere of bars and cafes.
B. Problems in the district: Because there are relatively few stores, everyday life is inconvenient. The educational environment for children is bad, and the local community has not been active recently.
C. Expectations for and uneasiness about the construction of Ring Route 2: Because of the lack of information from government authorities and developers, it is hard for the local community to have an image about the future of the town. The community is afraid that the new road may divide their town into north and south parts. The road plan has little relevance to most of the senior citizens for them to have an interest in the development.

2) Historical changes

The historic transformation of the blocks of Shimbashi district was investigated based on old maps (Fig.2). A study was made of the history of the traditional furniture industry in this area and the development process of the local industries was analyzed. Before the Great Kanto Earthquake of 1923, the furniture industry prospered in the Shimbashi district along Red Brick Street and Hibiya Avenue. This was because many foreign embassies located in Minato-ku in the Meiji Era and lifestyles became increasingly westernized, so the demand for western furniture rose and lasted for three generations. However, many furniture stores were forced to close during the post-war high economic growth period when the local rents increased dramatically. Today, there are not even any furniture stores in the area.

The local industry of Shimbashi has shifted from furniture making to the information industry. Shimbashi is a downtown area where people rarely establish roots because of the rapid changes that have occurred there since the postwar high economic growth period.

Problems in this area were identified by analyzing the population dynamics, the night to day population ratio, the present situation of office space and the local city plans. The following is a list of some of the problems that this district is currently facing:

A. The population of Minato-ku has been increasing, but the population of the Shimbashi district
continues to decrease.
B. The young generation continues to move out and the population is aging.
C. The hollowing out of the district is indicated by the unbalance between the day and night time populations and the empty office spaces.
D. There is a lack of central space and organization which can become the focus of the town.
E. The rapid changes in the industrial structure have made it difficult for new businesses to take root.

3.2 Investigation of the buildings and open spaces existing in the area
The locations and characteristics of the buildings which are suitable for reuse and conversion in the future were investigated by surveying account books and conducting fieldwork (Fig.3). A database was compiled of the field work, which included studies about open spaces such as roads, public spaces and green tracts of land.

3.3 Examination of the development possibility of the area
In the Shimbashi - Toranomon district which is located next to the Kasumigaseki and Shiodome central business districts, rapid development is expected in the near future after the completion of a new city planning road. The possibility was investigated of developing office and residential space.

Fig. 2 The historical transformation of the subdivision of the blocks in Shimbashi
Upper left: Edo era, Upper right: around 1912
Lower left: after the Kanto Earthquake in 1923, Lower right: Present

Fig. 3 Location of the vacant offices
in this district. Based on interviews with local residents, the author proposed that this area could become more attractive through mixed use development including housing. Facilities which could enhance the attractiveness of the area include the following:

A. A nursing facility and a day center for the elderly which are necessary for a district like Shimbashi where the population is aging.
B. Dormitories for the medical and social welfare students of Jikei University.
C. A library which is open throughout the week.
D. An information and event space where people can gather freely.
E. An NPO center where any group moving into the Shimbashi area can start up their offices easily.
F. Work spaces that businessmen or software creators can use while they are working in Shimbashi.
G. A hotel or condominium that can provide long-term accommodation for visitors.

4. An urban environment to aim for

The author made a detailed model of the district level (Fig.4) and three-dimensional CG to study the city space. As a result of the study, it was determined that the 600% floor area ratio established in the current regulations would be high enough even after MacArthur Road is completed. The road will become the main axis of the district of Shimbashi and most of the existing buildings along the road are expected to be rebuilt in the near future. Therefore, it is necessary to establish city planning regulations as soon as possible to prevent the construction of unharmonious buildings following the completion of MacArthur Road.

Special attention was paid to vacant lands, parking lots which can be changed into public spaces and green tracts of land. The author envisions continuous green spaces which will become attractive pedestrian walkways that will make it enjoyable for people to walk in the inner part of the district. Figure 5 shows a situation in which an alley and vacant land that is not used can become a community garden. The author also proposes attracting pedestrians into the vacant areas of Shimbashi by linking open and green spaces into a contiguous network.

![Fig. 4 Model of the present area](image_url)

![Fig. 5 Network of open and green spaces made from the unused urban spaces](image_url)
5. Proposal for the design guidelines

The author made a draft for the city planning guidelines to create the desired urban space. The rules that should be set for the city planning guidelines are as follows:

1) Rules for buildings
   A. Rules for external wall easements
      Along MacArthur Road: Walls may be no more than 6.0m high and must be set at least 1.0m away from the roadside, or at least 3.0m away when the ground level is used as a pedestrian arcade.
   B. Maximum building height: The maximum height of buildings should be no more than 30m to maintain harmony with existing neighboring buildings.
   C. Building use: Commercial uses are recommended for the lower floors of buildings facing MacArthur Road and offices and/or residential uses for the middle and upper floors.
   D. Position of doorways of buildings: The doorways of houses should be located away from the main street to secure privacy and security.

2) Rules for the street space
   A. Create an active margin: The spaces of the lower part of buildings along the pedestrian walkway will be used for creating turnout. Ex. Open air cafés.
   B. Create a vibrant atmosphere for the pedestrian walkway
   C. Plants and street furniture: Arrange continuous plants within 5m from the roadside at each site. Install street furniture along the street.

3) Other Rules
   A. Underground parking network: Connect the underground parking areas in this area in order to facilitate the auto traffic on the ground level and control on-street parking.
   B. Restrictions on signboards: Neither roof signboards nor overhanging signboards should be installed along MacArthur Road.
   C. Walls, fences, gates and signboards which may obstruct traffic and block out the cityscape should be restricted.
6. Conclusions

The author studied the geographical and historical characteristics of the areas, using old maps and aerial photographs, and analyzed the historical development process, the changes in the industrial structure and the demographics of the area. The author also investigated the present situation of building stocks through account books and fieldwork and made a database which suggests buildings that may be suitable for reuse and conversion.

The Shimbashi - Toranomon district, which is located between the Kasumigaseki governmental district and the Shiodome business district in Tokyo, is expected to become a new business and residential zone after the completion of a new city planning road. The author analyzed the potential of areas for future business and residential functions and made three-dimensional perspective views and models of the blocks to study various alternatives for future city spaces. Design guidelines for the area were drafted and their effectiveness was tested by using them in a schematic design.

This study has revealed that it is very important to pay attention to the existing resources in the area, some of which are not fully used currently but have high potential. The author proposes that vacant spaces and parking lots in the area be converted into continuous green spaces which will encourage people to walk into the inner part of the district where many vacant office spaces currently exist. If more people visit, new shops and new offices will open accordingly. It is also important to establish city planning regulations and design guidelines as soon as possible, especially for the area along “Ring Route 2” (MacArthur Road), because new redevelopments are expected to follow immediately after the construction of the road. It is hoped that the results of this study will be utilized in local city planning and district design guidelines in the near future.

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8. References