

# Regeneration of City Space Based on the Continuity of Orders

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## Abstract

What has our present-day city lost, and what should we inherit or reproduce? We can find the answer by observing the historical transformation of the local orders in space. Natural geographical features and site allocation patterns often help us to understand these hidden orders. Reconstructing the principles for city architecture in modern cities, which is suitable for the present high-density city environment, will ensure the flexible transformation and the sustainable development of the urban fabric over a long period of time.

**Keywords:** city space; order; regeneration; principle for city architecture

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## 1. Introduction

Presently, most of the projects that are called "urban regeneration" in Japan involve the conversion of ex-plant land and shunting land to high-rise building areas, but these areas connect weakly with the existing surrounding city areas, and it is difficult to say that they are inheriting the history of a city. What are the things modern-day cities have lost, what should be "regenerated," and what should continue to be passed down? This can be understood by studying the individual "spatial order" of the particular area that has been passed down over time. These days, we can not feel "nature" closely in the city centers, but in the past it existed as part of our immediate life space. The redefinition of the principles for city architecture in modern cities respecting the traditional space orders, and rebuilding the order of the chaotic city space should lead to the sustainable development of cities.

## 2. Urban regeneration based on history and characteristics of the area

During the transformation of cities over a period of hundreds of years, the things that remain are not physical structures such as buildings or civil engineering works, but moreover the void spaces such as streets and squares. For example in Tokyo, even if the buildings change on such streets and avenues as Omotesando, the Chuo-dori Avenue in Ginza, or the Daigaku-dori Avenue in Kunitachi, that space or landscape continues as before. Public spaces and parks such as the Imperial Palace Plaza, Yoyogi

Park and Hibiya Park also continue to exist longer than any structures. Cities are formed due to the connection between them and the lives of the people who live there, so in some cases a non-daily "festival" continuing for centuries can be a decisive factor in forming the city space. The basis of the continuity of cities can be said to be the consciousness of people toward their lifestyles and the city space.

As shown in Table 1., the "structures" and "spaces" that form a living environment can be seen as a hierarchical structure<sup>1)</sup>. The higher the structures and the spaces in the hierarchy, the longer their life spans. The transformation of these structures and spaces transform the structures and spaces lower down in the hierarchy, but even if the structures and spaces lower down undergo some transformation, the structures and spaces high up in the hierarchy remain stable. One of the reasons for the chaos in the Tokyo city environment, and for the extremely short life period<sup>\*1</sup> of buildings there, is because the high level structures and spaces which should have a long life span and should be stable, have shown major changes in a short period of time. While maintaining continuity culturally and historically, in order to build a flexible city which is able to meet the extreme social and economic changes, there must be control of the order, to control city structural elements that should be maintaining continuity, and for changes in the short term.

In the case of Tokyo, during the Edo Period, samurai residences were located on the high land of the Musashi plateau, and the residences of low caste samurai and tradesmen were located in the valleys below, forming a life space for a mixture of living and working areas according to the configuration of the land. Tokyo Bay could be seen in the distance from the roads leading down from the high land, and there were many roads where people could enjoy the view towards Mount Fuji<sup>\*3</sup>. In the case of city planning in Japan, too much predominance has been given to universality

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Table 1. Levels and Hierarchical Structure of the Living Environment<sup>2</sup>

Environment level	Elements that form the environment	Physical shapes that are formed	Spaces that are formed	Principles that control the environment (examples)
1	Rivers, hills, etc	Landscapes	Natural environment	Nation
2	Major Arteries	City Structure	Neighborhood	Municipalities
3	Roads	District	Block	Local communities
4	Building Elements	Building	Built Space	Home owners
5	Partitioning	Floor plan	Room	Families
6	Furniture	Interior Arrangement	Place	Room occupants

rather than the characteristics of the place, resulting in the creation of a stereotype city space. It is required to pay attention to the various contexts of the city such as the configuration and breakdown of the land, the history and the culture, and to foster the "characteristics of the place," in order to regenerate a city space with individuality and activity.

Like other historical cities, Edo (or Tokyo) developed around the rivers and canals. These days, the rivers are isolated from the town by vertical embankments (Photo 1.), or covered by an elevated highway (Photo 2.). The buildings have their backs to the polluted rivers, but previously, the view was opened up, and the river banks, with direct access to the water transportation network, were ideal sites for city architecture. Buildings are now being built closer together, so in present-day Tokyo, without enough open space, dry riverbeds and harbor front areas are an important spatial resource (Photo 3.). To acquire new land and build parks and green spaces would require an enormous amount of money, so the use of underused river spaces as the structural element for rebuilding the city is inevitable. The highways, which cover the rivers and canals in large Japanese cities such as Tokyo and Osaka, devalue the waterways as natural elements. It has been strongly argued in Tokyo these past several years that the highway over the Nihonbashi River should be buried underground and that the riverbeds become a park. The experiences of the Cheonggyecheon Restoration Project in Seoul and the Big Dig in Boston should be applied to regeneration projects in Tokyo and other large cities in Japan.

Dry riverbeds function as roads for the wind, clean the air and cool the city. Over the past 100 years, the average annual temperatures have risen by over three degrees centigrade, and it is said that the protection and creation of green areas, and greening urban areas would be effective in reducing the temperature of Tokyo by about 0.3 degrees centigrade<sup>2)</sup>. Like the Emerald Necklace of Boston, by joining the green areas of the rivers to the green areas of the inner city, and building a green network, the effect of regenerating nature would be increased, and would also give a chance for the cut-off ecosystem to be reborn. In Tokyo, the separation of living and working areas has advanced too extremely, and it is said that the average work and school commuting time is 71 minutes, with

about 70 percent of the people spending over one hour to commute daily. If nature was brought back to the center of the city, more families would probably choose to live there.

### 3. Principles for city architecture combining sustainability and development

When thinking about principles for future city architecture, the types of high-density residences around the world, and the structural principles of machiya-style traditional Japanese houses<sup>4)</sup> serve as useful references. They have the following characteristics<sup>4)</sup>:

1. The environment of each site such as sunlight and wind passage is autonomously secured, and any environmental impact on neighboring sites is kept to a minimum.
2. Any rebuilding or renewal work is carried out on a site-by-site basis, so the structure gives growth to the city as a whole.
3. They reflect the culture of the area, and the mutual relationship between both the city's unique public domain and private domain are developed.
4. There is a common understanding and agreement regarding the structural principles of the city environment by and between the residents, and this continues generation after generation.

Fig.1. shows an example of the transformation of a machiya-style traditional Japanese house built in 1915. The author made this drawing based on the interviews to the families who lived in this house. In more than several decades, the house has been transformed as the family grew in size.

During the process of modernization in most cities in Japan, high-rise buildings appear without concern for the neighboring traditional built environment and the streets, which were part of the life space, have been transformed into wide roadways, with the result that the traditional city architecture no longer functions.

To create modern day "principles for city architecture" which replace the style of traditional city residences, rules need to be made in each area regarding maximum height, distance between buildings depending on size, use of the part of the site that faces the road (for greenery, or for pedestrians), the location



Photo 1. The Vertical Embankment of the Kanda River



Photo 2. Nihonbashi River Covered by the Metropolitan Highway



Photo 3. The Dry Riverbed of the Tama River that can be Used for the Park.

of car parks outside, and how the cars should be driven in, according to each historic and natural condition. It is necessary for the residents of each area to discuss and make the rules, for the rules to be decided upon and a process of renewal to be upheld by everyone and passed on.

The "Urbanex Sanjo" machiya-style traditional Japanese house-type condominium project that was completed in Kyoto in 2002, is known as a pioneering effort of introducing an architectural style with values upheld by the "town" as a whole, after years of consultations between the residents of the area and various specialists <sup>5)</sup>. This project created a new type of city architecture respecting the principles which traditional communities in Kyoto have shared for centuries.

Another method that is being proposed for the regeneration of existing urban areas is to put a narrow street through the cleavage line at the back of sites in a block, which can be used for greening, for pedestrians and as a common car park (Figs. 2 and 3) <sup>6)</sup>. Blocks in historical urban areas have depth <sup>5)</sup>, so the sites in the block are easier to use, with people moving through the center of the block, and the environmental conditions of the backs of the sites can be improved. In contrast to the main roads which serve cars, having smaller pedestrian paths in the center of the block, would provide good access to the commercial and business areas via the main roads, and easy access to residential areas via the back roads, thereby maintaining good access to both separately. By using the back part of the block, a new type of architecture that provides a mixture of living and working areas could be created while using the existing buildings, while at the same time a green area can be secured in the center part of the community block.

#### 4. Conclusion

When considering principles for present city architecture in Japan, it is often said that the urban tissue, which will be the context (the context of the area), does not exist any more. However, the natural configuration and historical breakdown of the land, which are hidden in the background of the city provide suggestions. The rebuilding of traditional principles of city architecture as something suitable for the high density city of the modern day, will not only enable cities to smoothly transform, but should also contribute to the continuation of their growth.

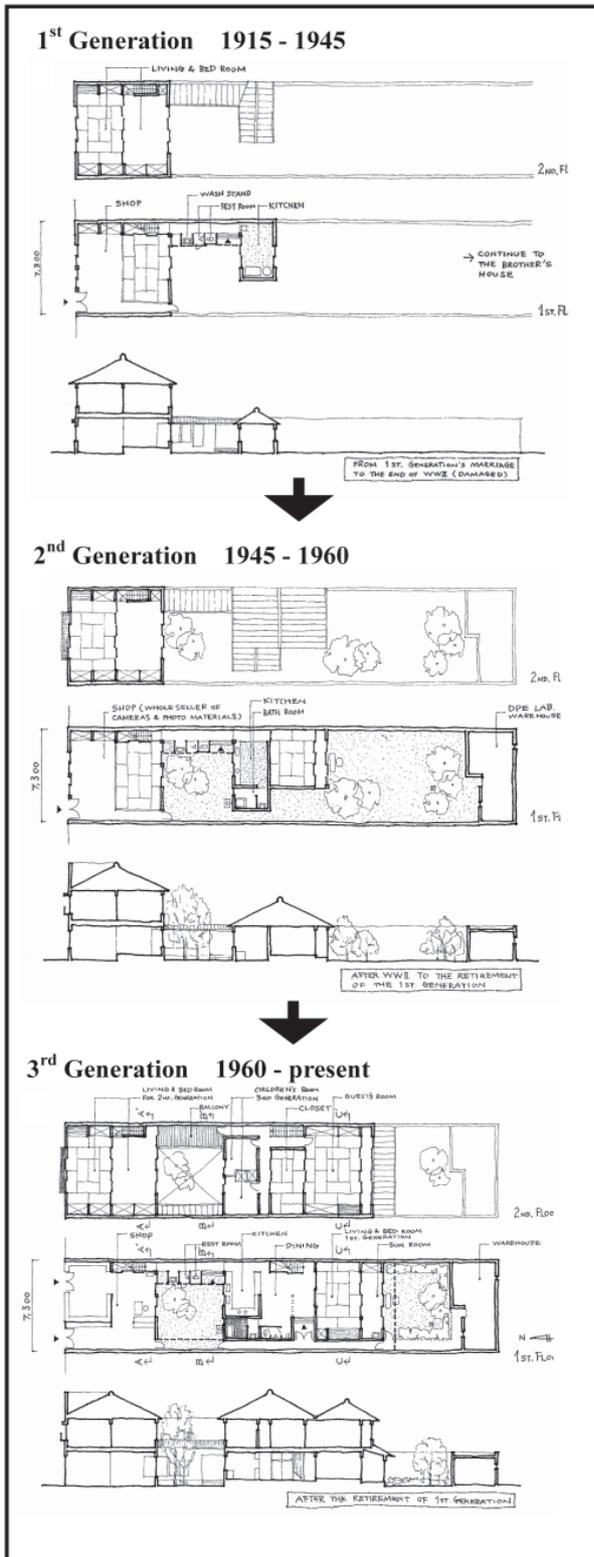


Fig.1. The Transformation of a Traditional Japanese Merchant's House. The Road is Located at the Left Side of the Drawing.



Photo 4. Urbanex Sanjo, Courtesy of Urbanex Inc.

### Notes

- \*1: The average lifespan of Japanese houses is about 26 years (the average age of houses demolished in the past five years). This is extremely short compared to about 44 years in the U.S. and 75 years in Britain.
- \*2: Restructured, based on N. J. Habraken, "The Structure of the Ordinary," MIT Press, 1988
- \*3: Even in London today, protecting the view of Saint Paul's Cathedral from various main points around the city is a major guideline for the city planning.
- \*4: Condominiums based on the structural principles of traditional Japanese city houses mainly used by merchants.
- \*5: According to the ancient Japanese grid-type lot-allocation city planning structure, a block is 120 square meters, which is divided into two or three sections. A block is therefore between 40 to 60 meters deep.

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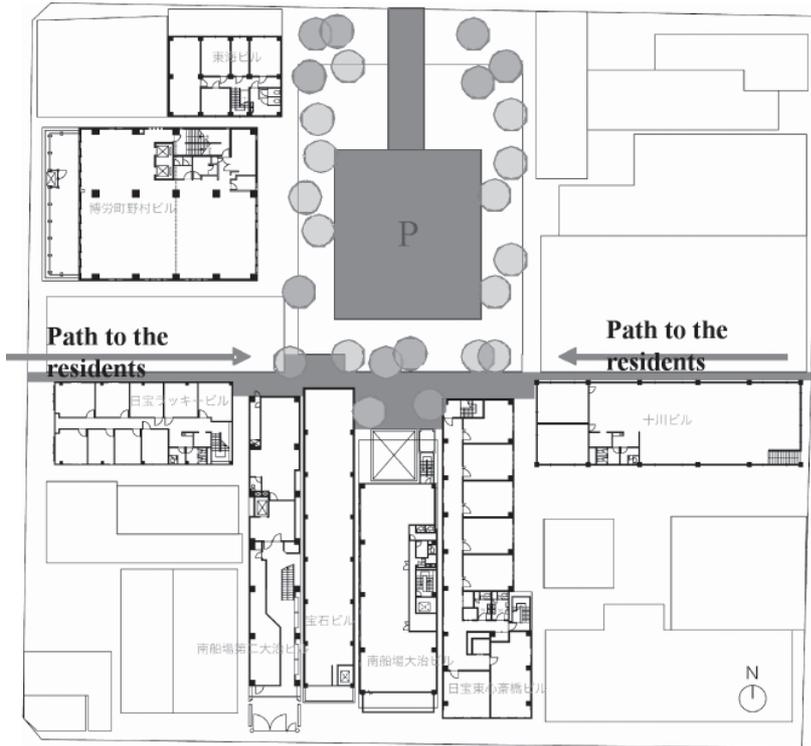


Fig.2. A proposal to regenerate existing urban areas by putting a narrow street through the cleavage line at the back of sites in a block, which can be used for greening, pedestrians and as a common car park. The drawing was made based on studies by Prof. Kazuhiko Nanba and students of the Osaka City University.



Fig.3. The transformation of the cleavage line at the back of sites in a block, which can be used for pedestrians. The proposal made by Prof. Motomu Uno and Prof. Masao Ando of Chiba University.

