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Study on the Landscape Consolidation of Midosuji Boulevard in Terms of Block Characteristics

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Abstract

The present study aims at examining urban landscape in terms of the transition of block composition and the formation of tree-planting in open spaces resulting from different combinations of lots and buildings, taking as an example Midosuji Boulevard, the street that symbolizes Osaka; and at identifying problems with, and the ideal orientation of, future landscape consolidation of Midosuji Boulevard by evaluating three-dimensional models of present and future street spaces created by a computer graphics (CG) system.

The study revealed the following : In terms of utilization, the only currently feasible function of Midosuji Boulevard is merely that of a pedestrian thoroughfare since there are no open spaces. In the future, however, open spaces may be secured in the front of lots and on the lower level of buildings for various usage by pedestrians. In terms of landscape, the present condition tends to be oppressive, as the building walls are situated very near or immediately on the boundary between public and private spaces. In the future, open spaces secured in the foreground of lots and on the lower level of buildings will create a more expansive and spacious atmosphere. At the same time, this change can pose a new problem: continuously located open spaces of a similar size on the lower level of buildings facing the same street may excessively emphasize the continuity of the streetscape, depriving the quarter of special charms that could result from variable and unpredictable "rhythms" of landscape.

Purpose of Research

Midosuji Boulevard is considered the street that symbolizes Osaka. Currently, commercial and business buildings line the street in an over-orderly fashion. Midosuji is considered an important arena of various urban activities for both city dwellers and visitors. Therefore, it is desired that this area be developed into a more attractive, rich and lively space by taking advantage of this high-density yet characteristic urban landscape. The present study aims at examining urban landscape in terms of the transition of block composition and the formation of tree-planting in open spaces resulting from different combinations of lots and buildings, and at identifying problems with, and the ideal orientation of, the future landscape consolidation of Midosuji Boulevard.

Research Method

For this study, the area between Yodoyabashi and Shinsaibashi, the business zone which

shows particularly varied lot arrangements of the entire Midosuji district, and where pedestrian space development is anticipated, was designated as the study area.

The survey first involved comparing the arrangement of blocks along Midosuji Boulevard in 1931, 1973 and 1992, to clarify how the block composition had changed due to lot integration, and to predict future block composition, an important factor in landscape consolidation. The lots currently existing in the target zone were then classified into several types, using two indices: size and location on each block. Based on the availability of open spaces and the formation of tree-planting in individual lots, surveyed from drawings and in the field, the characteristics of future open spaces and tree-planting were estimated according to respective lot type. Among block compositions estimated for the future, one-lot, two-lot and four-lot blocks were used to create three-dimensional models of present and future street spaces, using a CG system, with emphasis on future open spaces and tree-planting formations. These models were evaluated in terms of landscape and utilization in order to identify problems with, and the ideal orientation of, the future landscape consolidation of Midosuji Boulevard.

Results of Analysis and Discussion

Block characteristics and future prediction

Fig. 1 shows the block and lot arrangements before and during the expansion of Midosuji Boulevard. Square blocks that existed before the expansion (original width: approximately 5.4 meters) were reshaped into today's rectangular blocks in a project that commenced in 1924 and was completed in 1937. This widened the Boulevard to approximately 44 meters. As for the arrangement of lots on each block in 1931, blocks facing streets running in four directions had been reduced, and the lot arrangement of many blocks had been altered into one consisting of narrow, rectangular lots facing streets running east to west and small lots facing streets running north to south in parallel with Midosuji; the two types of lots being divided by Taiko Sewers.

Fig. 2 shows the arrangement of lots on blocks in 1931, 1973, and 1992. The leftmap in this figure indicates that in those days Midosuji had been widened only from Yodoyabashi to Kita Mido Temple and not southward from Kita Mido Temple since the expansion project was still in progress. By the time the project was completed, blocks facing streets running in four directions had been reduced. Because of this, many blocks were reshaped into blocks comprising narrow, rectangular lots facing streets running east to west and small lots facing streets running north to south in parallel with Midosuji; each type of lot being located on either side of Taiko Sewers.

The center map in this figure shows the arrangement of lots in 1973. Since the conventional lots were not large enough to accommodate large-scale modern buildings which had begun to appear, small lots, especially those located at the corners and directly bordering on Midosuji, were integrated, resulting in the emergence of blocks consisting of one or only a few lots.

The right map in this figure indicates that the integration of small lots, or the absorption of small lots into larger lots, progressed further between 1973 and 1992.

Fig. 3 summarizes the transition of block composition, as well as estimated future block composition, based on the comparison of lot and block conditions in the three different periods. In 1931, when the Midosuji expansion project was still in progress, the blocks consisted of narrow, rectangular lots facing streets running east to west and small lots facing streets running north to south. Then, the disappearance of the dividing lines of Taiko Sewers in the early stage of the expansion project prompted the absorption of small lots into larger lots, which are expected to eventually develop into one-lot blocks. Blocks where the dividing lines have been preserved are expected to undergo lot integration more slowly and to varying degrees: some will end up as

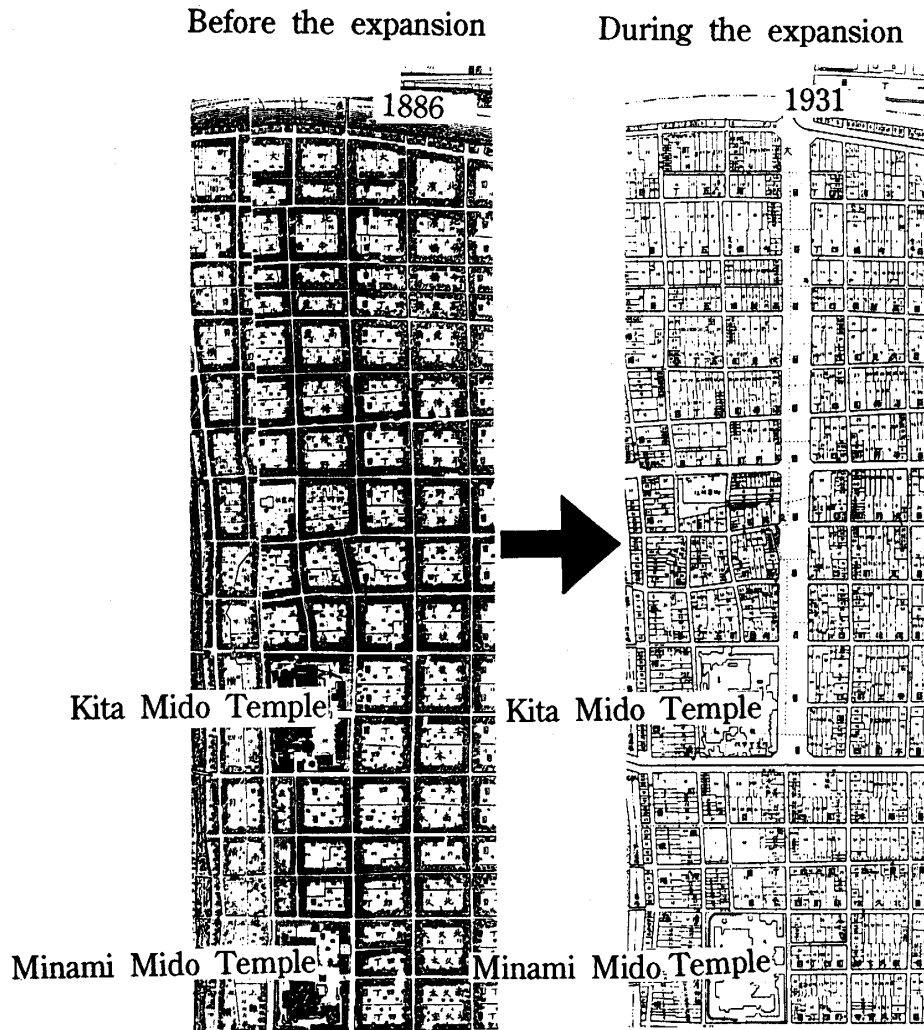


Fig. 1 Block and lot arrangements before and during the expansion of Midosuji Boulevard

two-lot blocks while others will be three- or four-lot blocks.

Lot characteristics

Fig. 4 summarizes the classification of lots into 13 types from A-a to E-d. The most representative lot type along Midosuji Boulevard is Type B-c, which numbers most; it is a corner lot of 1,000 to 3,000 square meters. In contrast, many Type A-a lots, each occupying a small area of 0 to 500 square meters, often face Midosuji only, while many large lots, such as Type E-d of 3,000 square meters or larger, are actually one-lot blocks resulting from advanced lot integration.

Fig. 5 shows main models of open space and tree-planting formation. The combinations of main models of open space and tree-planting formation, based on field surveys, for the 13 lot types are as follows: A small lot of 0 to 500 square meters is unlikely to have an open space. The most representative lot type, B-c, can provide an open space about 2 meters deep in its foreground, where monotonous tree-planting with shrubbery is possible. Type E-d lot of 3,000

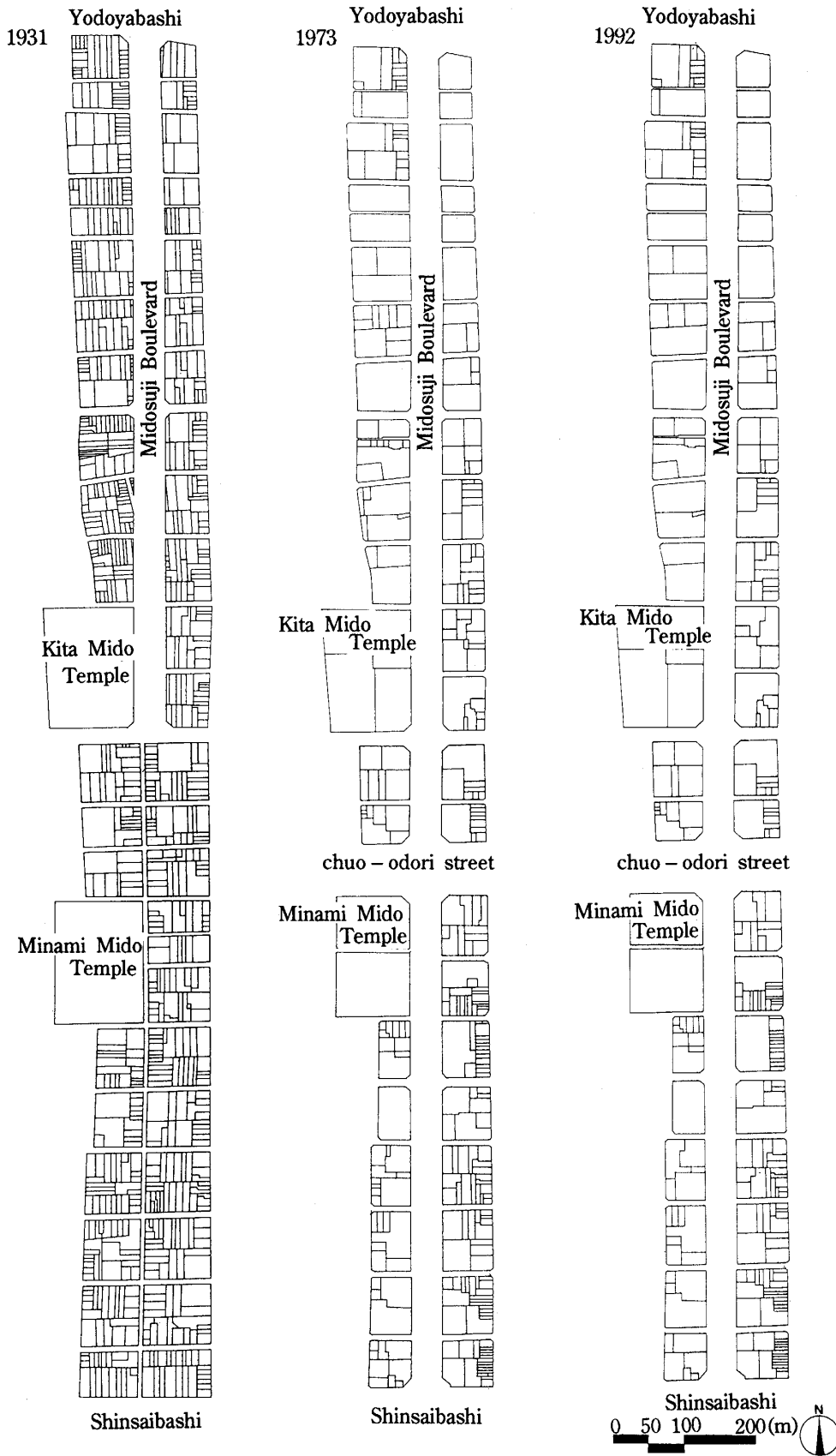


Fig. 2 Arrangement of lots on block in 1931, 1973 and 1992

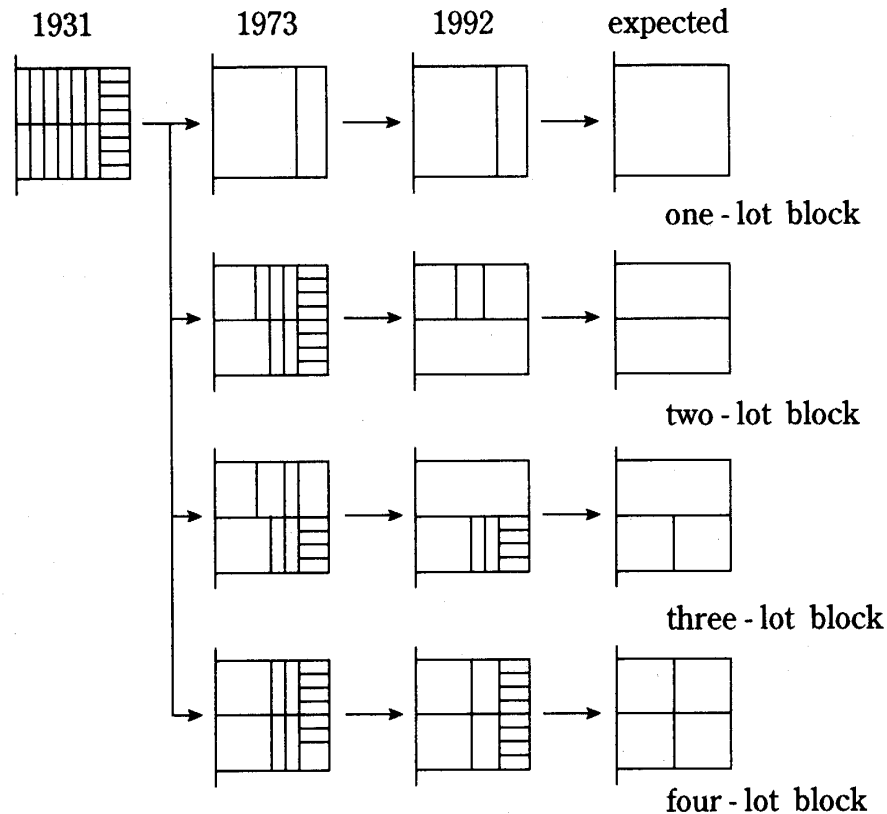


Fig. 3 Transition of block composition

square meters or larger, where lot integration has advanced, generates an open space 4 meters deep in its foreground, where varied tree-planting, combining tall trees and shrubs, can be realized.

As these combinations indicate, the feasibility of diverse formations of tree-planting is proportional to open space availability.

Evaluation of street space models

Among street space models created by incorporating tree-planting formations into corresponding models of future blocks based on the above stated analysis results, those expected to become one-lot (Fig. 6), two-lot (Fig. 7) and four-lot (Fig. 8) blocks in the future are expressed in eye-level three-dimensional images in order to examine their present and future status. These street space models are evaluated in terms of utilization and landscape as follows:

[Street space model of one-lot blocks]

The middle lot of the present block model shown in Fig. 6 (upper side) is a large lot which is already a one-lot block now; in the future, an open space will be created on the lower level in line with streetscape improvement, resulting in a 4-meter setback area. In this open space, only tall trees will be planted.

In the present block model, there is no open space, and this block is regarded oppressive in terms of landscape and is functional solely for a pedestrian thoroughfare. In the future, this block is expected to become much more spacious, with a large open space available for various purposes, including the establishment of an art gallery or a cafeteria.

[Street space model of two-lot blocks]

The two blocks shown in the present block model in Fig. 7 are expected to become two-lot

	a 0~500m ²	b 500~1,000m ²	c 1,000~3,000m ²	d 3,000m ² or large
A				
B				
C				
D				
E				

A: Lot facing only Midosuji Boulevard

B: Lot facing Midosuji Boulevard and one street running east to west

C: Lot facing Midosuji Boulevard and two streets (one running east to west, other north to south)

D: Lot facing Midosuji Boulevard and two streets running east to west

E: Lot facing Midosuji Boulevard and three streets

Fig. 4 Classification of lots

blocks as in the future block model. The present block model shows open spaces on the lower levels of buildings. Yet, due to the lack of continuity between the open spaces, the blocks do not offer a spacious atmosphere in terms of landscape. As for utilization, the open spaces are small and thus limited. In the future block model, open spaces on the lower levels of buildings are smaller than in one-lot blocks. For this reason, shrubbery-planting will be carried out. The future block model is evaluated highly for the expansiveness and continuity of open spaces. In terms of utilization, although more varied usage is possible than at the present, the formation of use will still be limited due to the small scale of open spaces on the lower level of buildings.

[Street space model of four-lot blocks]

The present block model will change into the future block model, the lower block in the present model becoming a four-lot block, as shown in Fig. 8. In the present block model, there are open spaces on the lower levels. However, since they are small and not continuous, they do not effect a sense of spaciousness or depth in terms of landscape nor do they offer any chance of utilization. In the future block model, with no open space on the lower level of buildings, the landscape is rather monotonous, even though spaciousness is secured in the landscape. The absence of open space severely limits the scope of utilization.

[Evaluation of street space models in summary]

Based on the evaluation of street space models in terms of utilization and landscape, it can be said that the present street space models suggest the utilization of Midosuji Boulevard solely as a pedestrian thoroughfare due to the lack of, or low availability of, open spaces along Midosuji. The future street space models indicate, however, that open spaces created in the front

	Model of lot	Model of open space	Model of tree-planting formation
A - a			
A - b			
A - c			
B - a			
B - b			
B - c			
B - d			
C - c			

	Model of lot	Model of open space	Model of tree-planting formation
C - d			
D - c			
D - d			
E - c			
E - d			

Fig. 5 Main models of open space and tree-planting formation

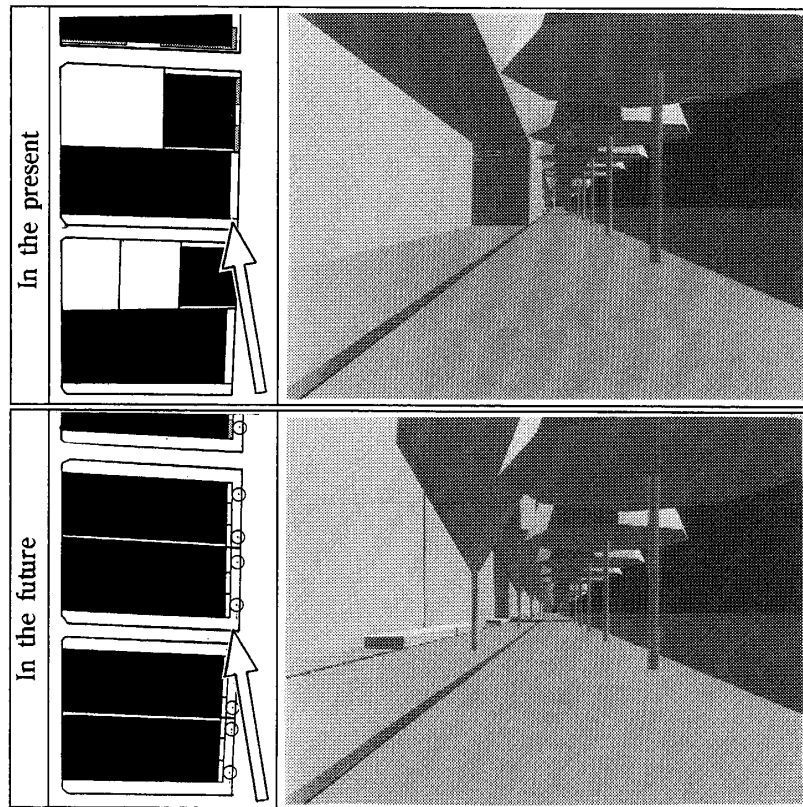


Fig. 6 Street space models of one-lot blocks

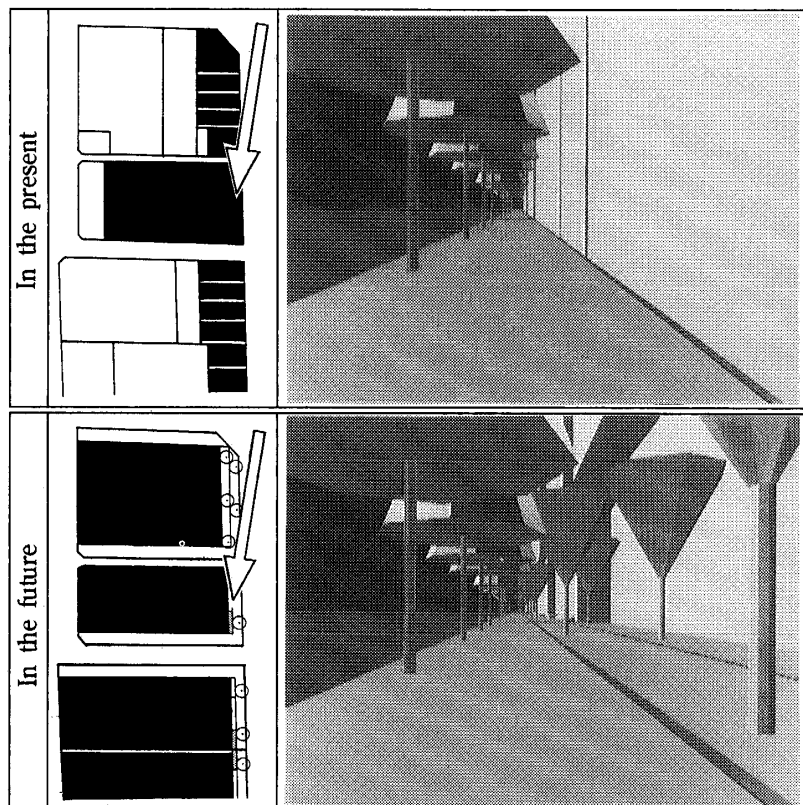


Fig. 7 Street space models of two-lot blocks

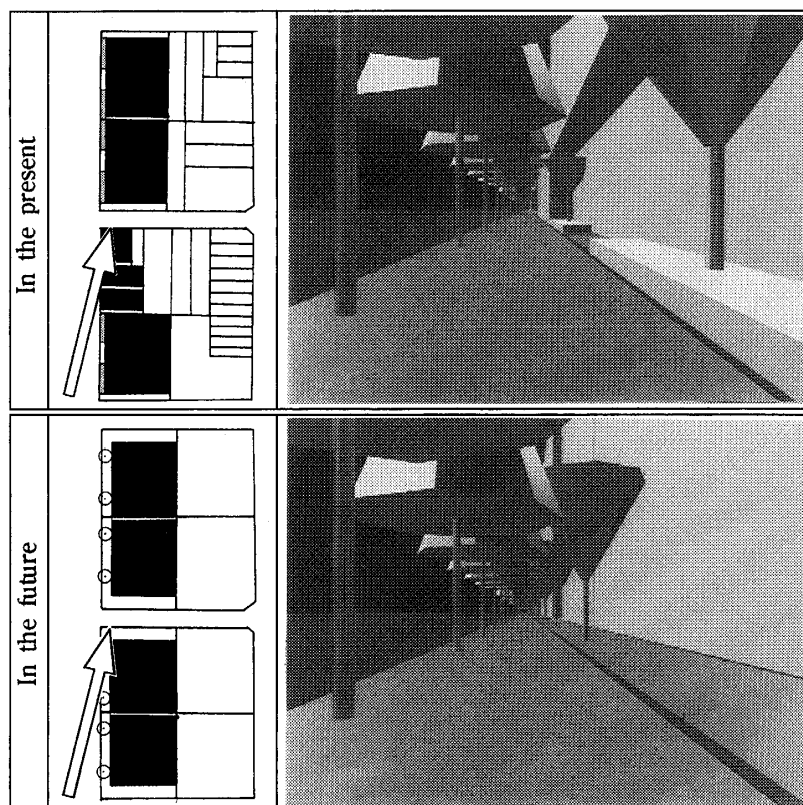


Fig. 8 Street space models of four-lot blocks

of lots and on the lower levels of buildings will offer the possibility of varied usage that will attract pedestrians. In terms of landscape, the current location of buildings extremely near or on the boundary between public and private spaces renders the landscape oppressive. In the future, however, open spaces created in the front of lots and on the lower levels of buildings are expected to offer a sense of spaciousness and depth. Yet, at the same time, it must be noted that this can result in a new problem: open spaces of a too similar size located on the lower levels of adjacent buildings may excessively emphasize the continuity of the streetscape, depriving the area of special charms that could result from varied and unpredictable "rhythms" of landscape.

Conclusion

In 1995, the Guidelines for Landscape Improvement Involving Buildings on Midosuji Boulevard were adopted. Accordingly, at the time of renovation, buildings facing Midosuji Boulevard are required to have a 4-meter setback area from the boundary between public and private spaces. Moreover, Osaka City's Comprehensive Design System encourages tree-planting that harmonizes with surrounding buildings as well as the planting of tall trees at appropriate intervals along pedestrian paths in public open spaces. To make Midosuji Boulevard more attractive in the future, not only setback areas should be adopted but also quality open spaces, where lively urban activities can take place, should be secured in the low-level front of buildings. By so doing, Midosuji can be improved further in both utilization and landscape: pedestrians can relax, enjoy themselves and meet friends in such open spaces, which appear at appropriate intervals along Midosuji and add a pleasant "rhythm" to the streetscape.

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