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"Invisible Ceiling" behind the Formation of Urban Skylines in Tokyo

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Abstract

This paper aimed at exploring one feature in the mechanism of cityscape formation in Tokyo. The formation of skylines is diversified depending on the areas of Tokyo, that is, the core area (CBD), Shinjuku sub-center, and waterfront area and the like. Behind the formation of those Tokyo's skylines, there are several invisible forces regulating the heights of skyscrapers. Particularly, the heights of buildings are highly regulated by the Aviation Law according to a distance from Tokyo International (Haneda) Airport. Though skyscrapers are increasing rapidly and the skyline of Tokyo has been changing drastically, skyscrapers cannot extend to the sky unlimitedly due to invisible sealing existing over Tokyo. Instead, skyscrapers extend sideward in order to secure the same floor space. Consequently, the cityscapes of Tokyo in the near future will be crowded with not tall but wide cube-shaped buildings.

Key Words: Tokyo, Urban Landscape, Skyline, Skyscrapers, Aviation Law, Obstacle Limitation Surface, Urban Renaissance Special Measure Law

1. Introduction

High-rise buildings have come to be considered one of the most important elements in the make-up of an urban landscape. Going three-dimensional (building upwards), we have acquired a considerably greater amount of space than ever before. On the other hand, due to a reduction in sunlight and what some sense as visual intimidation, we have also witnessed deep-rooted objections toward the construction of high-rise buildings in recent years.

Irrespective of whether you take an affirmative or a negative stance, in many cases, high-rise buildings have existed as regional landmarks which symbolize authority and power owing to their magnificent scale. As examples, churches with spires and castle towers can be named. And since the arrival of the twentieth century, the skyscrapers in New York or Shanghai, for example, have become symbols exhibiting the prosperities of their respectful nations, the United States and China, and have also played a role in enhancing their nation's standing.[1)]

Regarding studies on the construction of high-rise buildings in the field of urban geography in Japan, we can name two masterpieces by Todokoro (1986) and Yamashita (1999). They made detailed analyses on high-rise buildings from geographical viewpoints. Both papers have succeeded in obtaining valuable results on the diversification of the three-dimensional functions of urban space as one aspect of the study on the internal structure of cities. However, studies which have analyzed high-rise buildings from the aspects of urban landscapes are still small in number. Looking overseas, there was a series of studies conducted by Ford. In his study, Ford viewed high-rise buildings as a part of typical urban landscapes in North American cities. And then he has made a comparative analysis of the urban landscapes in cities

across the United States (Ford, 1994). However, the paper failed to delve into the factors which cause urban landscapes to be so different due to the existence of high-rise buildings.

In general, the formations and the changes of the landscapes are considered as visual products resulting from various forces in play in the region. Accordingly, determining what forces are relevant to the formations of the skylines in a city, namely the regulations on heights of skyscrapers, is an important theme in the study of urban landscapes. In Tokyo[2], particularly since the start of the new century, there has been a rush in skyscraper[3] construction and hence, the skyline of Tokyo is steadily showing a remarkable change. This paper thereby aims at exploring the regional diversifications of the skylines in Tokyo and also aims at inspecting some factors which form the urban landscapes by analyzing various matters and conditions which restrict the heights of buildings.

2. Distribution of Skyscrapers in Tokyo

Figure 1 shows the distribution of skyscrapers in the central part of Tokyo. This figure clearly shows that the skyscrapers in Tokyo tend to increase in height in the direction from south to north. Further, to focus on the density of the skyscrapers, it is confirmed that the skyscrapers are agglomerated roughly in three areas. That is, the first area being "the central area of Tokyo" which lies to the east and south of the Imperial Palace, the second area being "Shinjuku Sub-center" which is located on the west side of Shinjuku Station with a dense erection of relatively higher skyscrapers, and the third area being "the Waterfront" where relatively lower skyscrapers are erected in a

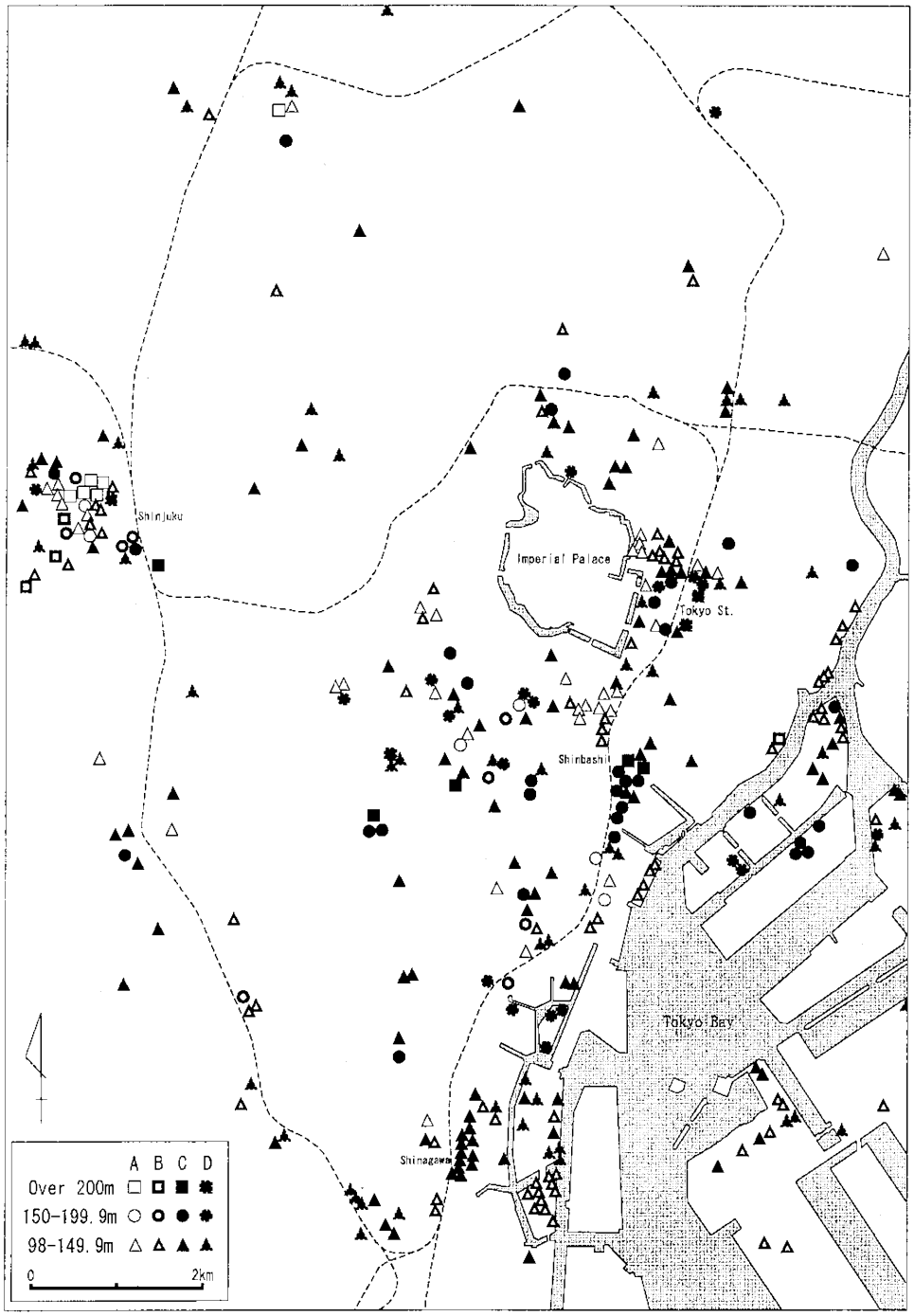

Figure 1 Distribution of skyscrapers in the central part of Tokyo

Sources: Bureau of City and Regional Development of Tokyo Metropolitan Government (2004)

and The Building Center of Japan, Each issue

Note: A-D refer to completed year (A: before 1987, B: 1988-1997, C: 1998-2005, D: after 2006)

wide range from the bank of the Sumida River to the coast of Tokyo Bay. The characteristics of the respective areas are described hereinafter.

2-1. The Central Area of Tokyo

The central area of Tokyo, the area ranging from the east to south side of the Imperial Palace, forms the biggest business office zone in Japan. This area is comprised of several districts having their own unique characteristics, i.e., Nihonbashi District (where many companies in the Mitsui Group have their headquarters), Marunouchi and Otemachi District (where the Mitsubishi Group has lead the developments), Kasumigaseki District (government office quarter), Toranomon and Akasaka District (many foreign-affiliated companies have their offices in the buildings owned by Mori Building Co. Ltd), and so forth. The high land price of this area creates strong demand for the effective utilization of the land whereby the verticalization of the buildings has been considered inevitable.

In Marunouchi and Otemachi District (Photo 1) and Kasumigaseki District (Photo 2), single large-sized buildings, starting with the Marunouchi Building and the government office building, have been built in each relatively wide plot of land for many years. As buildings dilapidate, one after another they have been replaced with skyscrapers. However, due to the proximity to the Imperial Palace, there has been strong opposition toward the verticalization of buildings in consideration of the landscape. Accordingly, there had been no skyscraper exceeding a height of 100m for a long time in this district. However, since 2000, buildings exceeding 100m have been built one after another. Furthermore, seven or eight skyscrapers over 150m are planned to be completed in this district within a few years[4].

"Shiodome Sio-Site" which forms a group of skyscrapers in Shinbashi District

(Photo 3) is the redevelopment site of the old Japan National Railways train yard. In this area, skyscrapers have been built in succession since 2002. In the newly developed blocks, twelve skyscrapers in total have been erected. In Toranomon and Akasaka District, while there are many residential areas with many plots of land finely subdivided and owned by different landowners, the development of the area as a whole has been taking a considerable amount of time with dealing with developers and multiple landowners (Photo 4).

2-2. Shinjuku Sub-Center (The West Part of Shinjuku)

Shinjuku Sub-center, often called "the Manhattan of Japan", is an area where a large number of skyscrapers of outstanding heights were first built relatively earlier than other areas (Photo 5). The history of the development of this district dates back to 1960 when the "Shinjuku Sub-Center Plan" was authorized due to the enactment of the National Capital Region Development Law. The then Yodobashi purification plant (about 34ha) at its center, the fan-shaped district spreading out towards the west exit of Shinjuku Station (about 96ha) was designated as the planned area. In 1965, the purification plant was relocated to Higashi Murayama City and 11 new blocks were built on the site applying the "Special Block" system. Then, starting with the "Keio Plaza Hotel", 14 skyscrapers were built within 20 years, including the "New Tokyo Metropolitan Government Building" which was finally completed in 1991.

In Shinjuku Sub-center, these newly built blocks on the site of the former water purification plant became the core of the development and triggered further redevelopment in the peripheral areas of the core blocks leading to further construction of skyscrapers. Skyscraper construction has extended from the former water purification plant site (Nishi-Shinjuku 2-chome) to 3-chome and 6-chome of

Nishi-Shinjuku, as well as to Yoyogi in Shibuya-Ku and even to Honcho in Nakano-Ku. As of 2005, the total number of skyscrapers built in Shinjuku Sub-center had reached 29. Including Yoyogi and other areas around the sub-center, there are roughly 40 skyscrapers forming an urban landscape which can be rarely seen in Japan.

2-3. The Waterfront

Until the middle of the 1980s, the Waterfront Area (Photo 6), which faces Tokyo Bay and the Sumida River, functioned as a center of industrial and physical distribution with a concentration of factories and warehouses. In the 1980s, because of containerization and the structural changes in the Japanese industry, these factories and warehouses were relocated overseas or closed down. As a result, a huge amount of land remained. Such huge plots of vacant land are located somewhat far away and not easily accessed by public transportation. However, different from subdivided urban land owned by many landowners, these vacant lots were owned by a single or a small number of landowners. These large integral areas of land can be easily obtained and hence, are considered suitable sites for urban development. Skyrocketing land prices due to the economic bubble at that time further increased the value of the land in the Waterfront Area.

Accordingly, in this Waterfront Area, the redevelopment is not limited to the construction of a single building in each small plot of land. That is, the Waterfront is characterized by large-scale redevelopment projects contributing to the district as a whole. "Shinagawa Seaside Forest", "Tennozu Isle", "River City 21" and so forth can be considered such areas. "Tokyo Waterfront Sub-center Project" implemented by the Metropolitan Government has also contributed to the enhancement of the large-sized redevelopments of this area. New lines of public transportation have been set up and

traffic inconveniences in this area are gradually being solved and hence, more and more "Tower Mansions" are being built here. Due to such a rush to build Tower Mansions, the tough competition in the sales of residences in this waterfront area is often called "the Gulf War."

On the other hand, in the same manner as Shiodome, the site of the train yard of the former Japan National Railways on Shinagawa Station's east side was redeveloped. Due to the completion of the "Shinagawa Intercity" and the "Shinagawa Grand Commons" and the opening of New Shinagawa Shinkansen Station, this land has been revived as a convenient and comfortable business district. Furthermore, in another district located on the east side of Shinagawa Station, several redevelopment projects in Tennozu, Kounan, Shibaura District and so forth have taken place one after another following the redevelopment of the Shinagawa Station east side. In this area, a group of skyscrapers having a substantially similar height of 100 to 150m stand like a wall along the Waterfront (Photo 7).

3. Forces Regulating the Height of Buildings

Progress in construction technologies has allowed a steady increase, year by year, in the height of buildings being constructed. Around the world, skyscrapers over 400m high have been constructed one after another not only in cities like New York and Chicago in North America but also in Kuala Lumpur, Hong Kong, Shanghai and the like in Asia. In Japan, the highest skyscraper at present is the "Landmark Tower" in Yokohama which was completed in 1993. The height of the tower is 296m, not even reaching 300m. Frequent earthquakes in Japan might be regarded as a factor which

brings about such differences between Japan and the above-mentioned cities in foreign countries. However, as of the end of 2005, the world's highest skyscraper over 500m is in Taipei in Taiwan, which is also an earthquake-ridden country like Japan. Further, by knowing that this skyscraper was built by a Japanese construction company, we can speculate that there must be some other factors in Japan behind the nonexistence of buildings over 300m. Some such factors are examined hereinafter, using Tokyo as an example.

3-1. Building Codes

Different from North America where the verticalization of its cities started at the beginning of the 20th century, Japan, which is an earthquake-ridden country, has a long history of prohibition of high-rise building construction. In 1919, the Town Building Law established the standards with respect to heights of buildings in which every building was obliged to limit its eaves height to within 100-shaku (about 31m). Soon after the enactment of the law, the Great Kanto Earthquake occurred in 1923 and a 52-meter-high building (Ryoun-Kaku) built of bricks before the enactment of the law collapsed and hence, the risk of high-rise buildings was realized. Eaves height of 31m corresponded to the height of an 8-to-10-story building of the time. In Marunouchi and other districts, a landscape reflecting buildings having the same eaves height was created (Photo 8).

However, the "theory of flexible structure" of buildings was advocated after the Second World War and hence, the construction of safe, earthquake-resistant skyscrapers became technically possible. Then, in 1963, the Building Standards Law was revised so as to abolish the absolute height regulations of buildings. As a result, it is basically possible to build high-rise buildings freely. In place of such regulation, "the floor area

ratio system" was introduced, which limits the resulting area when dividing the total floor space of a building. The floor area ratio differs based on its specific-use zone. In Tokyo, for example, the floor area ratio of the city's Center and Sub-Center commercial zones is designated at from 600% to 1300%, with other commercial zones being from 400% to 700%, and residential areas being from 200% to 400%. Furthermore, there are exceptional systems such as "Specific Block System" in the Building Standards Law and hence, it is possible to receive an allowance in the increase of the floor ratio provided that the acquisition of the open space is ensured.

On the other hand, for each specific-use zone, building regulations such as the Slant Line Regulation (Setback Regulation) have been established by the Building Standards Law and hence, the designated floor area ratio may not be completely utilized in many cases. Further, there exists a provision in the City Planning Law which allows the establishment of "height control zones" permitting self-governing community bodies to set the maximum height of a building in their residential area. It is evident that such regulations in building height established by law have brought about differences in the landscapes of those respective districts.

3-2. Aviation Regulations

Throughout the world, in regions located close to an airport, the height of buildings is regulated in order to assure the safety of aircraft taking off and landing at the airport. In Japan, based on the Aviation Law, building height regulations (called "the obstacle limitation surface") are applied depending on the distance between the district and the airport [5]. The obstacle limitation surface of Haneda Airport covers the whole area from the southern to eastern part of Tokyo and its conic surface extends almost to the City Center of Tokyo (Figure 2). However, the conic surface and the outer

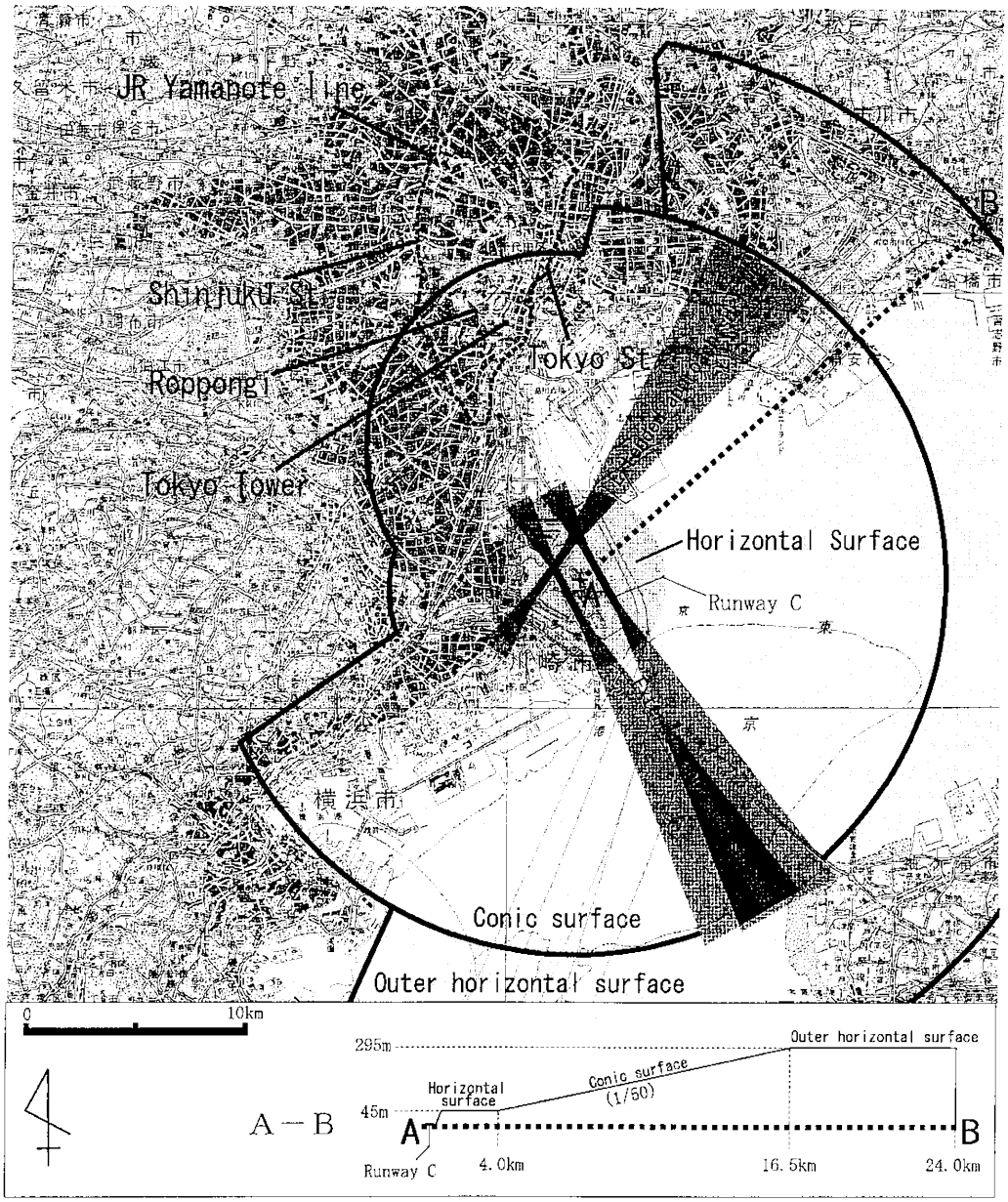

Figure 2 The obstacle limitation surface of Tokyo International (Haneda) Airport and its vertical cross section (A-B)

Source: materials obtained from Ministry of Land, Infrastructure and Transport

horizontal surface form a round shape which has a portion thereof cut-off and hence, Nishi-Shinjuku and the like are not located in the regulated area whereby the regulation is not imposed on the building height of the area [6].

According to the Aviation Law, it is possible to designate a gradient of the conic surface to 1/50 or more, that is, with an inclination at which the obstacle limitation surface is increased by 1m for every 50m away from the airport. In other words, the conic surface of Haneda Airport (1/50) has a rather gentle slope (Figure 3) compared to the International Standards (1/20) enacted by the International Civil Aviation Organization (ICAO). This is because, in allowing an aircraft to take off from or land at the airport while performing a circular flight, the conic surface of Haneda Airport is ensured as a zone which includes an approach surface, an extended approach surface, and a take-off climb surface all having the same level. Actually, the aircraft leaving Haneda towards the City Center turn in a clockwise direction shortly after taking off from the airport.

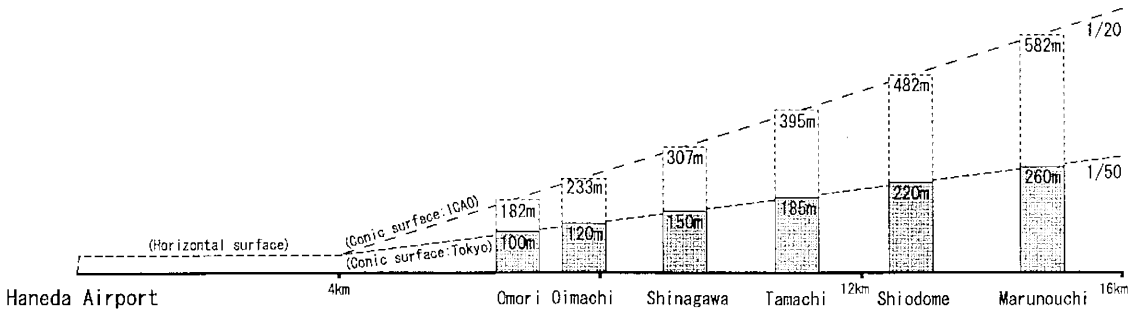

Figure 3 The height limit of buildings in each district regulated by the obstacle limitation surface of Tokyo International (Haneda) Airport

Source: materials obtained from Ministry of Land, Infrastructure and Transport

The obstacle limitation surface of Haneda Airport was introduced in 1962 and many skyscrapers built in Tokyo have increased their heights extremely close to the obstacle limitation surface with the progress of building technologies nowadays. In short, the obstacle limitation surface imposes a considerable restriction on the verticalization of the buildings. As indicated by the broken line in Photo 9, it is apparent from the figure that, as you approach Haneda Airport (left side of the photo), the height of the buildings in the landscape is linearly lowered as if top portions of the buildings have been trimmed (the same phenomenon is shown in Photo 7).

3-3. Environmental Impact Assessment

When a large-scaled development project is carried out, cases may arise in which the ambient environment is greatly changed thus creating trouble between developers and residents of the area. Thus, efforts have been made to predict and evaluate what impact the project may impose on the environment, and to ask specialists to judge the impact and to listen to opinions of residents and local governments so as to prevent any trouble from happening well in advance. This movement is called "the Environmental Impact Assessment System." In Tokyo, ordinances were enacted in October 1980 and this assessment has been enforced on any building project over a certain scale.

Any building 100-meters or higher with 100,000m^2 or more of total floor space is subject to this system. The items in the assessment include sunlight, radio disturbance, wind environment, landscapes and so forth, and the process of the assessment basically follows the following procedure. Firstly, a document is submitted by a developer which will be discussed thereafter and, then, a presentation meeting is held for the residents living in the vicinity. Next, written opinions are submitted by the residents and plans

are made in accordance with those opinions. Generally, this process usually takes about 20 months, which causes a substantial delay for the founder in completing its business, creating a financial burden as well as having to pay property taxes, thus constructing such large-sized buildings have been avoided wherever possible. Therefore, to no small extent, have buildings been constructed to a height of slightly under 100m (such as 99.8m) with the 100-meter line being one of the legal hurdles in building skyscrapers.

3-4. Informal Agreement and Guidelines

The "Tokyo Marine Building (appellation at the time)" built in front of the Imperial Palace was originally designed to have 30 stories at a scale of about 130-meter-high, which was supposed to be the first skyscraper in Japan. However, the Tokyo Metropolitan Government rejected its building certification application for the reason that constructing such a high building in front of the Imperial Palace is not appropriate. In the end, the builder compromised on modifying the size of the building to 25 stories at a height of 99.7-meters and hence, the building was completed in 1974, about 10 years after the application was submitted. Originating with this case, an unwritten law was created that states the height of skyscrapers built thereafter in front of the Imperial Palace should be voluntarily regulated under 100m-high and hence, a skyline linearly trimmed at 100m in eaves height, replacing the original 31m absolute restriction, has been gradually formed (Photo 10).

In the course of such a trend, Mitsubishi Estate Co., Ltd. announced the "Marunouchi Redevelopment Plan[7]" (so-called "Marunouchi Manhattan Plan") in 1988. The proposal of this plan was accepted as a breakthrough draft by approximately 100 companies and groups of landowners and leaseholders of Marunouchi district and hence,

they together established the "Otemachi Marunouchi Yurakucho Redevelopment Project Council" in the same year. In 1996, Chiyoda-Ward, Tokyo Metropolitan Government and East Japan Railway Company joined the council and "The Advisory Committee on Otemachi-Marunouchi-Yurakucho Area Development" was inaugurated. The group combined the ideas of landowners and leaseholders' and the government to establish the Guidelines for Otemachi-Marunouchi-Yurakucho Area Development in 2000. In these guidelines, "landscape" is viewed as significant along with function, environment and networking of the futuristic picture of this district.

Among the guidelines which take the landscape into consideration, there exists a passage "We aim at the realization of buildings having heights of approximately 150m while observing the fixed height of 100m in this area and also by taking the fixed uniformity of the skyline into consideration. In the respective centers of Otemachi, Marunouchi, Yaesu, and Yurakucho, in order to symbolize their centrality and skyline, we aim at the realization of buildings having heights of approximately 200m" (Fig. 4). This height is set considerably lower than that of the obstacle limitation surface of this district (around 260m) set by the Aviation Law.

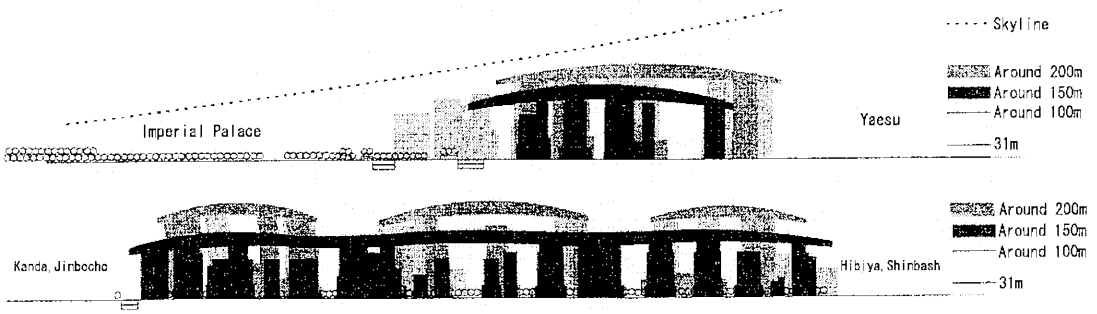

Figure 4 The images of skylines in Otemachi-Marunouchi-Yurakucho Area

Source: The Advisory Committee on Otemachi-Marunouchi-Yurakucho Area Development, (2005)

The guidelines do not have any legal effect. However, these guidelines have been established based on the agreement of the landowners and the municipal authorities and will be observed for the time being. As a matter of fact, the buildings completed in this area after the establishment of the guidelines such as Marunouchi Building (179m), Mitsubishi Trust & Banking Headquarters Building (148m), Nippon Life Marunouchi Building (159m), Marunouchi Kitaguchi Building (147m), and Meiji Yasuda Life Building (147m) all have heights which follow the guidelines.

4. New Trends – Urban Renaissance Special Measure Law and Deregulations

The concept of urban renaissance originated in government discussions conducted in 1998 on emergency economic measures to deal with bad loans and asset deflation. This concept is one of the most significant policy issues ever brought forward by the Cabinet since the inauguration of Prime Minister Koizumi, and this concept has been considered as the prescription for reviving the Japanese economy. Under the prolonged recession after the collapse of the bubble economy, the policy was expected to promote the mobilization of real estate which was unused or could not be sold due to bank bad loans and so forth, so that the real-estate market is activated to promote effective use of the land and, at the same time, the revive the Japanese economy. In this manner, this policy was expected to serve a dual purpose by both making effective use of lands and enhancing the Japanese economy. Such policy brought about the expectation that urban development will bring about a positive economic impact on a great number of industries such as the construction, traffic, real estate and building materials industries.

Reflecting upon the above-mentioned history, the Urban Renaissance Special Measure Law (Law No. 22 – April 5, 2002) came into effect in June 2002 as legislation valid for a period of 10 years. This law stipulates that an Urban Renaissance Headquarters be set up in the Cabinet and this headquarters is to designate specific areas "Urgent Development Area for Urban Renaissance" and take specific measures such as establishing deregulation policies and the like for urban development with respect to those designated areas. In order to moderate the regulations, several laws relevant to the Urban Renaissance Special Measure Law such as the Building Standards Law, the City Planning Law, the Urban Redevelopment Law and the like were also partially amended.

In Tokyo, a total of 2375ha over seven districts such as the surrounding area of Tokyo Station and Shinjuku Station is primarily designated as Urgent Development Areas for Urban Renaissance[8]. Within these areas, districts designated as "Urban Renaissance Special District" are regarded particularly significant, with several town planning regulations such as floor area ratio, specific-use zones, height and so forth are not applied to this district in addition to the various preferential treatments in financing implemented for the development activities.

Among the series of construction-related regulations established so far, the establishment of the "System for Special-Case Floor Area Ratio Application Zones" has largely accelerated the increase of skyscraper construction in addition to increasing floor area ratio. This system has enabled the transfer of some amount of a building's floor area from one site to another even if these sites are spaced apart, so long as both sites belong to the same commercial district. Due to this system, developments with a floor area ratio that far exceeds 1300%, which used to be the maximum possible ratio at a single site, have now become possible.

The Urban Renaissance Special Measure Law includes changes to the Environmental Impact Assessment and hence, requirements on the size of high-rise buildings to be newly built in a Special Zone for Urban Renaissance and other areas have been eased, as in the case of Tokyo. In other words, since July 2002, (limited to the center, sub-centers and special districts such as Urgent Development Area for Urban Renaissance) along with the reduction in procedure time, requirements necessary for buildings requested to satisfy the Environmental Impact Assessment have been relaxed to 180m in height and more than 150,000 square meters in total floor space. Still, despite such amendments to the requirements, several buildings have been constructed to a height of 179.9-meters in such districts with eased regulations by merely dodging the requirements.

On the other hand, the outer horizontal surface of the obstacle limitation surface of Haneda Airport was also reviewed and amended, and it was announced on April 28, 2005 that a part of the horizontal surface of the obstacle limitation surface which covers Sumida-Ward to Yokohama-City was deleted from the outer horizontal surface. However, the conic surface has not yet been reviewed and the Federation of Economic Organizations, the Economic Organizations of the Tokyo Chamber of Commerce and Industry and the like have requested the Ministry of Land, Infrastructure and Transport to make conic surface revisions. In response to this request, the Ministry of Land, Infrastructure and Transport stated that the revision will be considered in accordance with the ICAO's review of conic surface levels planned for a few years from now.

Still further, inspired by the "Urban Renaissance Special Measure Law", the "Guidelines for Otemachi-Marunouchi-Yurakucho Area Development" were updated in September, 2005 and renamed as "Guidelines for Otemachi-Marunouchi-Yurakucho

Area Development 2005". In the new guidelines, provided that such buildings are considered to contribute to the formation of a better landscape, the buildings are allowed to increase their heights to 200m or more which is the conventionally established height.

5. Conclusions

There is no sign of decline in construction of new skyscrapers in Tokyo even since the start of 2006. Rather, there seems to be a tendency for the number of new skyscrapers to increase further. However, in the case of Tokyo, the legal height regulation set by the Aviation Law and so forth exist as the "invisible ceiling". Accordingly, even though further verticalization may be technically possible, skyscrapers cannot be extended limitlessly to the sky. Further, in a region where there are no legal restrictions, there are districts with set guidelines that control the landscape by limiting building height.

When an upper height limit is set, it is inevitable that the building will be expanded horizontally to ensure the total floor space of the same scale. Accordingly, an urban landscape consisting of a group of relatively wide buildings with no gaps between them may become more and more noticeable mainly around the water front areas. Some scholars point out that groups of buildings erected on the waterfront block the wind from the sea thus spurring on the heat island phenomenon occurred in a city. Also from this viewpoint, it may be necessary to review the regulations set by the Aviation Law. On the other hand, so long as the current environment regarding height restrictions is maintained, it is expected that the urban landscape of Tokyo will become considerably different from those of New York or Hong Kong which bristle with many

slender and spearheaded skyscrapers.

The relaxing of construction regulations set by the urban Renaissance Special Measure Law is one of the factors behind the remarkable increase of skyscrapers. The increase of skyscrapers attributed to increased volume creates a huge urban space. Does the demand for such a huge space exist in Tokyo? To compare Tokyo with New York which is the pioneer of skyscraper cities, while the average area of a residence in New York is approximately $80m^2$, that of in Tokyo is approximately $62m^2$. Assuming that the residential and workplace area per person in Tokyo grows to that of in New York, a large demand for space in Tokyo is to be expected. Further, to compare the area of parks in these two cities, while the area of New York parks is approximately $170km^2$(1997), the area of parks in Tokyo is approximately a mere $59km^2$(1996). By using the open space at the feet of the skyscrapers as public greenery space, it may be possible to increase the overall area of parks in Tokyo.

The urban landscape of Tokyo is changing at such a rapid momentum unseen anywhere else in the world and hence, it is necessary to continue to carefully observe the changes in the landscape of Tokyo. In particular, determining whether the increase of skyscrapers in a society with a decreasing population will bring about an increase in the utilization of space per person or whether it will lead to re-concentration in the city center and the hollowization of the suburbs will become a crucial task.

Acknowledgements

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Notes:

1) See, e.g, Goldburger (1986).

2) The ward part of Tokyo. The term refers to this hereinafter unless otherwise specified.

3) The definition of a skyscraper differs from country to country or from one group to another. In this paper, a building whose top portion reaches to or over 100 meters is defined as a skyscraper, or it is just called a high-rise building where specified. However, a building over 98 meters in height is classified as a skyscraper due to concerns in the Environmental Impact Assessment.

4) In Otemachi, a development called "chain reaction redevelopment" is in progress. In this development, setting the former site of the Otemachi Joint Government Buildings No. 1 and 2 as a seed lot, landowners and leaseholders relocate one after another using this lot as the starting point so as to sequentially renew the buildings in this district.

5) Obstacle limitation surface includes "approach surface" which extends along the airport runway, "extended approach surface" which is the extended approach surface for 15 kilometers, "horizontal surface" (4 km in radius) which spreads in a circle with the airport reference point as its center, "conic surface" (4km to 16.5km in radius) which spreads in a circle like horizontal surface does, although in a cone shape, and "outer horizontal surface" (16.5km to 24km in radius) which spreads around the outer portion of the horizontal surface and so forth. Among these surfaces, extended approach surface, conic surface and outer horizontal surface can only be designated for Class 1 airports and Class 2 airports determined by government ordinance. At Haneda Airport, which lies close to Tokyo, these

surfaces were designated in 1962. Obstacle limitation surface is based on the height above sea level and hence, building height restrictions include the height of the land whereupon the buildings are built.

6) This results from the discussion on the establishment of the surface regulations that built-up areas are possibly exempt from. Further, in the 900m area around Tokyo Tower (333m in height) which already existed at the time of the establishment of the regulations, construction of buildings over the obstacle limitation surface is specifically allowed by a different standard. Such buildings must be determined by the Tokyo Regional Civil Aviation Bureau as not being a disturbance to the safety of aircraft, relative to existing buildings. As such examples, the Roppongi Hills Mori Tower and the Tokyo Midtown Tower (under construction), both locating behind Tokyo Tower when viewed from Haneda Airport, are allowed a height of around 300m (above sea level).

7) A plan made by Mitsubishi Estate Co., Ltd. which is the largest landowner and leaseholder in the Marunouchi district. In this plan, around 60 skyscrapers of 40 to 50 stories are to be built in the district around Marunouchi and Otemachi, so as to turn the district into a leading international financial business center. The district is planned to be completed 30 years after construction starts.

8) In Tokyo, the following seven areas were primarily designated as Urban Development Areas for Urban Renaissance:

- the area around Tokyo Station and Yurakucho Station,
- the area around Shinbashi on the Loop Road No. 2, Akasaka and Roppongi,
- Akihabara and Kanda area,
- the Tokyo Waterfront area,
- the area around Shinjuku Station

- the roadside area around Tomihisa on the Loop Road No. 4, and
- the area around Osaki Station.

9) See, e.g., Ojima (2002).

10) Fuji Research Institute Cooperation (1997).

11) Ibid.

References:

The Advisory Committee on Otemachi-Marunouchi-Yurakucho Area Development, (2005) *The Guideline on Otemachi-Marunouchi-Yurakucho Area Development 2005*, The Advisory Committee on Otemachi-Marunouchi-Yurakucho Area Development.

The Building Center of Japan, Each issue, *Building Letter,* the Building Center of Japan.

Bureau of City and Regional Development of Tokyo Metropolitan Government, (2004) *Kenchiku Tokei Nempo (Annual Survey of Construction) 2004,* Bureau of Citizens and Cultural Affairs, Tokyo Metropolitan Government.

Ford, R. (1994) *Cities and Buildings: Skyscrapers, Skid Rows, and Suburbs,* Johns Hopkins University Press

Fuji Research Institute Cooperation, (1997) *Large Cities in the World 1997*, Executive Office for Major Citizen Summit 1997.

Goldburger, P., (1986) *The Skyscrapers,* Alfred A. Knopf.

Masai, Y., (1991) *Global Sekai Chishi* (A Global World Geography), Ninomiya Shoten.

Official Homepage of Civil Aviation in Japan, Ministry of Land, Infrastructure and Transport.
URL: http://www.mlit.go.jp/koku/koku.html (searched on September 30, 2005)

Official Homepage of Prime Minister of Japan and His Cabinet/Urban Renaissance Headquarters.
URL: http://www.kantei.go.jp/jp/singi/tosisaisei/index.html (searched on September 30, 2005)

Official Homepage of Tokyo Regional Civil Aviation Bureau/Regulations on Location of Buildings and the Like Around the Airport.
URL: http://www.mlit.go.jp/tokyo_cab/normal/index.html (searched on September 30, 2005)

Official Homepage of Tokyo Metropolitan Government/Environmental Bureau/Tokyo Ordinance of Environmental Impact Assessment.
URL: http://www2.kankyo.metro.tokyo.jp/assess/ (searched on September 30, 2005)

Official Homepage of Tokyo Metropolitan Government/Bureau of City and Regional Development/Policy and Standards for Designation of Intensive Land Utilization Zone in Tokyo.
URL: http://www.toshiseibi.metro.tokyo.jp/seisaku/new_city/koudo_riyuu.html (searched on September 30, 2005)

Official Homepage of Tokyo Metropolitan Government/Bureau of City and Regional Development/Town Planning Project.
URL: http://www.toshiseibi.metro.tokyo.jp/plan/pl_index-j.html (searched on September 30, 2005)

Official Homepage of Cabinet Secretariat/The Government Ordinance of Urgent Development Area for Urban Renaissance.
URL: http://www.cas.go.jp/jp/hourei/seirei/seibi_s.html (searched on September 30, 2005)

Ojima, T., (2002) *Hiito Airando* (The Heat Island), Toyo Keizai Shinpo Sha.

Todokoro T., (1986) *Toshi Kukan no Rittaika* (Verticalization of Urban Space), Kokon Shoin.

Yamashita, M. (1999) *Tokyo Toshinbu no Kukan Riyo* (Spatial Usages in the Central Area of Tokyo), Kokon Shoin.

Photos:

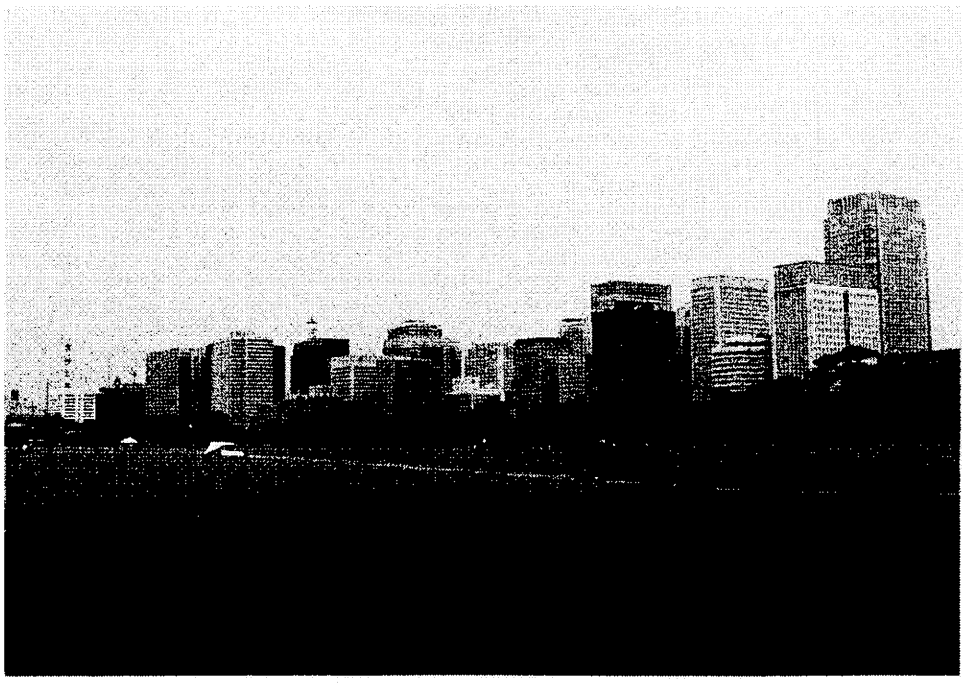

Photo 1　Skyline of Marunouchi and Otemachi district (2005).

Photo 2　Skyline of Kasumigaseki district (2004).

Photo 3　Skyline of Siodome Sio-Site (2005).

Photo 4　Skyline of Toranomon and Akasaka district (2005).

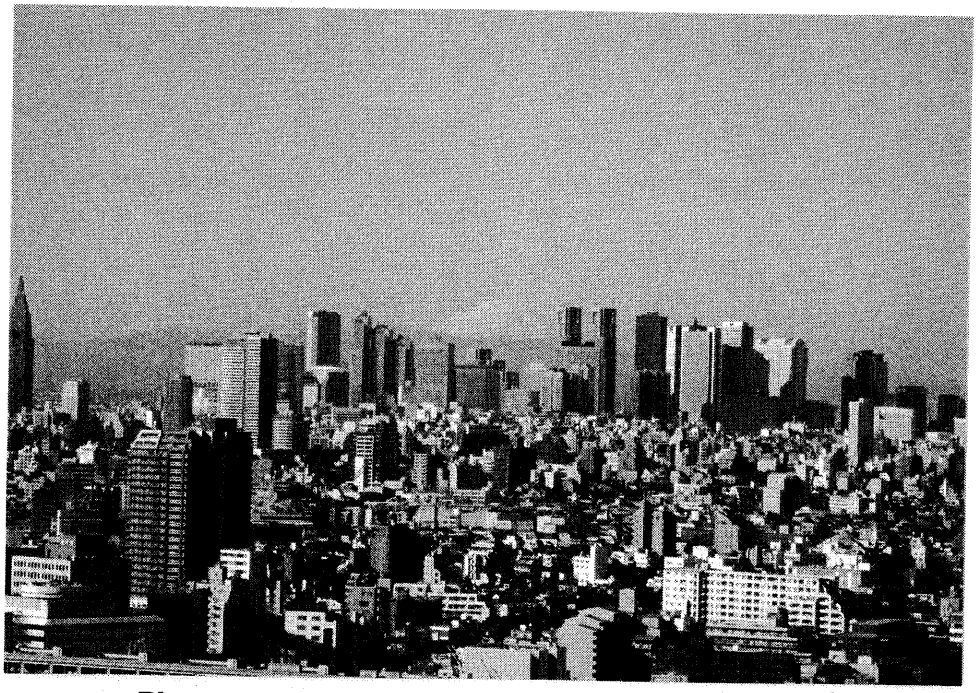

Photo 5 Skyline of Shinjuku Sub-Centre (2005).

Photo 6 Skyline of Waterfront area 1 (2005).

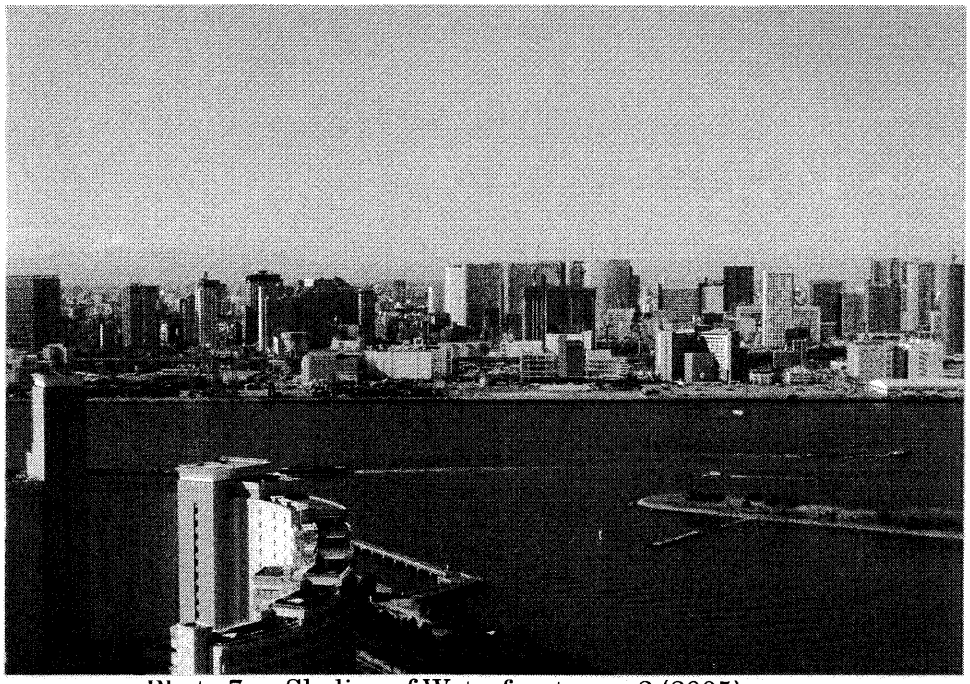

Photo 7 Skyline of Waterfront area 2 (2005).

Photo 8 Buildings with same eaves height (31m) in Marunouchi district (2004).

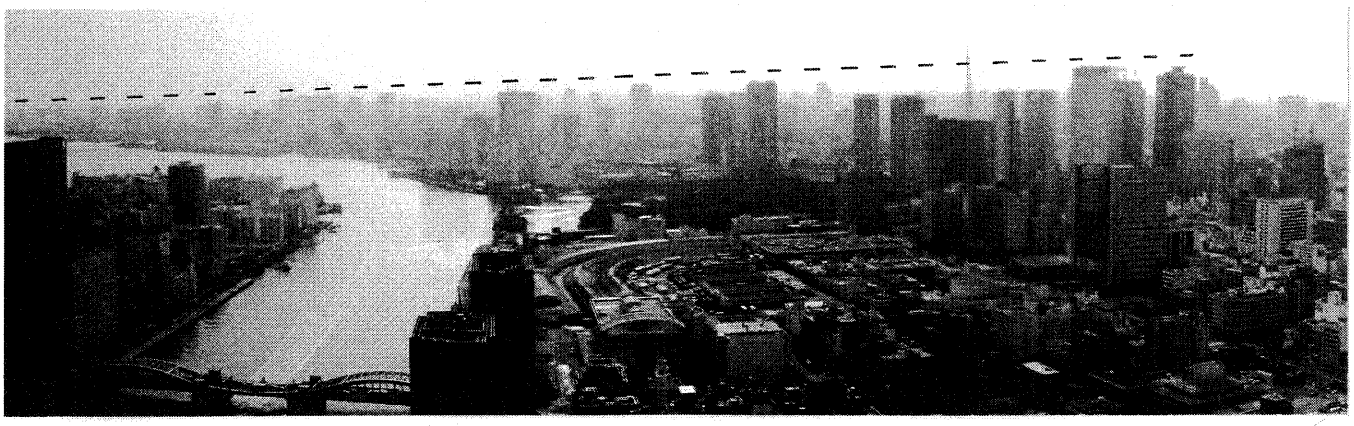

Photo 9 Height of buildings is linearly lowered toward Haneda Airport (left side) (2005).

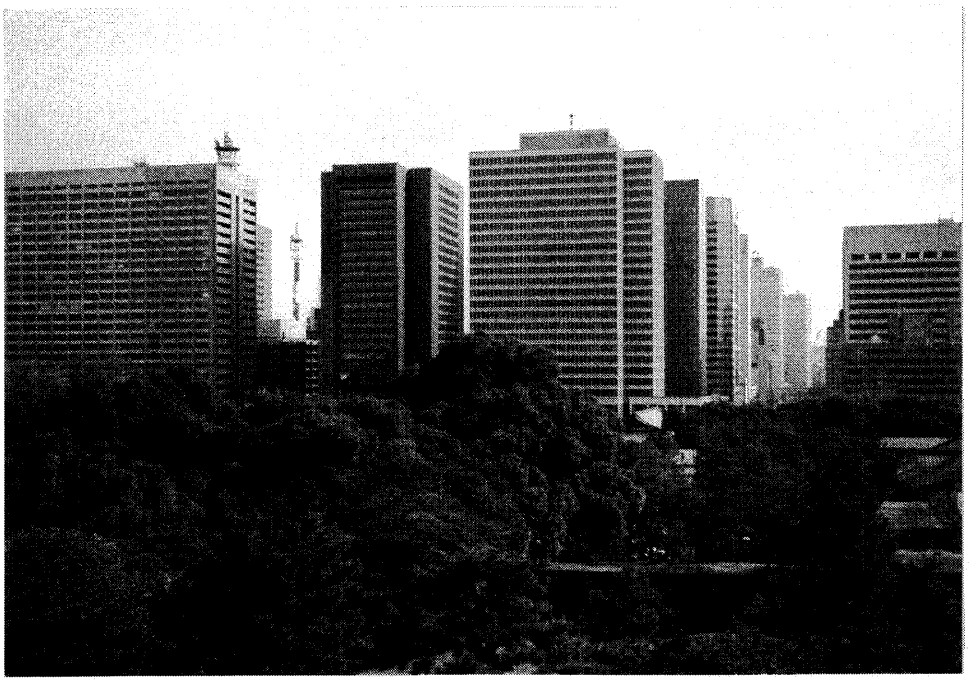

Photo 10 Buildings with same eaves height (100m) in Otemachi district (1993).