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Architecture and Urban Responsibility in High-Rise Design

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Jun Mitsui, born 1955 received his Bachelor of Science degree from University of Tokyo in 1978 and Master of Architecture from Yale University in 1982 with awards. He is currently heading Cesar Pelli & Assoc., Japan and Jun Mitsui & Assoc. He is also a member of Japan Institute of Architects and American Institute of Architects and is licensed in both countries. He practices in architectural design and urban design.

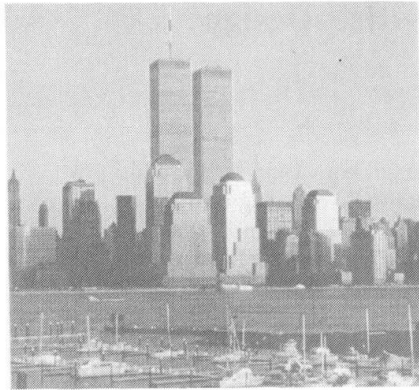
Summary

High-rise buildings became possible through technological innovations, however at the same time their impact to our living space has been astronomical and changing our look of cities dramatically. Technology should be for the better quality of our life. Therefore as an architect Cesar Pelli has been struggling hard to make this very modern building type as part of our friendly partner. Technology is becoming very internationally recognized and understood however, urban culture of each place is very much attached to the place and strongly connected to the tradition and custom of the district. The job of architect is to negotiate those conflicting phenomena of modern age and create a better cities for people.

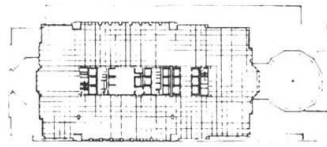
The Era of High-Rise Building

High-rise Building or so-called Skyscraper is a new invention of the modern society. They became able to exist by the modern technology which did not exist before the modern time. Office space before the skyscrapers were low to mid height office buildings with the light well (exterior courtyard in the middle) in the center.

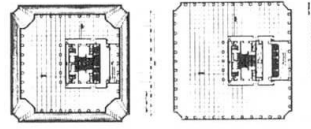
Skyscrapers became possible on a group of technologies, such as fast elevator technology, air conditioning and electrical technology and structural technology. Especially in Japan, compared to other areas of the world, the idea of real skyscraper had to be a very new idea, because of the strong seismic consideration.



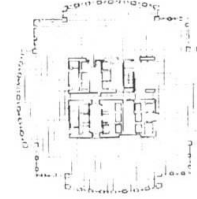
1 Skyline of New York



2 North West Center Plan

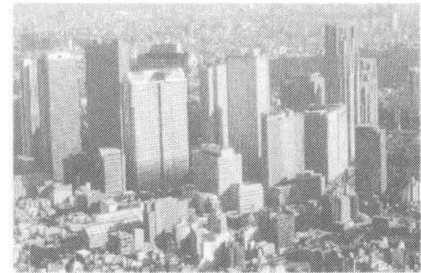


3 Mori Building Plan



4 NCNB Plan

At the same time high-rise buildings became also possible by the economical reasons of the land development. One was a great need for white-color work space and the other was a pressure to maximize the limited urban property. As the commercial activities get centralized and very dense in terms of the per square feet value in cities, the pressure to maximize the every inch of the property became very important. At the same time with the development of the hi-speed elevating system, it actually became economically more efficient to do high-rises than doing flat and large floor plate buildings. The leasing depth of the tower high-rises were around 40 ft and it was a comfortable dimension as a office space.

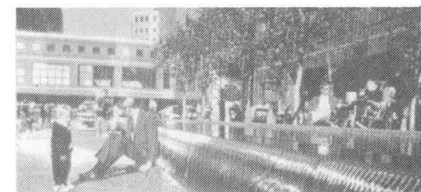


5 Bird's-eye view of Shinjuku



6 Bird's-eye view of Firenze

In any case, the idea of skyscraper became a very common idea in the modern world supported both by economy and technology and they are changing the traditional idea of urban space and urban development planning method.

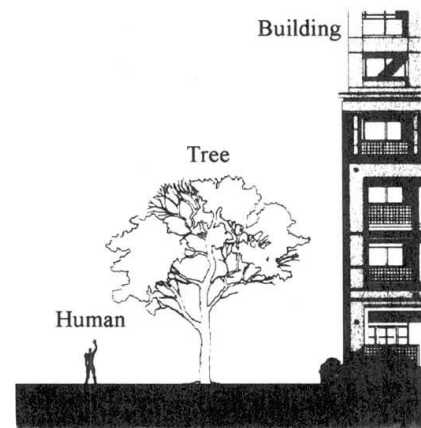


7 World Financial Center

Urban Impact by High-Rise Buildings

Because of its immense scale and volume as well as the numbers of the people living in the building and the energy consumed there, high-rise buildings have been always controversial issues in our society. Here I would like to focus my attention on the visual impact of the high-rise to the city both as part of our culture and as part of the tools to create comfortable city.

Cities are places for people not for buildings. Therefore the urban space such as street, piazza, plaza and others are so de-



8 Comparing Scales

signed that people in there feel comfortable and can enjoy their life in the city. And people has certain scale. Human scale, although they may be slightly different by generations, or country, they are in a certain height range. And trees are also in a certain height ranges too. As a result the scale of the buildings should fit to the scale of people and trees not vise versa.

In the process of urban planning studies for high-rise buildings, incentive method were created to minimize the negative impact of the high-rise buildings. This was to achieve more comfortable open spaces around the building by giving more FAR to the building as a bonus. As Le Corbusier tried in his "La Ville Radieuse" book, towers surrounded by green open space was one of the first try to solve the high-rise building and human scale, in which he tried to solve the scale problem by placing park around the tower. This method however as a result did eliminate the development of urban street space and made the space around the tower very barren. People needed street activities on the street not a very windy open plaza or just trees. From a urban activity (nigiwai) view points, the high-rise shape controlling method should be carefully studied.

Because of its immense volume, the wind moves around the tower sometimes in a very unexpected way and can cause uncomfortable micro-climatic conditions. Wind, after hitting the tower can be a very strong down-draft on the street and the velocity of the wind around the tower could be very annoying and sometimes can become physically very dangerous. The consideration to the micro-climate conditions which will be caused by the towers are a new urban problems and needs careful design responses to solve the problem.

Roles of High-Rises in the Urban Space Planning.

Because of its height, high-rise towers can play important role which mid-rise buildings could not play. One thing which it can achieve is the sense of landmark of the area. Height itself already gives a strong visibility and people get very much inspired by the height. There has been always a desire in people to go higher and taller structure. The KLCC towers which Cesar Pelli



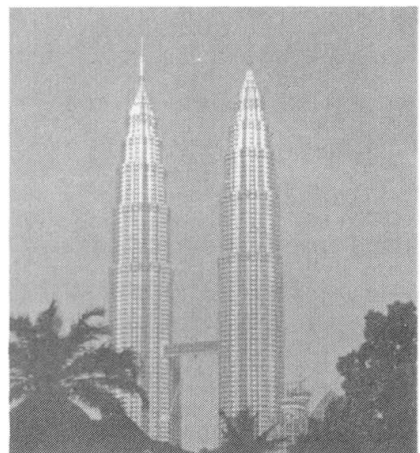
9 A contemporary city for 3 million people.



10 Urban Street Space formed by human scaled building fronts



11 Lack of attention to surrounding space



12 View of KLCC



& Associates (CPA) designed are the highest skyscraper in the world as of 1998 and the fact has been actually very much appreciated as a national pride by Malaysian people.

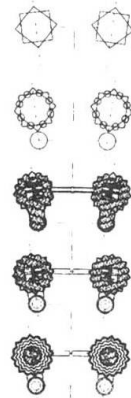
-KLCC Towers Kuala Lumpur, Malaysia-

Because of its very visible presence, not only the height but the design of the tower is also very important. In the KLCC tower we tried to achieve cultural metaphor in the tower design. First the floor plan of the tower is the overlap of the two squares rotated by 45 degrees. This combination is the basic set of geometry for Islamic visual culture which does not have icon figure in their life. The pattern with comfortable leasing depth and other mechanical space comfortably planned became a very reasonable floor plans for towers. The floor plans are fine adjusted depend on the floor and created a modern symbol for Kuala Lumpur. This project has two tower in symmetry and 70 meters space in-between. Each tower embodies the modern translation of the Islamic culture and the in-between space implies the gateway to the city.

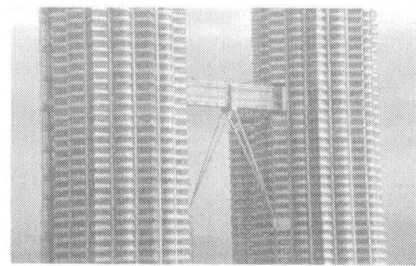
At the 52nd floor level two towers are connected by the double deck bridge for functional reasons. This large scale design configuration is obviously an urban response by Cesar Pelli, accomplishing its role. At the same time this tower has a huge commercial function base which makes the street life much more active and comfortable. People needs excitements and lots of people on the street to enjoy their life.

High-rise buildings have basically two different appearances in urban-scape. One is the long distance view which could be also called sky-line shape and the other is the base of the tower which defines the street space and very much related to human scale. Although the tower structure may be purer and simpler if it is isolated from the other structure, it is more comfortable for people if it has a smaller scale base attached to the high-rise structure.

At the beginning stage of the high-rise structure history, structural consideration prevailed and essentially decided its form.



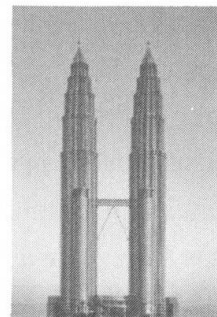
13 Plans of KLCC



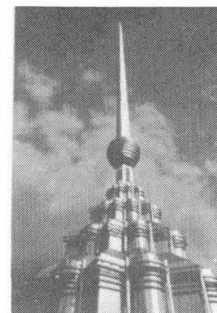
14 Bridge of KLCC



15 Base



16 Full view of KLCC



17 Detail of top

However now we are finding out that the technology and science is for people not just for technology and science and those are tools to achieve thinking of human-being. Even the high-rise buildings should be designed and should reflect the local culture of the place, and then they could be a cultural symbol of the place.

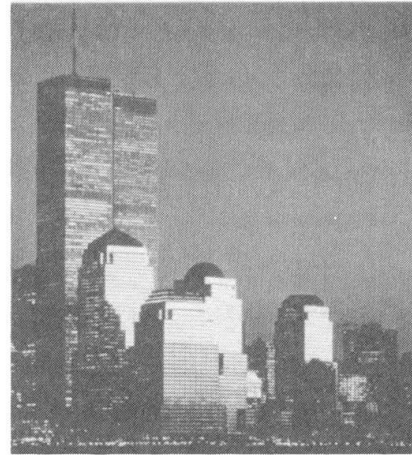
-World Financial Center NY, USA-

High-rise buildings in some cases are designed and planned in groups. When there are so many towers planned in the city, obviously the design and planning coordination of the towers are very important. In the early stage of the high-rise structure, it was not a consideration to make the tower much more sympathetic to the culture of the place. However we are realizing that it is actually very important to design towers carefully in coordination with other developments and urban context because the quality of the urban space will be decided not by a single building but the collection of the buildings in that area. In this project CPA was trying to balance the skyline form which will be created by both World Trade Center and WFC. It was not important to have a stronger presence or distinguished presence than the World Trade Center but to create a better Manhattan skyline and urban space together with the surrounding buildings. The end result, we believe is amazing. The new addition created a much better urban space in New York and added a great life to Manhattan skyline.

In this project there are four office towers and each has different shape roof as a metaphor to old New York skyscrapers. The floor plate sizes were adjusted so that basic tower floor plate sizes are very similar to World Trade Center. And there are setbacks in tower forms to create a sense of gradual height increase of the towers towards World Trade Center.

By this massing consideration, the World Financial Center and adjacent buildings became very interrelated urban buildings, those are together creating an exciting urban space.

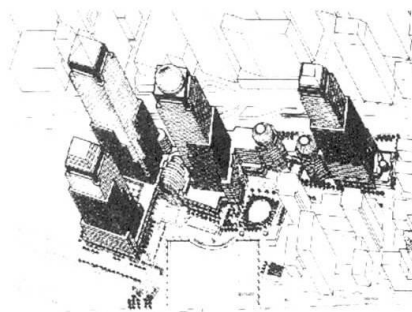
Buildings are so interlaced in the modern cities and collaborating spatial effect of the multiple buildings in the city is becoming



18 View of the World Financial Center



19 View of the World Financial Center



20 Axonometric



21 Base of the World Financial Center



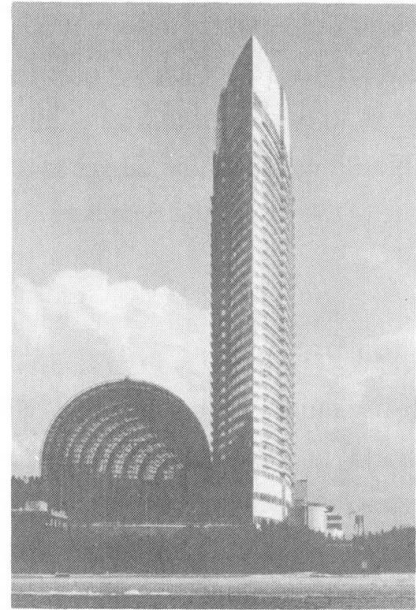
very important especially in the large scale high-rise buildings. As an architect we feel that it is our responsibility to create better city and better buildings for future by adapting the presence of high-rise bldgs. and by adjusting its scale and make it more gentle to people.

-Sea Hawk Hotel, Fukuoka, Japan-

This project is right on a beautiful bay called Hakata Bay, and next to the huge indoor baseball dome structure called "Fukuoka Dome". When the design started for this hotel, the baseball dome was already designed and our goal was to create a good resort hotel and beautiful skyline for the entire complex including the future Fantasy Dome. Since the massing of the Dome Stadium is so large and chunky that we felt that the design of the hotel high-rise tower should be rather thin in profile and should look visually light. In the end the floor plan of the tower became a ship-like form with the pointed top. This shape also achieved a view to the Hakata Bay from all the guest rooms. We also added a vertical articulation to the tower. Since the structure became so thin, we had to put the seismic mass damper at the top of the tower.

From the bay, the high-rise tower poses a very strong and characteristic presence and it is a very visible landmark of this area. The height of the tower is limited by the airport near-by, however it is the highest structure in that area. When people approach from air or on the sea or by car, the shape of the structure is so designed that from every angle, the structure appears almost as a sculpture and gives a new addition to Fukuoka culture.

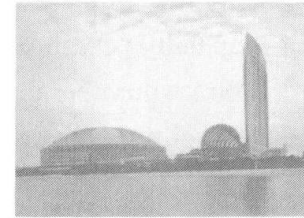
Cesar Pelli & Associates have done many skyscrapers all over the world and what interests us most whenever we design high-rise building is to contribute to creating a comfortable and pleasant living environment through architectural design and urban design. When we design skyscrapers, we see people working there, shopping there and enjoying the buildings and the environment which the skyscrapers creates.



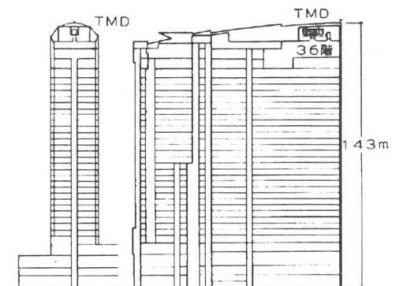
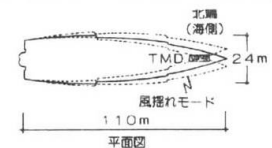
22 View of the Sea Hawk Hotel



23 Plan



24 The view from Hakata Bay



25 Seismic Damper System

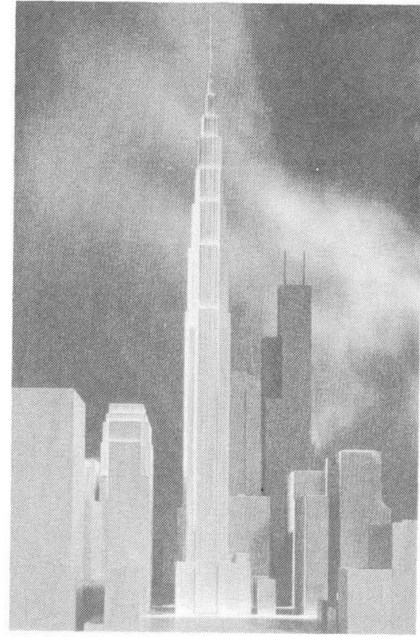


26 The base of North West Tower



27 Shopping Arcade in the North West Tower

New high-strength steel and high speed computer controlled elevator system will soon make a kilometer tall high-rise possible. And at that time we will have to ask ourselves why we are building such a tall tower? Do we really need it for our better life or is it simply for a technological challenge or a desire of human-being to show its pride and achievement. However when economy or technology decides to build the next generation structure, as an architect we are committed to design the new structure to make our city more comfortable and livable space.



29 Miglin Beitler Tower

Quotation

1. Photo No.1 taken from "The Master Architect's Series-Cesar Pelli," published by Sigma Union, 1993 page 55
2. Photo No.5 taken from "The Development of Complex Renovation," published by Syoukokusya, 1995 page 47
3. Photo No.6 taken from "The Street and Roof of Europe," published by Creo Corporation, 1995 page 103
4. Photo No.7 taken from "The Master Architect's Series-Cesar Pelli," published by Sigma Union, 1993 page 63
5. Photo No.9 taken from "Le Corbusier," published by A.D.A. EDITA, 1975 page 15
6. Photo No.10 taken from "Public Design Dictionary," published by Sngyo Cyosakai, 1991 page 148
7. Photo No.11 taken from "Public Design Dictionary," published by Sngyo Cyosakai, 1991 page 72
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