



Study on the Intermediary Space of the High-Rise Building

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Year:2012

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ENGAWA-Traditional Intermediary Space

Abstract

The concept of intermediary space is relatively new which was proposed by Kisho Kurukawa in his book "The Philosophy of Symbiosis". Such space exists between the exterior and interior space that takes the effect of transiting the separated area, and promote the continuity of the whole public space. Though the term itself just be noticed for only several decades, this kind of space has existed for more than one thousand years. Ancient people usually applied such transition area into their houses and public buildings. As time goes by, the intermediary space plays a more important role in different kind of buildings.

Among the various types of buildings, the high-rise buildings are the symbol of the new technology, some of them also the symbol of the city. So the high-rise buildings make the greatest impact on urban space. However, due to the huge volume and the inhuman scale, they make a significant influence on the city image and the people's psychology. What is much obvious than other types. So the communication between the skyscraper and the city means a lot to the urban environment. Using some intermediary space is one of the solutions, which could better the surrounding space of the high-rise and make the urban space more continuous. In this paper, I will make some researches on the characteristics of the intermediary space existing in the high-rises. Besides that, I also studied some cases to better understand the disciplines of that. In the end, I classified the types of this space and proposed some design principles.

KEY WORDS:

Intermediary, Hi-rise building/skyscraper, Environment, Urban public space, Continuous space, Transition area

Abstract

Il concetto dello Spazio Intermedio è relativamente nuovo che è stato proposto da Kisho Kurukawa nel suo libro "La filosofia di simbiosi". Tale spazio esiste tra lo spazio esterno e lo spazio interno che prende l'effetto del transito della zona separata e promuove la continuità dello intero spazio pubblico. Anche se il termine stesso è solo farsi notato da alcuni decenni, questo tipo di spazio è esistito per più di mille anni, che l'antico popolo solitamente applicarono tale area di transizione nelle loro case ed i edifici pubblici. Col passare del tempo, lo spazio intermedio svolge un ruolo più importante nei edifici dei tipi diversi.

Tra i vari tipi di edifici, i grattacieli sono il simbolo della nuova tecnologia, anche il simbolo della città fra alcuni di loro. Così i grattacieli fanno il maggiore impatto sullo spazio urbano. Tuttavia, a causa dell'enorme volume e l'inumano scale, fanno un'influenza significativa sulla psicologia della gente e anche l'immagine della città, che è molto evidente rispetto ad altri tipi. Così la comunicazione tra il grattacielo e la città ha un grande significato per l'ambiente urbano. L'uso del qualche spazio intermedio è una delle soluzioni, che potrebbero ottimizzare lo spazio circostante del grattacielo e rendere lo spazio urbano più continuo. In questa tesi, ho fatto alcune ricerche sulle caratteristiche dello spazio intermedio esistenti nei grattacieli. Oltre a questo, ho anche studiato alcuni casi per comprendere meglio le discipline di che. Alla fine, ho classificato i tipi di questo spazio e proposto alcuni principi di progettazione.

KEY WORDS:

Intermediario; Grattacielo; Ambiente; Spazio; Pubblico; Transizione zona

Chapter One

Preface

Research motivation:

The paper is going to do the research on the intermediary space in the high-rise building, and this part I need to explain the definition of the intermediary space, and two other points:

The first point is that why the intermediary space is a positive area in the buildings, and could make the building more comfortable for people to stay as well as fuse together the indoor and outdoor space.

The second is that why the high-rise building need the intermediary space to better the surrounding and interior environment.

Definition:

The intermediary space is a transition area between the interior and exterior space, which is a medium area for the building and the natural environment. The effect of it is to merge the two opposite space and vague the boundary of them, and make the building and environment a continuous space.

1.1. The intermediary space is a positive space in the building.

An opinion by Alexander is that, buildings, and especially houses, with a graceful transition between the street and the inside, are more tranquil than those which open directly off the street.¹

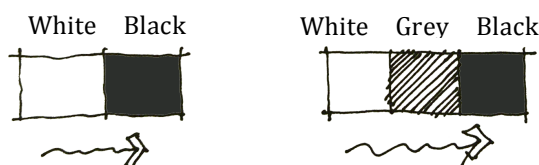
A report of the effect of transition space(The necessity of the transition space)

This project offers a buffer space for visitors to share, and in a lot of buildings, a "preparation" before entering into the building is also necessary. There is an evidence comes from the report by Robert Weiss and Bouterline. The author noticed that many exhibits failed to "hold" people; people drifted in and the drifted out again within a very short time. However, in one

¹ Alexander. A Pattern Language. Oxford University Press (1977). P1154

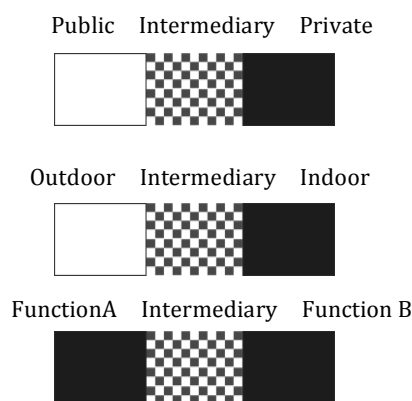
exhibit people had to cross a huge, deep-pile, bright orange carpet on the way in. In this case, though the exhibit was no better than other exhibits, people stayed. The author concluded that people were, in general, under the influence of their own "street and crowd behavior," and that while under the influence could not relax enough to make contact with the exhibits.² That means an intermediary space between the exterior and interior is an essential part for people's psychology.

The concept of intermediary space is relatively new which was proposed by Kisho Kurokawa in his book "The Philosophy of Symbiosis". Such space exists between the exterior and interior space that takes the effect of transiting the separated area, and promote the continuity of the whole public space.



1.1 The theory from Kisho Kurokawa

Three intermediary space types:



Traditional intermediary space:

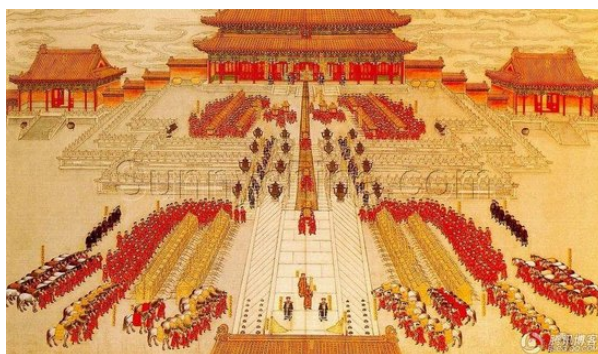
The Forbidden City:

The Forbidden City is a group of buildings. The form is traditional Chinese courtyard. The function of the palace is single, and the courtyards are the connection parts in the whole Forbidden City. For example, the square before the Hall of Supreme Harmony is a huge intermediary space, which connects the palace and the surrounding buildings. There is also an important space for the ministers to make some preparation before entering in to the palace. The space is kind of like the vestibule in the house. This space is necessary, because the palace is for the king who is the representative of the royalty and dignity. The ministers should experience some certain process before meet the king, which is set off the position of the king.

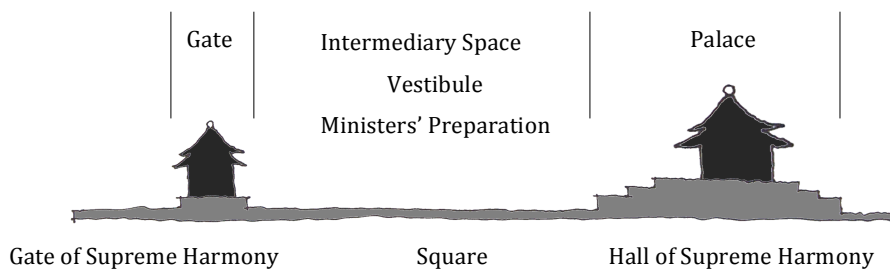
² Robert Weiss and Serge Bouterline, *Fairs, Exhibits, Pavilions, and their Audiences*, Cambridge, Mass, 1962



1.2 The Forbidden City



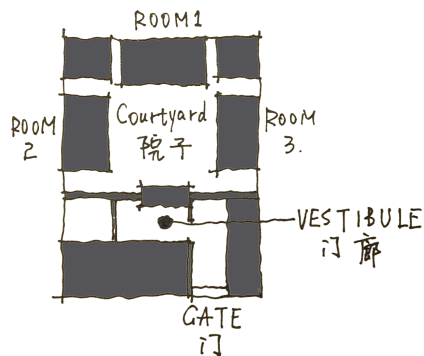
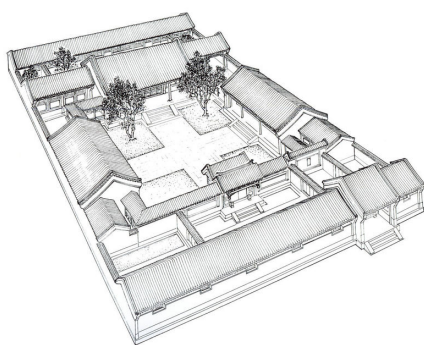
1.3 The Ministers' Preparation before seeing the Empire



1.4 The Section of Forbidden City

Traditional courtyard in Beijing

The traditional courtyard in Beijing is the most usual form of house. The courtyard is divided into the front part and the back part. The back part is mainly for living, and the front part is for a transition area between the street and the living rooms. This space is an alleviation for the residents and guests from the public space. The space could also be seen as a protection for the private space.



1.5 The Diagram of the traditional courtyard in Beijing

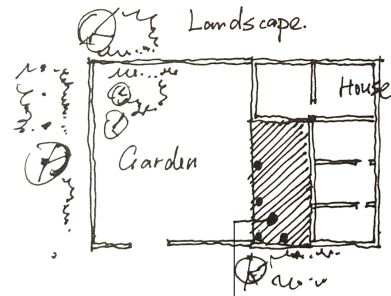
Annunciazione in Florence's SanMarco

The painting Annunciazione in Florence's SanMarco church, made by Beato Angelico shows a typical transition area. There are two women staying in a half open space with two sides of walls and two sides of columns. Such space offers a very harmony atmosphere for these two ladies to communicate. The painting expresses a transition area between the left side natural space and the right side artificial rooms, which is 'The Third Space' based on the interior and exterior space. This is just a void made by people to create a more lively and harmony space as an intermediary area for people to fully enjoy the natural ventilation and green, also with the

protection from the roof. This space is more popular for people to take some daily activities, because it does not limited to the size of the area. This place is totally open to the outer courtyard, and connect to the enclosed rooms. The quality of ambiguous and multi-functional is the most attractive point.



1.6 The Painting of Annunciazione



The intermediary space

1.7 The Plan of Annunciazione

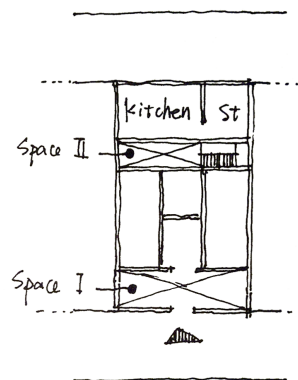
Lilong, Shanghai

In Shanghai, China, the traditional house Lilong has a very useful transition area to alleviate the sudden change between the public and the private space.

Normally, there is a small patio between the interior space and the outdoor space. The area is 10-15M², which to transit the different areas, and better the skylight and natural ventilation of the building. The residents also can take some daily activities here, in the half private and open space, which make the whole house a new layer.



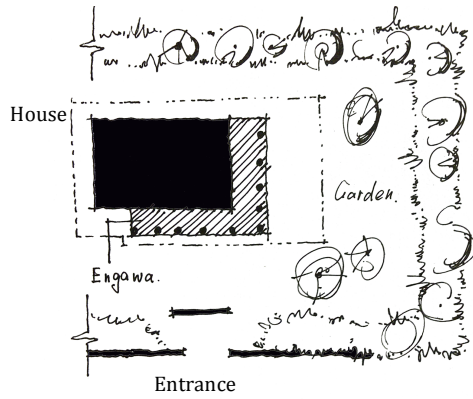
1.8 The Picture of Lilong



1.9 The Plan of Lilong

Engawa, Japan

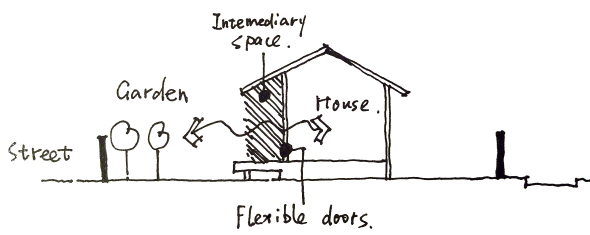
In Japanese traditional resident, this kind of space is also essential. They have a particular name for this area, "engawa". This part could be regarded as the favorite space for the resident to stay.



1.10 The Plan of Japanese resident



1.12 The Daily life in "Engawa"



1.11 The Section of the house

Intermediary space in modern buildings

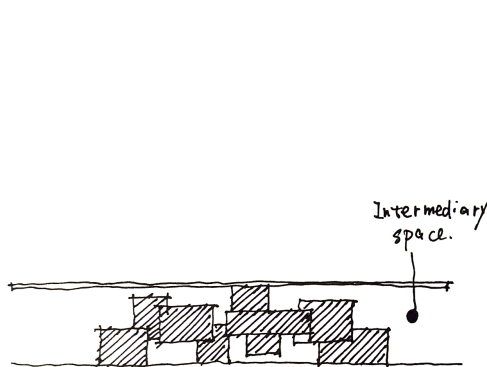
In the modern buildings, the intermediary space is also a very common and effective strategy to improve the surrounding environment, and make the building more friendly to the urban space.

Miami Art Museum

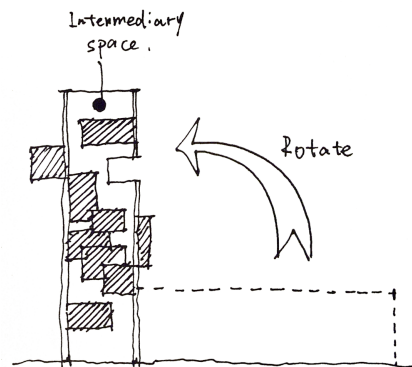
For example, the Miami Art Museum by Herzog & de Meuron. Sensitive to the city's need for public green space, the new MAM building is designed to extend the park into the museum site by means of a shaded outdoor terrace accessible to all visitors, not just those who continue on into the museum itself. An open-air structure of precisely arranged columns supports a broad, shading roof. Under this roof, the park is intensified, transitioning into a dense, multi-dimensional garden with a museum buried in its heart. Tropical plants engulfing the museum are integrated into the structural system of columns and platforms. Stairs as wide as the plot connect the platform to the sea and to a waterfront promenade. The combination of the roof and the hanging garden allows for the creation of a microclimate on the museum platform, which in turn becomes activated as a community forum. So, here the intermediary space play a very important role on the whole construction.



1.13 The Model of Miami Art Museum



1.14 Horizontal Intermediary Space

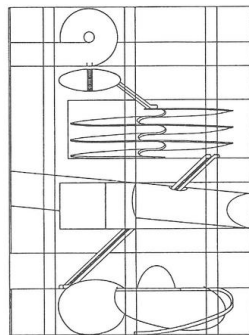


1.15 Vertical Intermediary Space

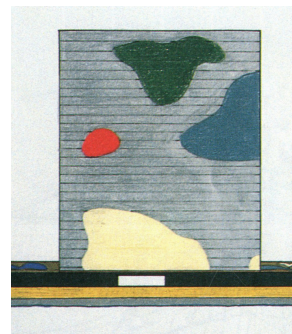
Intermediary space inside the building

The intermediary space is not only applied in the entrance space of the building. Inside the building, the margins of the functional area also need some intermediary space. The intermediary space could act as a bridge between the different area, and also can offer a very causal space for people to take rest, chat, or drink some coffee, where is very diverse.

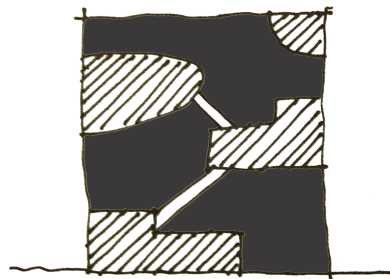
The Paris Library proposal by OMA is a good example for such kind of intermediary space. Koolhaas separated the different functions in the space and left the margins for the service part. According to his concept, the more important part of the library is not the reading rooms the auditorium or something, but the margins between the functional cubes. The attractive space should be dynamic and movable and meet the various needs of visitors. And the functional parts are all fixed with only one purpose. In reading rooms, we could not talk or drink coffee. In auditorium we could not read or communicate with friends, so all things are fixed without flexible possibilities. Where people really want to linger and hang out with friend or take some coffee or snack is the unfixed part, which is the intermediary space between the functional areas. In the library proposal, the functional elements like the bubbles floating in the air, and the intermediary spaces like the air to fulfill the rest space. With the connection to other parts and attractive atmosphere, the void itself is the most dynamic and lively space. Such intermediary space is a transition and connection function for the whole building machine. This zone could afford various kinds of activities and be a compensation for the psychological layer, which make the whole space more continuous.



1.16 The Sketch of Paris Library



1.17 The Intermediary spaces



1.18 The diagram of the library

1.2. Why the intermediary space can improve the space quality of the high-rise building

The high-rise is a new type building, which has a history of just over 100 years, and the urban structure they formed is totally different from the traditional structure. Though the high-rise buildings are the representative of the image of city and the advanced technology, the space quality dropped a lot. The urban space turned to a lot of fragments rather than an organic structure.



1.19 Negative space
from "A Pattern Language"



1.20 Positive space
from "A Pattern Language"

Outdoor space which are merely "left over" between buildings will, in general, not be used. Outdoor space is negative when it is shapeless, the residue left behind when buildings- which are generally viewed as positive- are placed on the land. An outdoor space is positive when it has a distinct and definite shape, as define as the shape of a room.³

City structure of the hi-rise building area

In the high-rise buildings' area, due to the huge volume of the buildings, they can hardly form an enclosed space to build a positive space. The buildings stand separately from each other, and the urban space just left overs.

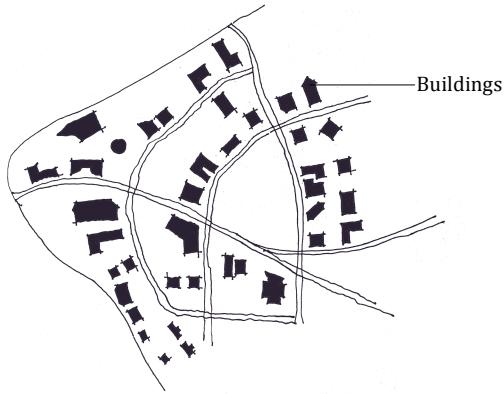
There are there pictures from the CBD areas from Chicago, Shanghai, Hong Kong. It is very obvious that the skyscrapers just do not work together to form some positive space, leaving very spacious, unshaped space.



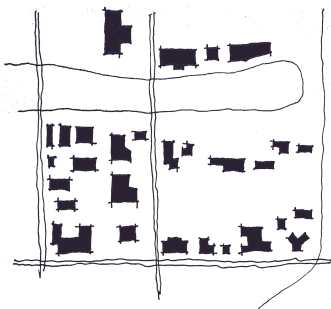
1.21 Nolli's map of Rome



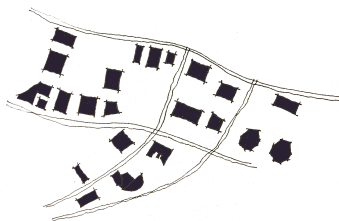
³ Alexander. A Pattern Language. Oxford University Press (1977). P 1093



1.22 Map of Shanghai's CBD



1.23 Map of Chicago's CBD



1.24 Map of Hong Kong's CBD

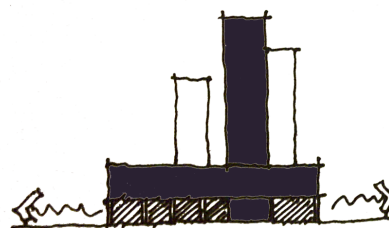


The Lever House

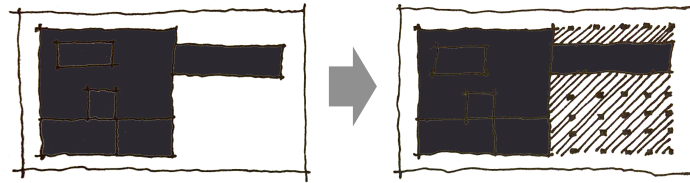
For example, the Lever House in New York City. The 94M high skyscraper does a positive response to the site. The building does not just leave the rest area as a plaza, but make a huge intermediary space to cover the whole block, which offer a humanity and half-public space for the city. This treatment is much better than the spacious, left over space. So, the intermediary space could reshape the surrounding area of the high-rise building.



1.25 Intermediary space of Lever House



1.26 Section of Lever House



1.27 Plan—Intermediary space reform the site

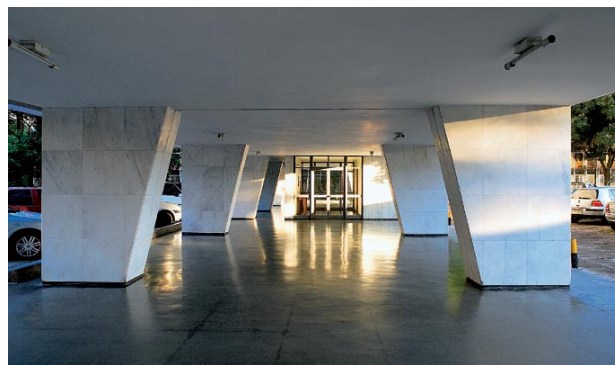
The Superquadra in Brasília

A competition for the master plan of the new Brazilian capital was held in 1957, and the scheme proposed by architect Lucio Costa was selected. The configuration of the residential blocks, commonly referred to as Superquadras (“super blocks”), is a 280m square occupied by long, six-storey slab apartment buildings. The first floor of these buildings were conceived as being raised in pilotis to promote the integration of landscape and architecture, and to undermine a sense of private ownership. However, building codes have overtime allowed an increased occupation of the ground level.

The ground level in the bottom of the construction could be seen as some huge intermediary space, which offer an ideal space for residents to take activities. The buildings and the environments are fused into an integration like a huge park.



1.28 Plan of Superquadra block



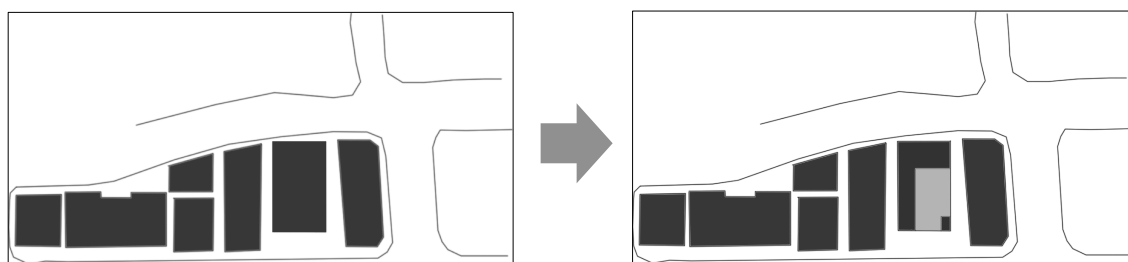
1.29 Intermediary space of Superquadra block

Fukuoka Bank Headquarter

The Headquarter use a similar strategy to create a relatively enclosed space for the urban space. In this hi-dense area, the urban space just filled with a lot of huge concrete boxes, and the streets are very narrow and negative. The huge intermediary space formed by the building give a shaped, half-private space for the citizen. The area is also a transition zone for the headquarter.



1.30 Intermediary space of the Fukuoka Bank



1.31 Intermediary space reform the urban structure

La Defense, Paris

The La Defense area is another good example for the hi-rise effect. Definitely, the La Defense is a proud of Paris, and there are some amazing buildings. However, the quality of the urban space just decreased a lot, comparing to the old city. We can see from the right picture, the huge vacant space left by the buildings is so boring. The landscape is few, and no seats for citizen, people rarely stay here. And under the La Defense Gate, there is a large intermediary space, with the protection of the roof, and lots of steps, so there is the first choice for people to stay.



1.32 People prefer to gather in the intermediary space

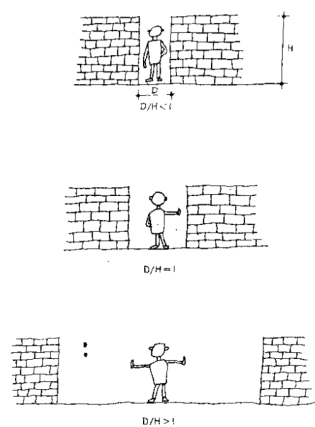


1.33 Few People stay in the vast empty ground

The Low quality street space formed by high-rise buildings

High buildings have no genuine advantages,...they do not help to create open space, they destroy the townscape, they destroy social life, ... they wreck the open space near them, and they damage the light and air and view.⁴

The high-rises usually own the height of over 100 meters, which make the street feels very narrow and oppressive. The huge volume blocks the sunlight, take so much field. And the dimension is far over the dimension of people, so the space is very inhumanity. The citizens do not want to stay near the towers. In Yoshinobu Ashihara's book, describes about the relationship between height and distance of the building on people's psychological effects. Assume construction height is H , D is the distance in between. When both sides are the same height with people, and $D/H < 1$, it give us a strong sense of a closure, which will bring a sense of anticipation to enter. When the $D/H = 1$, it feels balance. When the $D/H > 1$, it is already a wide open space rather than an entrance.⁵ When both sides are the buildings, $D/H < 1$, the street will have a certain sense of oppression, force people go through here quickly. When the $D/H \approx 1$, it feels more



1.34 Graphic in "Exterior design in architecture"

⁴ Alexander. A Pattern Language. Oxford University Press (1977). P292

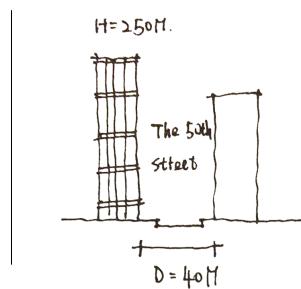
⁵ Yoshinobu Ashihara Exterior design in architecture. Van Nostrand Reinhold Company.P56

balanced, when people walking down the street, they will have a sense of enclosure and not over depression. Proportion of this ratio ($D/H=1$) is very commonly used in the city. And when $D/H > 1$, scale of the street became very loose, there will be no sense of oppression, people walk here feel more like a square.

Three cases

The ratio in the CBD area is much lower than 1, sometimes even reach 1/5, or more serious. Now I just show 3 typical examples of the number of D/H in some megacities' downtown. The followings are the ratio of the New York, Hong Kong and Chicago.

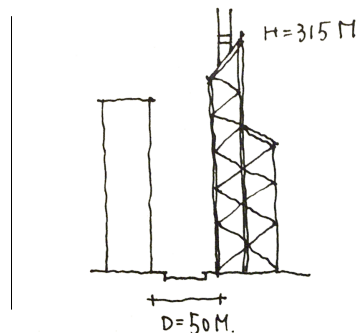
The 50th street, NYK



1.35 Relation of the skyscraper and street in the 50th street, NYK

These pictures are from the 50th street in New York, the $H=250M$, and the width of the street is 40M. So the $D/H=40/250=0.16$, which is far lower than 1.

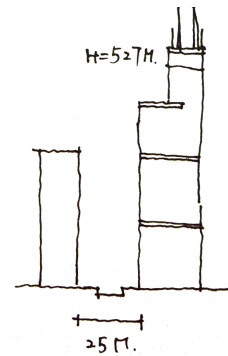
Garden Road, Hong Kong



1.36 Relation of the skyscraper and street in the Garden Road, Hong Kong

The 2nd case is from the headquarter of Bank of China in Hong Kong. The road is Garden Road, there is also another hi-rise stand across the street. The height of the tower is 315M, the distance between the buildings is 50M, so the $D/H=50/315=0.158$, similar to the 50th street in New York.

The W.Adams Street, Chicago

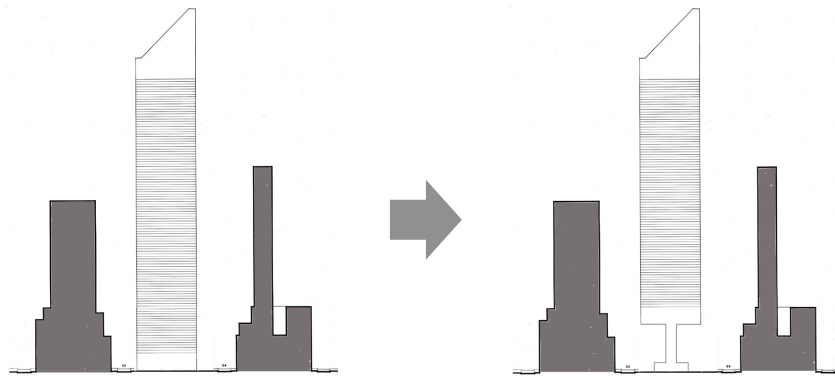


1.37 Relation of the skyscraper and street in the W.Adams Street, Chicago

The 3rd case is the Willis Tower (former Sears Tower) in Chicago, the road is W.Adams Street which is at the North of the building. At the other side of the road, there is also a hi-rise building. We can see from the picture, which is really oppressive for the citizens. The street can hardly get some sunlight. The towers just like the cliffs grow from the ground. The height of Willis is 527M, and the distance between the towers is 25M, so the $D/H=25/527=0.047$, which is really too small for the street.

Intermediary space improve the street quality

And introduce some intermediary space to the hi-rise building will improve the situation. Take the Citicorp center for example, the tower elevated 35M, and forms a huge intermediary space. The street next to it not feels narrow anymore. And some landscape also give some lively atmosphere to this space.



1.38 Intermediary space change the scale of the street

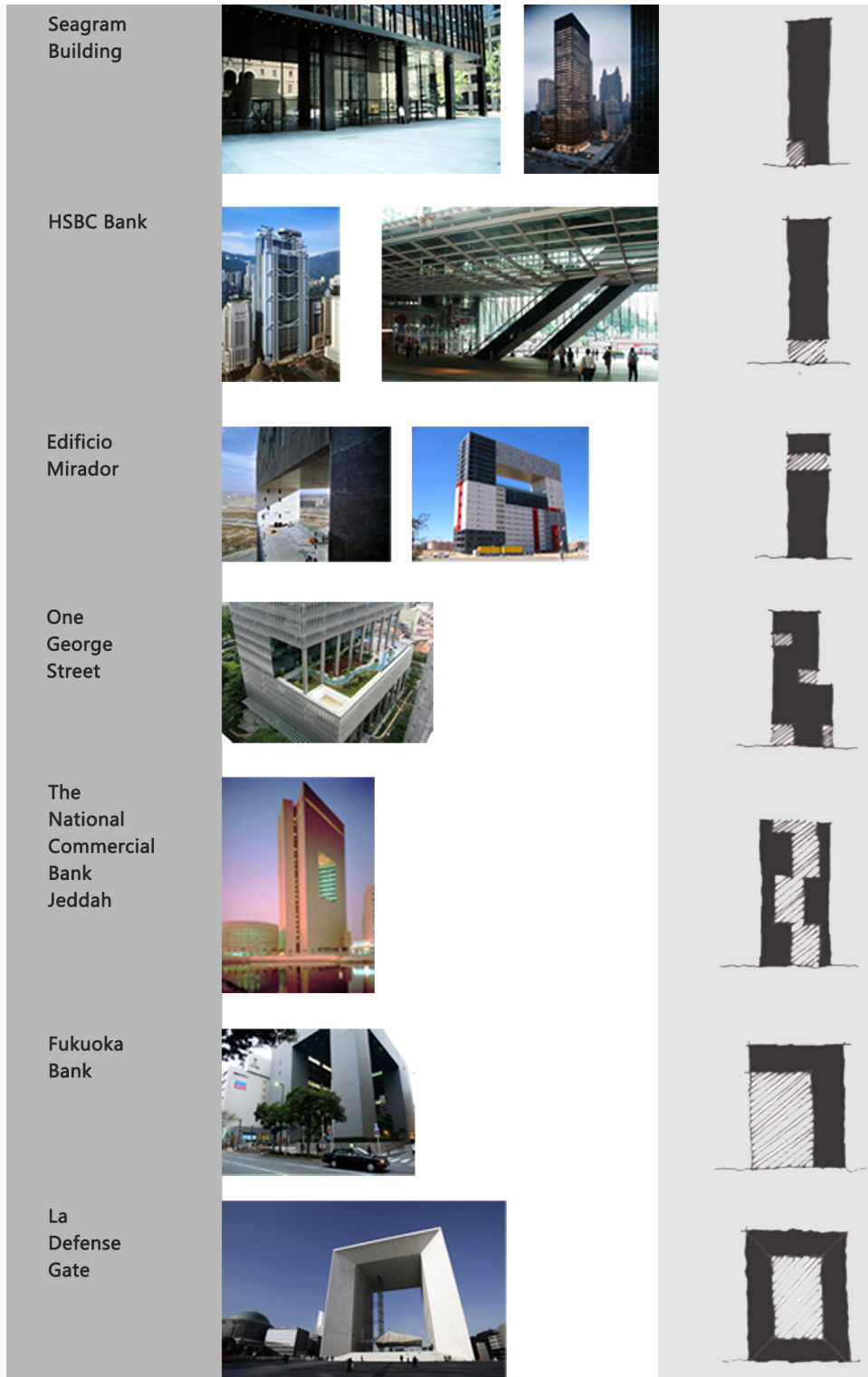


1.39 Street view of the Citicorp Center

Different intermediary space type

Drive up the skyscraper to build an intermediary space is just one solution. The staff in the building also need some open space to enjoy the landscape and natural ventilation to relief the pressure from staying in the hi-rises.

The followings are a category for the different intermediary solutions for the high-rises. They could not only change the urban space, but also can improve the interior space quality.



Chapter Two

Related theories about the intermediary space

Intermediary space is also called the gray space. Gray is the medium color between white and black. The depth of it depends on the percentage the black and white takes. The existence of gray space is an extension for the dualism. For instance, we can put the building's internal space as an entity, is black. Then, the external part of the empty will be white. The existence of gray space is a transition and buffer area between the internal and external. With this buffer space, in human psychology, there will be a gradual change in feeling.

2.1 Engawa space in Japanese hous



2.1 Concept

Kisho Kurokawa published the "The philosophy of Symbiosis" in 1994. He mentioned in chapter 8: "Western architecture is created to conquer nature, in opposition to nature. The significance in Western architecture of the wall, dividing exterior from interior, is very great for the reason. Japanese space, in contrast, seeks to harmonize architecture and nature, to make them one, by enveloping nature in architecture and making architecture and nature equal partners."⁶

Normally, there is a courtyard in Japanese house. Hence, indoor space within the house, while the courtyard belonging to the outdoors space. A very distinctive characteristic in Japan House is that there is a half open porch at the combination of indoor and outdoor space. The porch is playing a transition effect in the whole area.

In Japan, the porch has an exclusive term, called the "engawa" (縁側). Kurokawa believed that the gray space could create a lot of possibilities. Traditional Japan tenants prefer to stay here for dinner, leisure, enjoying the environment of the courtyards, resting, even sleeping.

The engawa possesses its own meaning as a third type of space, an intermediary space, in addition to interior and exterior space. In that it is beneath the eaves, the engawa is interior space; but in that it is open, it is part of the exterior space, the garden. In the country house that I lived in during the war, special and formal guests would be received in the guest room, but local merchants and neighborhood friends would come cooling to the engawa, sit down there, and have a cup of tea and chat. Thus the way of receiving guests was distinguished spatially according to the meaning and the role of the guest.⁷

In fact, Japan grey in architecture comes from Sen Rikyū(千利休), a Chanoyu master, 1522 - April 21, 1591. Sen Rikyū is considered the historical figure with the most profound influence on chanoyu, the Japanese "Way of Tea", particularly the tradition of wabi-cha.



2.2 Sen Rikyū

⁶ Kisho Kurokawa. 1994. 12.The philosophy of Symbiosis. Academy Pr. Chapter 8

⁷ Kisho Kurokawa. 1994. 12.The philosophy of Symbiosis. Academy Pr. Chapter 6

He reconciled with red, yellow, blue and white color of tea gray. Later, Japan household decorate the building with the Rikyū grey.

Kurokawa proposed, in this grey space can be used for building, and can be applied to cities. It is also one of the thought of his Philosophy of Symbiosis.

2.1.1 Three meanings of the gray space

1. Refers to the color, grey is the neutral, a combination of color. Therefore, grey contains characteristics of integration and cultural diversity. This is the coexistence of conflicting and multiple integration in the Japanese Culture. As well, the grey in the building reflect those ambiguous relationship. It was an insert of indoor and outdoor space, the third space between the inner and the outer. Engawa is a typical gray space. Its characteristic is that belongs to both the indoor and outdoor, with double characteristics.

2. Bond the indoor and outdoor spaces. It is used for fuzzy boundaries inside and outside the building, and eliminates the sudden sense at the space changing area. Give people an impression of an organic whole.

3. Functionally, the gray space in the building is diversity. In house, for example, gray spaces can host the users of indoor activities, such as rest, chat and meal, and so on. You can also assume it as the function of outdoor, such as seeing flowers, barbecue and so on.

2.1.2 The Psychological layer:

In real life, there is a regular pattern for the people's choice of public area. People don't like over crowded environment, either empty environment. When people walk on the road, they like to go under a tree or building exterior colonnade. Here, have a certain degree of protection, without prejudice to the sight. This suggests that people likes to stay at a relatively balanced and harmonious environment.

This place is actually a venue for buffering. At home, basically every household has a vestibule to the transition in indoor and outdoor. Such as going to the cinema, in order to avoid audience

go suddenly from outside into the very dim auditorium. Designers will layout a transition space between the auditorium and the foyer. Therefore, grey/intermediary space also has a certain Zen and philosophical thought.

Under the idea of Symbiosis, the inner space and outer space of the construction are both important. This article in compliance with the basis of the original concept to define the intermediary space:

This is a transition space that not clearly distinguished within or outside of building. This is also a phenomenon of ambiguity. Space element contains a third state, I define it as the intermediary space.

Because of the existing of roof, it can be regarded as internal space. On the other hand, without vertical entity boundaries is a property of exterior space. Inside and outside the gray space this is neither fragmented, is a combination of both within and outside the region.

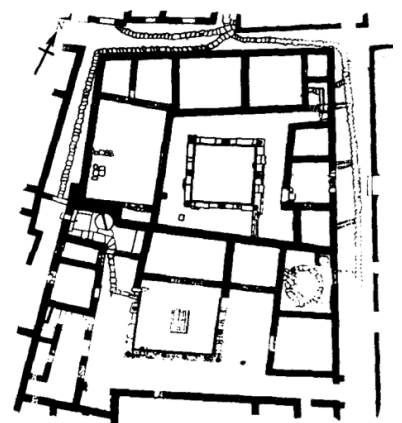
2.2 The intermediary space in the western ancient buildings



2.3 Intermediary space in Pompeii

The concept of intermediary space was proposed by Kurokawa in the 1970. But the intermediary space itself already existed for thousands of years. Both in buildings and cities, the intermediary space has played an irreplaceable role. While in different geographical environments and under different cultural backgrounds, intermediary space form is not the same. But their role is similar, which is to rich architectural and urban forms and functions. Evolution of study on the intermediary space can also give a lot of inspiration to the future of urban planning/urban design. So, I go to introduce the intermediary space in the ancient building which under the different period and different background.

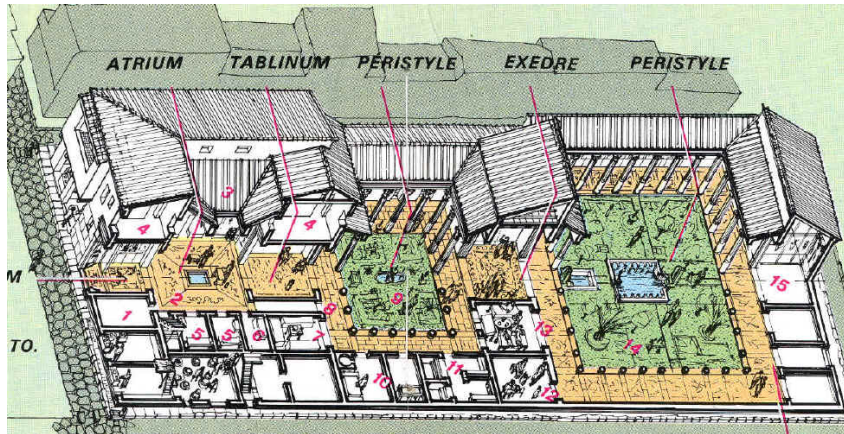
In the Western world, classical building began in Greece and Rome. Building of the 19th century and before are based on the development of these two cultures. In Greece and Roman's



2.4 Residence in Delos

architectures, the most representative symbol is the various column types. Therefore, most of the intermediary space in the ancient western architecture is in the form of colonnade.

Different from Japanese "Engawa" space is that Western classical architecture of the intermediary space is inside the building. Their external part always has a rigorous facade, which is confrontation with the outside world. Residents' activities were also conducted at the half open space inside the building.

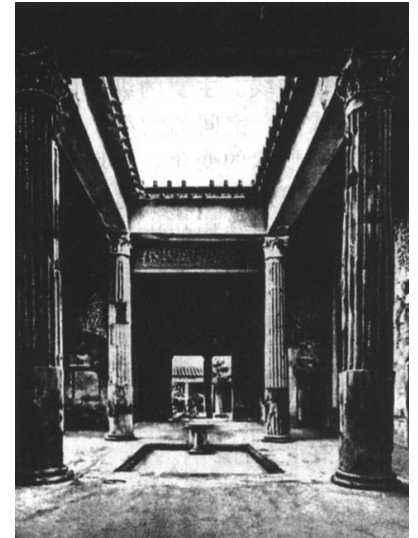


2.5 Diagram of Resident in Pompeii

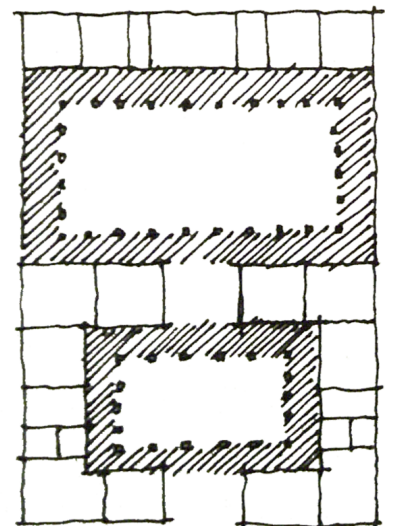
2.2.1 Residence Building

A. Ancient Greece Residence

Xenophon reminded a word from Socrates in his Memoirs. Socrates said: "Should not people consider themselves to live as comfortable as possible and convenient in the house? ... Comfortable is cool in summer and warm in winter ... In the South-facing house, in the winter sun will just touch a porch. High overhead in the summer sun protect them in the shadows." He refers to the porch that wraps around is the building's gray space. This space is connected to both indoor and outdoor. Is to select a preferred place for rest and activities of the local residence. In Hellenistic era, houses were more structured. Courtyard is surrounded and became an entity. On each side of the courtyard has a colonnade. The colonnade is for people to work, do housework, and activities. On the island of Delos, there was a typical residential. This residential was patio-centered and layout the Colonnades around the living room. There is a garden in the patio. The garden usually has a pond or a fountain. The patio is the center for local residents to take internal activities. The world well-known Pompeii was established by the Greece immigrants, therefore, the dwellings there are the representative of Greece



2.6 Residence in Pompeii

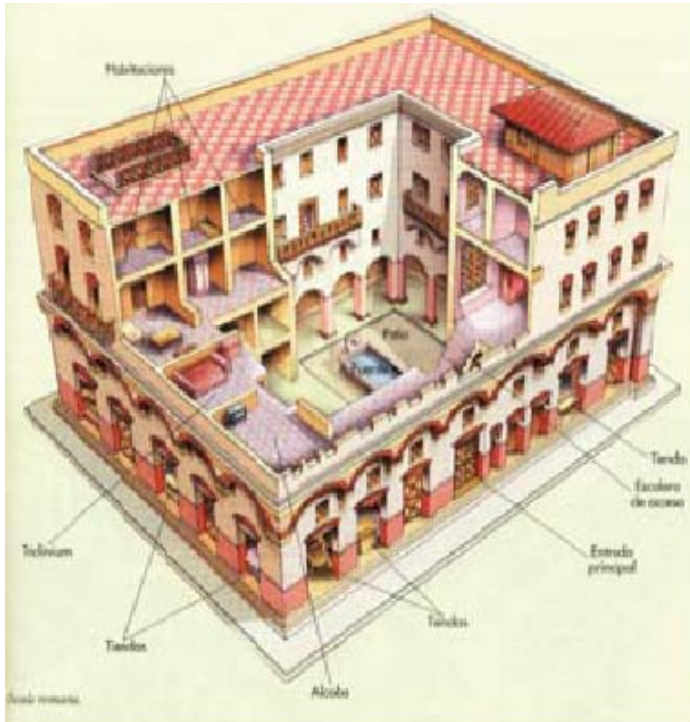


2.7 Intermediary space

advanced residential.⁸

This Colonnade surrounded the courtyard and back gardens are the main local activities carrier. Because people can avoid from the wind and rain, preventing the sun when stay here. And do not feel kind of cramped and sense of oppression from indoors. Intermediary space played a conciliatory role, so that humans could live in a balanced relationship with the outside world.

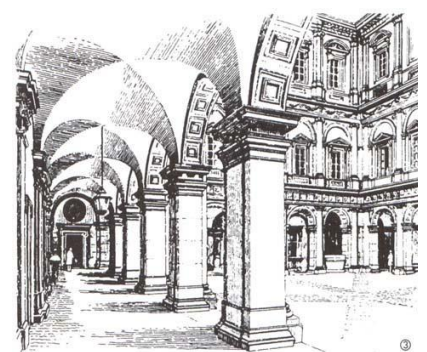
B. Ancient Rome Residence



2.8 Insula in Rome

Then for residence in Rome, basically, it can be divided into two types. One is the lineage of the Greece of courtyard-style residence. This one changed a little bit in the Roman period. Its plan was no longer as free as the Greece period, but tend to be structured. For example, Pansa house in Pompeii is a typical courtyard apartment. There was a huge hall is in the center of it. The hall becomes the hub of family life. Households do cooking, chores and receiving visitors, etc.

In Roman architecture, the insula (Latin for "island," plural insulae) was a kind of apartment building that housed most of the urban citizen population of ancient Rome, including ordinary people of low or middle-class status (the plebs) and all but the wealthiest



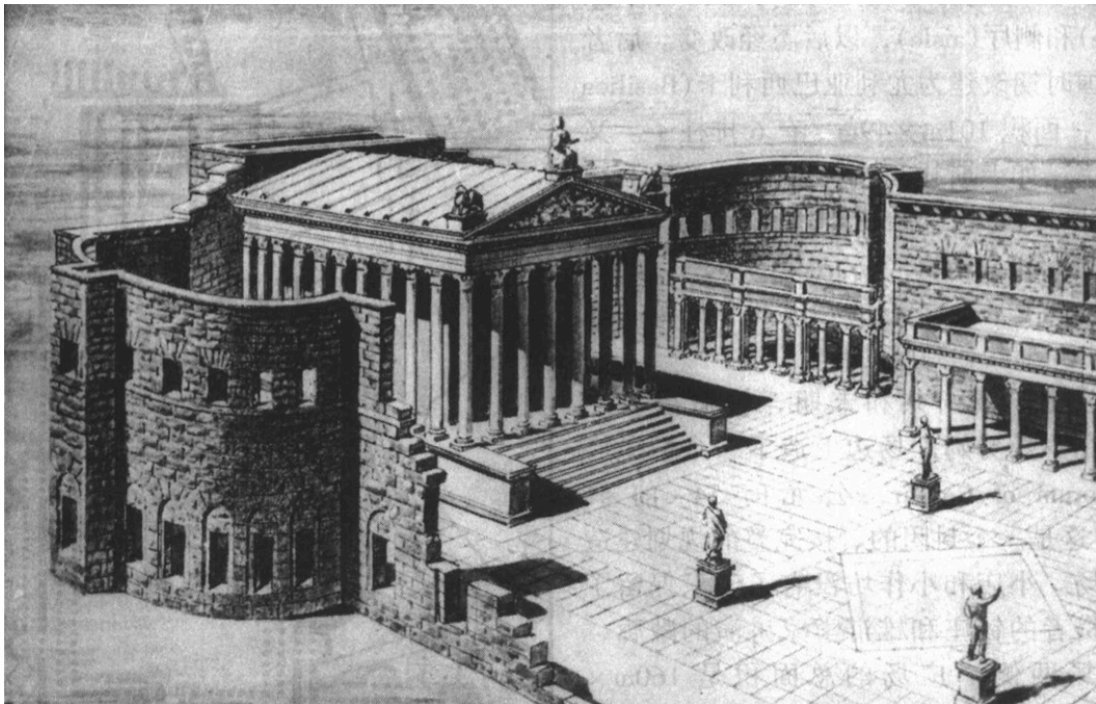
2.9 Patio of Insula

⁸ Chen Zhihua. 2010. Foreign architecture history. China Architecture & Building Press. Beijing.

from the upper-middle class (the equites). The traditional elite lived in domus, the large single-family residences. But the two kinds of housing were intermingled in the city and not segregated from each other. The ground-level floor of the insula was used for tabernae, shops and businesses, and the living space located upstairs, like modern apartment buildings. An insula might have a name, usually named after owner of the building.

At the bottom of the Insula central there was a half-open space which is surrounded by colonnade. People could contact nature through this space. Child's games also take place here. Within this quiet and open space for people to enjoy family life and not disturbed by the outside world. It can be said that the intermediary space has a significant impact on the way of people live.

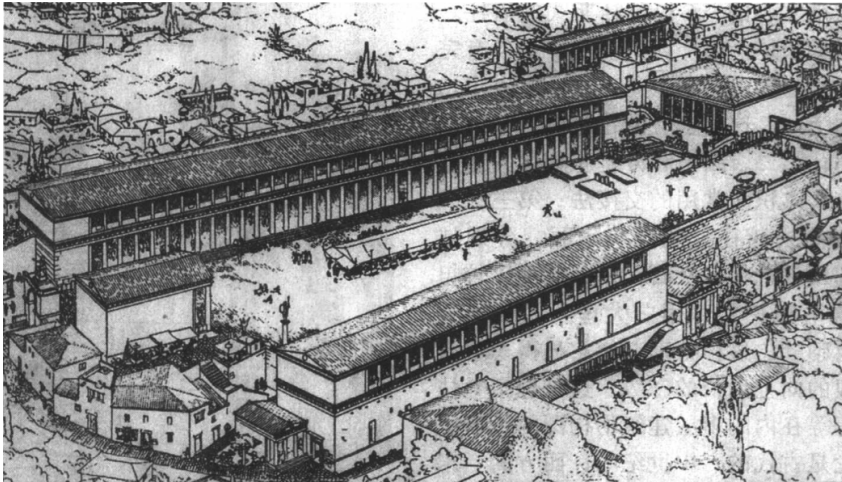
2.2.2 Plaza



2.10 Restitute Pic of Foro Augusto

Plaza is very common in Western countries. However, in Oriental countries, almost all of the activities occur indoors, it is difficult to think about people eating, drinking outdoors in public from the ancient Eastern countries. While Western countries are different, the outdoor space is an extension of indoor. Kisho Kurokawa said:

“Eastern city has no plaza, while the Western city has no street.”⁹ Since the Interior rooms of ancient Western countries were relatively cramped, people often stay outdoors. Square is equivalent to the second living room in Western people’s eyes. Colonnade could not only enrich the elevation layers, but also connects as a transition space, create a half indoor, half outdoor zone, offering a public space for social activities.

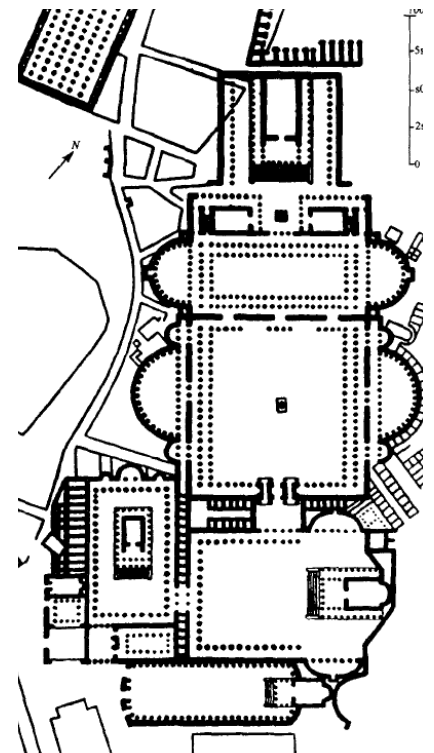


2.11 Plaza in center of Assos City

At the classical period of Greece, there were many different functions for the plaza. Usually, the building was surrounded by colonnade, very large size. The colonnade located on one or more sides of the plaza and the entity is complete. Take the Plaza in the center of the Assos City as an example. Colonnade located at each side of the square, non-parallel shaped market is trapezoidal in relatively wide side of the temple. The Colonnade has double deep. It is used for commercial activities. At this place, citizens could conduct commercial activities without affected by the sunshine or rain. At the same time, there will be no kind of cramped feeling (indoor area at that time was narrow). So consumers can shuttle freely between colonnade and plaza. People traded and communicated here felt very ease and comfortable.

Plaza of classic Rome

Ancient Rome’s plazas were more emphasis on sense of spatial



2.12 Plaza Group in Rome

⁹ Kisho Kurokawa. 1994. 12.The philosophy of Symbiosis. Academy Pr. Chapter 8

enclosure than the ancient Greece. They focus on forms of structured, tend to have a porch of Colonnade for independent enclosure. Space twists and changes of the Colonnade made the space dynamic. Reflect a strong sense of rhythm.

Take the Rome for example. The city take the Trajan's Forum and the Augustus Forum as the main body, and consists of several other different Plaza groups. Each square is surrounded by the Colonnade at the bottom, maintains a very complete interface. The Colonnade is the connection between the individual squares. Though shapes of the square are different, the continuous colonnades maintain the squares as an entity. Also the colonnade makes square facade more variable.¹⁰

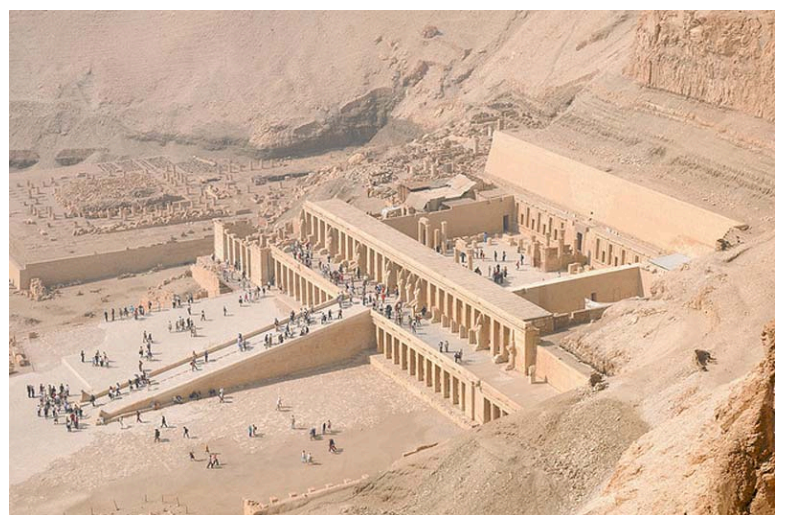
Piazza San Marco

Piazza San Marco is an excellent group of buildings around the world. For hundreds of years, the Piazza is always the Venice's political, religious center. Piazza San Marco is about 170 meters long, 80 meters width in the East, 55 meters in the West. Especially, the north facade of the square is very monotonous. However, the bottom of square is a colonnade that changed the elevation a lot. And also give businesses a buffer space. Visitors do not have to visit the shops from the square, they could stay at the intermediary space to talk and trade. After many times of renovation and expansion in past hundreds of years, the characteristic of Colonnade has not changed. Colonnade unified together all the constructions of the Plaza.

All of the mentioned plazas, they used similar approach to express the intermediary space. Make the square look unified, enclosure, also very dynamic. Colonnades between the outdoor space and the isolated construction provide an enough transition and cushioning area, increasing the sense of depth. Also give people the possibility of a wide range of activities.



2.13 Piazza San Marco



2.14 Tomb of ancient Egypt

¹⁰ Chen Zhihua. 2010 Foreign architecture history. China Architecture & Building Press. Beijing.

Ancient Egypt in 2000 BC, rulers began to build the gigantic tomb with surrounding colonnade to replace the pyramid. The form of tomb was based on the Cliff tombs from the ancient Egypt nobles. The tombs take advantage of extensive Colonnade and form a distinct light and shadow effect. This well-organized ceremony space strengthens the sense of sacred.



2.15 Temple of ancient Greece

There are similar forms of ancient Greece Temple. In Greece, the number and type of the column represents the levels of the temple. Colonnade of the temple shows the feeling of mysterious, solemn, greatness. At the same time this form is also used in other types of construction. Such as a transition space before entering the building, this space with a height difference from the ground. Besides that, the space is surrounded by Colonnade, creating a half open space. Let people step into the room with crossing an intermediary area.



.16 Agra Fort, Agra, India

2.2.3 Palaces

In General, most of the palace buildings are very dignified, magnificent. The construction of the Palace is relatively opposed to natural space. Therefore, the intermediary space is not a common form in the palace. However, in India and the Al Andalus provinc in Spain, there are lots of palaces with the sort of the intermediary space.

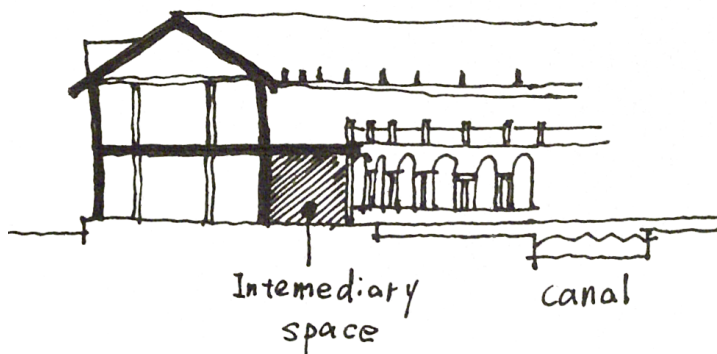
A: The Plaza de España in Seville



2.17 The Plaza de España

The Plaza de España, designed by Aníbal González, was a principal building built on the Maria Luisa Park's edge to showcase Spain's industry and technology exhibits. The Plaza de España complex is a huge half-circle with buildings continually running around the edge accessible over the moat by numerous beautiful bridges. In the center, there is a large fountain.

Though Plaza de España was not built at ancient era, the form is completely traditional architectural style. Colonnade and Plaza formed the a continuous contact. In this way, people walking in the square will not feel isolate d. Before enter the palace, visitors need to cross a small bridge and then step into an intermediary space with enormous white pillars. This process makes the long radius of palace buildings less monotonous. At the same time, the buffer zone also gives visitors an open space for activity.



2.18 Section and Intermediary space

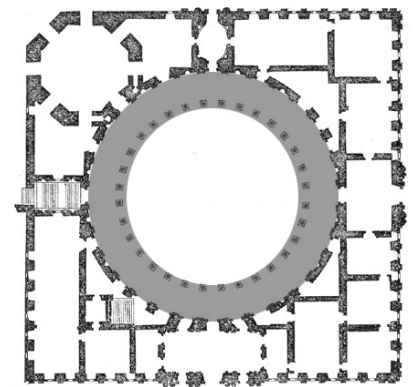
B: Palace of Charles V



2.19 Palace of Charles V

Granada is not far from Seville. The classical architecture there was similar to the others that established by the Moors. They all have very clear intermediary space.

The plan of the palace is a 17M high, 63 meter square containing an inner circular patio. This structure, the main Mannerist characteristic of the palace, has no precedent in Renaissance architecture, and places the building in the avant-garde of its time.¹¹ The palace has two floors (not counting mezzanine floors). On the exterior, the lower is of a padded Tuscan order, while the upper is of the ionic order, alternating pilasters and pedimented windows. Both main façades boast portals made of stone from the Sierra Elvira.



2.20 Plan and Intermediary space

The circular patio has also two levels. The lower consists of a Doric colonnade of conglomerate stone, with an orthodox classical entablature formed of triglyphs and metopes. The upper floor is formed by a stylized ionic colonnade whose entablature has no decoration. This organization of the patio shows a deep knowledge of the architecture of the Roman Empire, and would be framed in pure Renaissance style but for its curved shape, which surprises the visitor entering from the main façades.



2.21 Palace of Charles V

The circular atrium in the center dominates the space inside. It offers a buffered area for people doing outdoor activities, and enriches the building layers.

¹¹ http://en.wikipedia.org/wiki/Palace_of_Charles_V

2.3 The intermediary space in the eastern ancient buildings



2.22 Porch in Wuzhen

Comparing to the Western ancient architecture that use the stone as the main raw material for the construction, traditional Chinese architecture with wooden frame surrounded, more easily form the intermediary space. Because under this structure, the wall is only to compass the wall, is not a load-bearing structure. Eaves can grow significantly beyond the exterior wall. Wood-frame construction is easy to form a porch, lower intermediary space. Gray space in Chinese ancient architectures also existed for a long history. The major forms of that are the pavilion and porch, as well as courtyard.

2.3.1 Porch—linear intermediary space

Porch is a very common form of construction in China, often occurs in one side of the house frontage or water village. This kind of porch on the waterside is very common. For example, Wuzhen (乌镇), Zhejiang Province, China. In Wuzhen, the streets are basically water, much like Venice. In porch, citizens do not be affected by the sun and rain, and it is the most important places for activities. Here, people can drink tea, play chess, chat, wash their clothes. If there is no half open porch, the heat and humid in the South of China will be hard to endure. This porch is neither indoors nor outdoors, has a dual nature of space.



2.23 Porch in Chinese Garden

As time goes by and building development, in the system of Chinese traditional architecture evolved many other similar intermediary space. In ancient Chinese palaces, temples, gardens and other public buildings almost have such elements of the buffer area. Porch could be a subsidiary space of the main building, also could stands alone as urban landscape. This independent porch in Chinese classical garden is very common. Besides transportation connection, the porch in the garden can also adjust the shape, regulate the weather, as well as organize the functions. In the traditional garden space, porches exist everywhere. The space can be dynamic, introductory, uncertainty, blur, transitional and so on. As a linear space, porch belongs to a secondary structure in the traditional architecture. The porch contact the indoor and outdoor space, in particular, has played a very big role in the garden. It is both the visual elements and connection of the space.



2.24 Typical Chinese Pavilion

2.3.2 Chinese Pavilion—spot intermediary space

There are two verses from Yuan dynasty: "unlimited sceneries of the nature could be gathered in one pavilion." In other words, pavilion is an ideal place for viewing scenery. Pavilion is also a particular construction form in China. It is one of the important types of intermediary space. Pavilion styles are richness, and transparent all around without sight barriers. Pavilion has become one of important traditional culture and art construction in China.

If porch is the linear intermediary space, then the Pavilion should belong to spot intermediary space. Pavilion is the aggregation and distillation from porch. Point-style construction can stand independently in the environment, has outstanding landscapes and monuments characteristic. Pavilion becomes the focal point of environment as well as the visual Center.¹²

These unique characteristics of pavilion are dependent on their

¹² Li Yunhe. *Cathay's Idea - Design Theory of Chinese Classical Architecture* Wideangle Press. 1982. P122.

unique spatial form. For this void space surrounded by pillars, and their standards depends on the plan's shape and roof forms. For the roof, there are double slope roof, mountain roof, pyramidal roof or double eaves roof.¹³ It could create different styles of the intermediary space. Secondly, the plans of the pavilion are also very diverse. There are round, square, hexagon, octagon, and even fan-shaped, triangle, plum-shaped. Due to the change of plans, and the roof of the pavilion, the designer can grasp the scale and material to create the variable mood, functional morphology of Pavilion.

Occasionally, pavilion can exist independently, and can also be combined with other elements. Utilize the spot features to constitute double square, double triangle space. Pavilion and porch could combine together to form a new shape. Combined with another one can form a double Pavilion. The diverse space forms of the pavilion have obvious characteristic of the intermediary space what can accommodate a wide range of public activities.

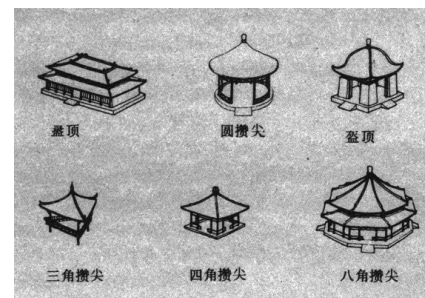
2.3.3 Courtyard and Patio—area intermediary space

The courtyard and patio exist in a lot of Chinese traditional dwelling. But not all patios are the intermediary space. Patio's primary role was to act as transport link. Residents wash clothes, exercise, rest and children playing at here. It is an outdoor sitting room.

Compare to the indoor area, patio is outer space. And with respect to the more open space off the construction, it becomes an internal space. Yard and patio as the intermediary between the indoor and outdoor area, it has changed the nature itself, providing a high level of continuity for the residential space.



2.26 Typical Chinese Courtyard



2.25 Types of the Roof

¹³ Chinese architecture history. China Architecture & Building Press. Beijing. 2010

2.4 Related theories about the intermediary space

2.4.1 In-between realm by Aldo van Eyck

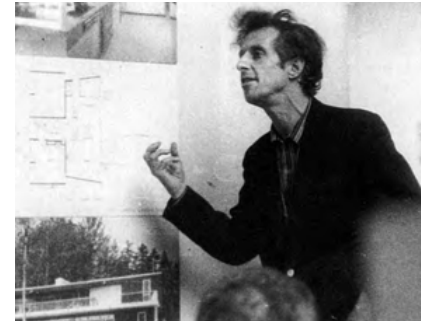
Van Eyck's in-between realm is a theory to describe the space balance. This concept was first introduced in his writing: "The Sahara spans between two worlds: the world of Mohammed and the world of the Negro. Both in the imagination and in fact, this ocean of stone and sand is an in-between world." He went on to apply this concept to many other realms. Later he used in-between concept to design the Amsterdam Orphanage. His strategy is to use the variable space in response to indoor and outdoor area, to merge them together.

It implies a break away from the contemporary concept of spatial continuity and the tendency to erase every articulation between spaces, i.e. between outside and in- side, between one space and another. Instead, I suggest articulation of transition by means of defined in-between places which induce simultaneous awareness of what is significant on either side. An in-between place in this sense provides the common ground where conflicting polarities can again become twin phenomena.

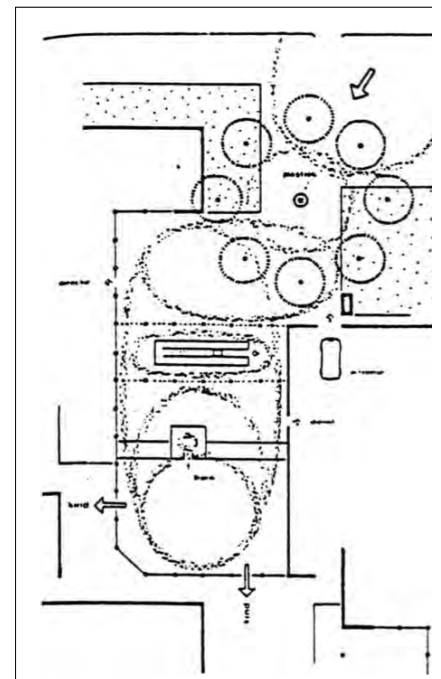
This quote furthermore reveals how Van Eyck made the transition from 'doorstep' to 'in-between': he combined the extended notion of doorstep with the notion of 'das Zwischen' (German for 'the in-between') as introduced by the Austrian-Israeli philosopher Martin Buber (1878–1965). His attention was drawn to the latter by the Swiss architects Rolf Gutmann (1926–2002) and Theo Manz in their contribution to the CIAM interim congress of Sigtuna in 1952.¹⁴

For instance, he supposed that there is a third area exists between the street and the house. He said:

I have been mulling over it, expanding the meaning as far as I could stretch it. I have even gone so far as to identify it as a symbol with what architecture means as such and should accomplish. To establish the 'in-between' is to reconcile conflicting polarities. Provide the place where they can interchange and you re-establish the original dual phenomena. I



2.27 Aldo Van Eyck



2.28 Scheme of the entrance sequence of the Orphanage as an example of the in-between in Van Eyck's

¹⁴ Gutmann and Manz referred to Buber's *Urdistanz und Beziehung* (1951)

called this 'la plus grande réalité du seuil' in Du-brovnic. Martin Buber calls it 'das Gestalt gewordene Zwischen'.

'Das Reich des Zwischen' gave Aldo Van Eyck some inspiration for "the in-between realm". "Architecture must extend 'the narrow borderline', persuade it to loop into a realm – into an articulated in-between realm. Its job is to provide this in-between realm by means of construction, i.e. to provide, from house to city scale, a bunch of real places for real people and real things."



2.29 Amsterdam Orphanage n

2.4.2 Intermediary space by Kisho Kurokawa

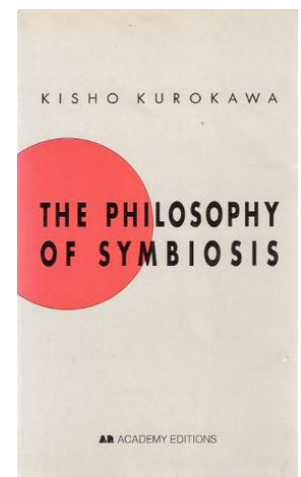
In the first half of the 20th century, the architecture was ruled by the Functionalism theory. Modern architecture abandoned the decoration, and put the function to the first place. Thus building as machine-like precision divides the space, arrange the functions to the right position. Hence, the buildings like the mechanical parts to be put into the city. This is an ideal model of architect and city planner.

Inevitably, this way of plan and design made the urban and architectural space lack of humanity. In fact, some issues of the architecture can not be solved easily by the functional division. Architectures are filled with incredible complex. Some realm and space have multiple meanings. And the urban life need this kind of emotional space and uncertain area, which make the atmosphere more active. However, the modern architectural theory blocked this complex in a certain degree.

Kisho Kurokawa, in awareness of this suppressed architectural characteristic, he presented his "symbiosis" theory to explain his architectural philosophy. Although in international architectural trends, such ideas are excluded, he believes that the fuzziness is filled in Japan's traditional culture and philosophy as well as aesthetics. In 1987, he published *The Philosophy of Symbiosis*.

He applied such theory into a lot of projects. Lets take the Saitama Prefectural Museum of Modern Art as an example.

The museum is built in the center of a park, and reaches up to the 15m-height restriction. The plan of the museum also makes use of the historically important tree rows that comprise the landscape. For that purpose, the museum's permanent collection is displayed on a basement level, and the special exhibits are



2.30 The book by Kurokawa

held on the first and second floors of the building. To allow the natural light into the lobby of the permanent collection display, a sunken garden is arranged to also connect the park with the slope. An atrium is located at the center of the interior devised to give both a space to suspend a large art object and a source of natural light through a skylight. The display route curves around the atrium, making the path easy to follow in addition to allowing visitors to see and be seen by other visitors on the other side. The architecture's structure is built as a lattice column structure. After completion, a work by sculptor Yonekichi Tanaka is installed into the facade. The exterior lattice frame of the main entrance approach describes an intermediary space where architecture and nature meet in symbiosis.

He designed the entrance intermediary space to create a more versatile public area. This is the attempt of modernization in orient space. This design makes the space inside and outside can get symbiotic.



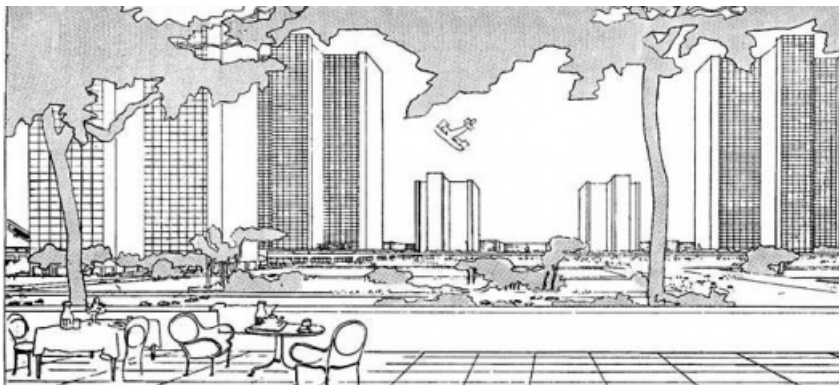
2.31 Saitama Museum

2.4.3 Le Corbusier –Radiant city



2.32 Ville Contemporaine proposal

In 1915, Le Corbusier raised the "Ville Pilotis" theory. This theory includes the concept of building overhead in the city. Le Corbusier said: " Modern architecture is not to design building how to grow on the ground, but provide the building to detach with the ground. This separation brings two results. The buildings can be seen as an isolated monomers to design, they don't have to rely on the earth. The second is to enable the state of the urban environment as a whole to achieve a continuous. Make the urban space continuous without interrupted by the constructions, then the whole city is like a huge garden.



2.33 Radiant City

In 1922, As the practice of Ville Pilotis theory, Le Corbusier designed for the autumn art exhibition in Paris a "Ville Contemporaine" project with a population of 3 million. In its Center, there were 10-12-story housing and 24 60-story office building, symmetrical grid road system, at a 45-degree diagonal connecting urban node, as well as unique cross shape office. These offices are elevated above the ground, basement is made up of rail and road and parking area, a whole complex transport systems. The entire ground floor was transformed into some green gardens. Here, the relationship of architecture and environment as well as artificial nature was redefined by a utopian ideal plan. The traditional relationship of urban space was overwritten.

In 1925, Le Corbusier did a Plan Voisin for Paris centre district, further developing his concept of urban planning, eventually forming the "Radiant City" this important urban ideal theory. High density, total overhead and surrounding parks in the city, as Radiant City's most important features. Entire cities are being raised above the ground, the ground becomes a park contains "sunlight, space, green". And from an architectural point of view, this was just a series of intermediary space composition of the park.

Development of the modern city was madly eating the natural space. Of course, the phenomenon received some of criticisms. Therefore, the significance of advocating overhead the building from the ground of the Radiant City is: not a negation to the modern city, it is to find a balance point from the contention of the indoor and outdoor space. In the process of the new urban constructions, return concerns for sunshine and fresh air. Gray space as a transition area between indoor and outdoor environment, partly contribute the natural space back to the city, thereby gaining some very precious green area form the artificial staff.

2.4.4 Five points of architecture and Villa Savoye



2.34 Ground level of Savoye Villa

Although Le Corbusier never directly mentioned the concept of the intermediary space, he supported building columns (Pilotis) has indirectly expressed his preference for this form. In the five points of architecture, published in 1926. First, Le Corbusier

lifted the bulk of the structure off the ground, supporting it by pilotis – reinforced concrete stilts. Le Corbusier preferred the overhead for the building, indicating that he pay attention to building volume and the underlying space. From another point of view, which has also become an important architectural element in Le Corbusier's projects. Almost all of his works includes some intermediary space finely designed.

In 1928, the Villa Savoye, can be called the representative practice of "Five points of architecture". The square shaped plan with a 4.75 metres of column grid. Except the entrance at the ground level, more than half of area is 3.15 meters high for the intermediary space. Expression of such an effect on the one hand the independence of architectural shape. The other hand, it won more green space for the city. And there are similarities with "Radiant City".

2.5 The intermediary space in the modern buildings

In modern constructions, the intermediary spaces are an interesting integral part. There are a lot of ways of manifestations, and the intent is very uniform. That is, the creation of dynamic space to meet the people's psychological factors. Particularly, in public buildings, the role of the gray space is diverse. The gray space can be used as the transit traffic core of construction, can serve a leisure place for people, activity places, or as a buffer space between urban and architecture. It can be said that the intermediary space is the most dynamic part of the building. There are also different locations for such kind of space.

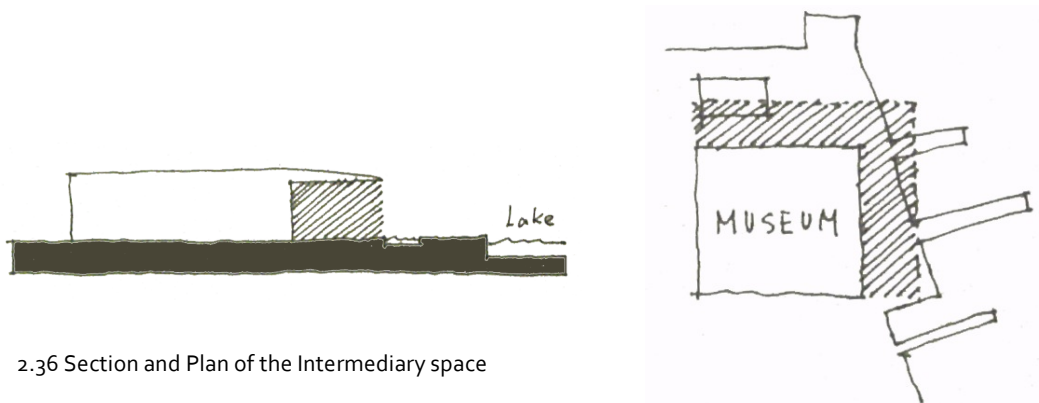
Following, I will introduce the different types of the intermediary separately.

2.5.1 The intermediary space at entrance

The gray space at the building entrance is the most common form. As in junction of buildings and street, in order to ease the sudden conversion of space, we need to put a space between the indoor and outdoor to mitigate people's mentality.



2.35 Kunstmuseum Luzern



2.36 Section and Plan of the Intermediary space

A: Kunstmuseum Luzern——Jean Nouvel

Kunstmuseum Luzern is at the east of the train station, and close to the lake of Luzern.

The Museum, formerly known as Lucerne Arts Museum before 1933. Later, at the same place France architect Jean Nouvel designed the new Museum and Conference Center in 1996. The building is located next to the railway station. In front it is the beautiful Lucerne Lake. Upper part of the building is a Museum,

architect designed different sizes of exhibition space, and introduce the natural light into the building. At the bottom there are hotels and commercial functions. Excellent location and good orientation make the building become the visual centre of the district.

At the top of the building, there is a large overhanging eaves, height from the ground is 46M. Almost the entire square covered by the eave. The roof can be said to be a huge intermediary space, there are Cafe, hotel, retail shops. That is the best place for tourist to visit.

At the same time, the museum faces the Lake, the intermediary space not only let the building communicate with outside space, while building could communicate with Lake. This huge intermediary space connects the lake and the construction. So that visitors can fully enjoy the beauty of the scenery and also can choose to visit museums, without be affected by rain and the Sun.

B: HSBC Main Building, Hong Kong

HSBC Hong Kong headquarter building was designed by the famous architect Norman Foster. From concept to completion was 6 years. The whole building is 180 meters high, a total of 46 floors and 4-story basements. Used 30,000 tones of steel and 4,500 tones of Aluminium.

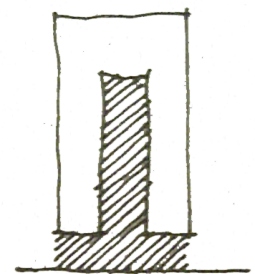
Most of the materials used in construction were precast. Structural steel parts made in the United Kingdom, glass, aluminum and floor made in the United States, services components materials made in Japan.

Features of the design as a whole did not have any internal supporting structure, are free to remove. All supporting structures are located at building's external, which provide more space to utilize. And design of glass curtain wall, aimed to use natural light sufficiently. Lobby doors facing south and north, can keep that cool in summer, save a lot of air-conditioning costs. With its flexible design, can easily be expanded according to actual needs without affecting the original structure. Inside the building there is also a vertical files elevator, shipping several tons of documents every day.

The bottom of the main building is elevated, consists of several escalators to link with internal. Overhead makes the whole



2.37 Lobby of HSBC



2.38 Intermediary space
in HSBC

building at the bottom forms a huge grey space, with the top and no closure structure. This design connects the HSBC Plaza and the other side. The building is not an obstruction of the district. And there are a lot of people to take rest, and enjoy the shade at the bottom of overhead space.

2.5.2 Bracketing intermediary space:

This intermediary space often appears in commercial buildings. In order to allow monomers to be echoed in the complex as a whole, generally take the form of enclosure among the buildings. Then the central enclosure part will be designed as a covered patio, and the atrium is a relatively open rather than an indoor space. Such spatial can join the surrounding structures, and also render a good place for people to take rest and activities.

Sony-Centre

2.39 Forum of Sony Centre



Sony Centre located at Potsdam Plaza. The complex is enclosed by seven separated buildings. Total area is 132,500M². This complex consists of Sony's new European headquarters, as well as other offices, apartments and hotels. Later, through an architectural competition, Helmut Jahn won the opportunity to design the Forum to cover the square. The middle area of the ellipse is a signature open space of the city, and the modeling of cantilevered structure is very modern. This forum is not designed to give some separated small plazas around buildings, but rather to provide them with a unique public space. This space provides



2.40 Intermediary space
in Sony Center

the surrounding hotels, shops, café an extension of space. Here, also provides free wireless LAN, and open to the public for 24 hours. This covered open space becomes one of the most favorite venues of the Potsdam Platz. Here, also many public events organized inside the ellipse.

2.5.3 The intermediary space inside the building

A: Mirador Building—MVRDV

The building is an observatory of the frame and a distant horizon. Construction projected to rise, largely frees the occupation of the plot, thus makes possible the transfer of a portion of private land for the benefit of the collective social enjoyment. Thus contributing to the generation of public space necessary for the contemporary city demand.

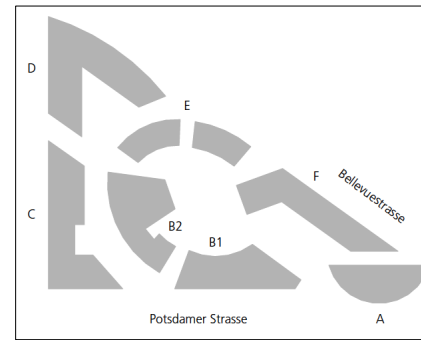
Moreover, the large veranda of 36,850 square meters above the ground, offers residents a community garden and an outdoor space at a height where to meet and enjoy the views.

Seriation against rationalist and repetition rate of family unity, there is a reasonable variation in response to new modes of contemporary living. Proposed housing organizations flexible and adaptable. This is to facilitate the identity that each person puts in his home, providing the required matching operation where possible and incorporating the changes and applications for current demand.

The occupants of a building can enjoy an opportunity for outdoor environments. Actually, transferred some ground open space to the sky.

B: Celosia Building / MVRDV

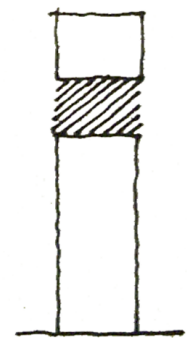
Jacob van Rijs from MVRDV and Blanca Lleó finished the social housing projects. It located next to Mirador building which is their early cooperation projects. Honeycomb-like celosia building holds 146 housing units. Go through the building's external public areas, there are car parks and the base commercial. Total floor area is 21,550 square meters. Total cost of EUR 12.6 million guaranteed this property sold at a relatively low price. This building block opens to the natural air and introduces the skylight into the inside, besides that, provides good scenery and



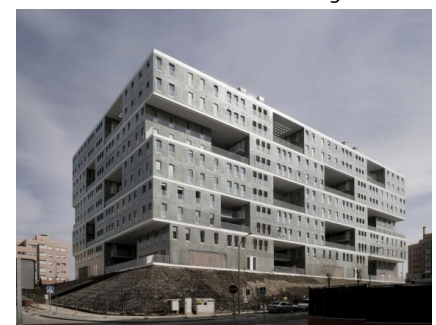
2.41 Master plan of Sony Centre



2.42 Mirador Building



2.43 Intermediary space
in Mirador Building



2.44 Celosia Building

outer space. The owner is EMVS.

The given volume of the city block was divided into 30 small blocks of apartments. These blocks are positioned in a checkerboard pattern next to and on top of each other, leaving wide openings for communal patios throughout the building. 146 one-, two- and three-bedroom apartments are all accessed via these communal spaces. Most apartments offer additional private outdoor space in the shape of a loggia right behind the front door. Inhabitants have the possibility to gather in the communal high-rise patios which offer views towards the city and the mountains and provide natural ventilation in summer. Opening the front doors connects the private outdoor areas to the communal area.¹⁵

This overhead gray space provides tenants a between indoor and outdoor space. Here is very a good choice for household to communicate. People don't need go down to the ground to touch the natural ventilation. Here, at upper space, residents can also enjoy the outdoor experience, and some good scenery.



2.45 Celosia Building

¹⁵ <http://www.archdaily.com/29637/celosia-building-mvrdv-with-blanca-lleo/>

Chapter Three

The characteristics for the intermediary space

In the design of public architecture, the gray space is a very unique part, with its own special architectural characteristics. Due to its own property, the intermediary space is to transit the artificial and natural space. In the intermediary space, there are outdoor features where to enjoy more natural factors. At the same time, is also part of indoor, without interference from the weather, which is a relatively protected space. Therefore, in this half-open space, its features can be very diverse. For example, the area could hold large number of people to gather, for public activity, leisure, also can provide some exhibition space. Intermediary space is periphery region in a building, is part of the building closest to the urban public area. Therefore, focus on designing of such intermediary space could increase some natural environment in the city, take the initiative to create spaces with unique characteristics. Following, I will introduce the characteristics of the intermediate space.

3.1 As a part of the functions

First of all, the intermediary space is one part of the architectural space, people create this space is to make it carry certain functions to serve the users of the building. Its characteristics of vague and ambiguous attributes that can carry a variety of demands, so it is an indispensable part of building function space.

3.1.1 Intercourse, Gathering, Exhibition

Whether in the Office building, exhibition buildings, or commercial building, staying in the room for too long, people always have a tendency to towards the outdoor space to take a breath. As a transition between the indoor and outdoor, the

intermediary area can provide a good region for people to away from the boring closed rooms. In the intermediary space, there is no enclosure wall, so the vision is open, we can contact more to natural wind, green and other natural factors for people to relax.

Also, inside public buildings, intermediary space is to connect indoor and outdoor space, thus the people flow is relatively concentrated. In this situation, intermediary space holding small exhibitions or events, will easily attract more attention. In particular, many intermediary spaces are connected to the urban streets, organizing activities can also attract pedestrians passing by from here. For example, Politecnico di Milano invited Zaha Hadid to make a lecture in the patio of the main building, which is a typical intermediary space.



3.1 Patio of the main building of Polimi

3.1.2 As a part of transportation

The intermediary space's own mission is to merge the different spaces, make the whole building unified. Hence, because of the nature of the intermediary space, it plays a very important role to organize the entire building functions. In large public



3.2 Atrium of the East Wing of National Gallery

constructions, the atrium, this kind of intermediary space will occupy a large area. The atrium itself plays an essential role of connecting the various plans and the inside transportation. In the pic 3.2 Atrium of the East Wing of National Gallery, the atrium connects each exhibition room and could offer visitors a huge area to leisure. In the atrium, there are stairs, escalators, elevators to connect the other parts, so it is almost the transportation core of the building. Which is to be aware of is that compared to

normal traffic organization of architectural space, high-rise buildings need more attention of the vertical people flow. Because high-rise buildings host large amount of people, and in the rush hour it will be very crowded. Therefore, traffic mobility is so important, and the intermediary area could largely relieve this kind of situation.

Some buildings and landscape use the intermediary space to organize the traffic, to achieve the purpose of function. Porch in Chinese traditional architecture is a typical case of this form. Besides the transportation function, it also provides a roof for people to communicate and leisure without the bother from wind and rain. Since the wideness is narrow, the strong directional characteristic takes the main function for transportation.

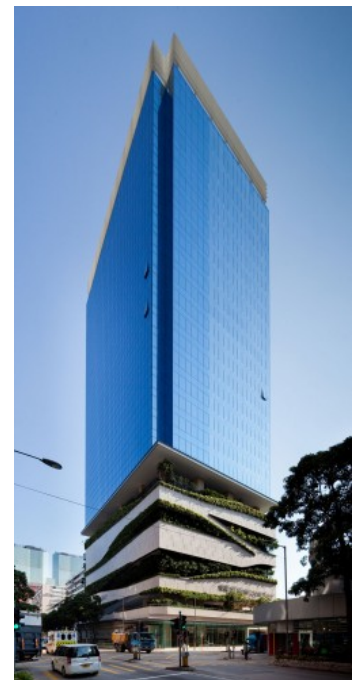
3.1.3 Rich architectural layers

People's activities are diverse, psychological needs are diverse too. Different spaces could host different activities. The gray space is between inside and outside, is an intermediate region. But the normal building is only a division of the indoor and outdoor, is a binary space. Therefore, the intermediary space can help to integrate the two parts. Multiple types of such space can form some transitions between inside and outside, and promote the building more natural and diverse. The fusion of this third area, making it to combine the indoor and outdoor, create a different atmosphere, which can also influence psychological effect. In sum, the intermediary space could help to enrich architectural layers.

In Europe, the role of the intermediary area becomes more obvious. Because Europeans take the plaza as a second living room, people spend much more time here than Eastern. To create the street and square with lively atmosphere, the multidimensional space is indispensable. Intermediaries provide to the European a public space with diversity characteristic to leisure, drink coffee and enjoy the urban scenery. Transitional space is ambiguous and layered, which is good to meet their demand.



3.3 Various space in Chinese Residence



3.4 18 Kowloon East

3.2 As a part of the landscape

3.2.1 Make contribution for the urban landscape

Machu Picchu Charter believes that cities should be a continuous whole and any part is a cell of city. Therefore the building itself is also an important factor in the urban landscape. Landscape ecology supposes that there are three landscape elements to constitute all. These are patch-corridor-matrix. The patch is a clearly different image from the surrounding area. For the overall urban environment, intermediary space is a concept of patch.

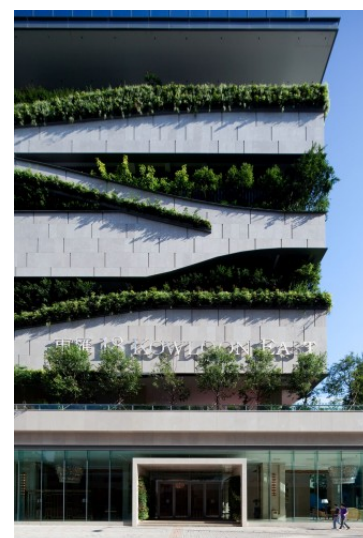
Generally, landscapes in the cities are opposed to the construction space. Landscape exists normally in the form of square, street-side afforestation. However, landscape inside building is a special form which is convenient and effective for the stuff to use. Since this kind of landscape is a part of the building, which is different from those that are difficult to reach. And the space is also open to the city, is free to utilize by the public. Therefore the green and landscape in intermediary space made very prominent contribution to the city's public environment.

For example, the 18 Kowloon East Office building in Hong Kong. This is a 28-storey mixed use high-rise buildings. First 6 floors are for the platforms and parking. And green arranged around this six-storey, also available to citizen. This design also contributes to urban landscape in a special form, and the effect is very good.

3.2.2 Merge the City and Architecture

Lively environment will have positive impact on people's minds, and stagnant atmosphere makes people's feelings pretty pass. Space was created, which in turn will affect people. Buildings, streets and squares are independent from each other, and each of them responsible for different functions. However, human psychology is inertia. In the cinema, for example, people coming out from the dark halls would be extremely unwell, which is because the radical changes of the light environment. In the urban space, similarly, from a very noisy, open environment into a quiet, closed space, it will be a little bit strange. At this time, Intermediary space would be contributing, to transit such mutations between the city and architecture, make the both part an organic whole.

People born with natural instincts. Such as in the office, if people work for too long in such a confined space would feel irritation and pressure. At this point, they would need an open, green



3.5 18 Kowloon East

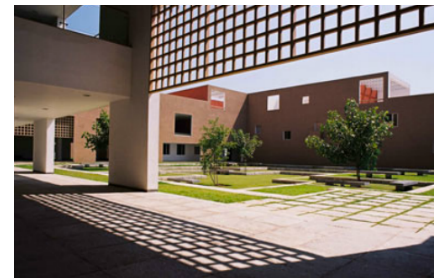


3.6 Open Space to connect city

space to ease the pressure. In such complicated functions organized construction, intermediary space has a good potential ability for eco-regions, its spatial fuzzy and variety much better than the closed walls. In this kind of space, to create a green, landscape, water is exposed to be very good effect. Coupled with the intermediary space is connected to the urban environment, where layout landscape, green can also get a good effect. Hence, city and architecture become a whole. And such landscape belongs to both urban and building. And a variety of forms of space make landscape itself very rich, full of rhythm. At the same time, the layout of medial area also provides more choices to the building's users room for public activities. Therefore, the buffer zone in public buildings with a very strong ability to integrate can also promote urban public activities happen in a continuous and comfortable environment.

3.2.3 The effect for the micro-environment

Intermediary space is a transition of internal and external environment, and could have an important role on regulating the surrounding temperature, humidity climatic factors. Such design in architectural space will improve air, sunshine, green oasis environmental conditions. For example, India architect Charles Correa, use the gray space in his architectural design to ease India unbearable heat in summer. The interior corridors, foyers are open to outdoors, this has the advantage of air ventilation, also provided a venue of the shadow. That lively space in India is of great value. At the Gandhi Memorial Hall, almost all space is



3.7 TATA TECHNOLOGIES CAMPUS



3.8 Gandhi Memorial Hall

intermediate, each pavilion is connected and without walls to separate. Large areas of shadow and the introduction of natural wind, combined with the surrounding green and water make it much cooler than the outdoor area.

The green plants that intervene into the gray space through photosynthesis to improve surrounding environment and air quality. In addition, the gray space could provide appropriate shade in the summer to reduce indoor temperatures. In the winter, such area could partly block the cold wind to improve thermal environment. In other words, the intermediary space is not only a buffer zone for indoor and outdoor space, as well as a buffer between architecture and urban landscape. Pay attention on such area design could improve the building environment in a lot of aspects.

3.3 Offer a space for people to take activity



3.9 Metropol Parasol in Sevilla

3.3.1 Culture Identity

Professor Yu kongjian of from Turenscape said: "a city should have a cultural identity and a sense of belonging. " Public buildings are the carriers of urban culture. Architect, when engaged in the creation of public buildings, most of the time is to create a space and atmosphere as well as mood. Region is not a

simple natural object, unlike normal space. Region contains humanity idea inside, and different places are to express a different mood. Each space has a corresponding inner temperament. These are spiritual content that cannot be ignored in the architectural design.

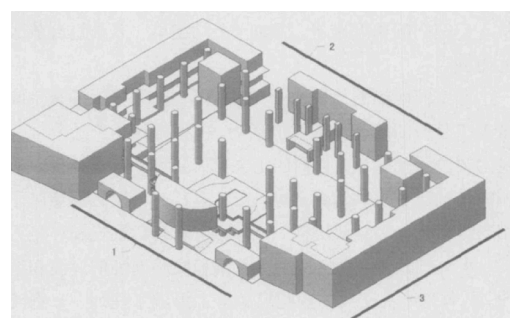
The humanities environment included in public buildings' intermediate area has three main levels: one is the aesthetic effect of the space, mainly refers to the visual feel of the space. Visual analysis of space must not only adhere to the artificial environment of respect for the natural environment, while also taking into account about aesthetic factors. For example, its spatial scale, proportion and rhythm contrast and visual patterns. Second, space and human interaction, this level emphasizes participation of subjective perception and experience. Space provides privacy or openness and sense of security as well as sense of belonging. The third level is the cultural spirit of space, the main regional culture graphics included to the site itself and the social life value hosted by the intermediary space. The study is based on historical and social information to make a depth analysis of its social significance, and thus maintain continuation of the site context.

Citizens always expect a colorful social life. In order to achieve such an expectation, space diversity should be based on a certain cultural background. Environment and architecture develop with time, and people's aesthetic orientation is also updated. A large number of peculiar styling architectural designs emerged frequently, and a lot of them appear as the landmarks of the city. However, in the urban space, as a sign of city image, should represent the context of regional culture and traditions. Therefore, inherit city cultural and historical factors need to rely on some of the traditional forms of space. Therefore, new forms of architecture should integrate this historical tradition to achieve the objective of combining old and new factors.

3.3.2 The sense of field and spatial mood



3.10 ShangHai Center



3.11 Diagram of Shanghai center

In the context of meet the functional requirement, the best connotation could be transferred by the intermediary space is the atmosphere, which contains the sense of belonging and spatial mood. People create and develop such space, sometimes for the reasons of long time indoor activities easy to get the sense of closure and oppression, while the outer space activities will bring relatively insecure. Facing with the economy, technology development and global integration, sometimes, architectural design is done by architects from other countries. And the building's style is determined by the architect. So buildings in different regions of the world are tending to be more and more consistent. People from different regions, different climate use the similar space. This will cause certain problems, usually psychologically.

So, how to find their own territory in the complex city life, create the space to meet the demands of physical and mental should be the main target for the architects to pursue. Gray space would play such a role. Kurokawa said, this space has been seen as an important approach to alleviate the emotional pressure which is a result of isolation from modern architectural space.

Take the entrance intermediary space in public buildings for example, such a sense of space meet the spiritual demand very well. Overhead space at the bottom offers a pleasant zone for people to stay, hang out with friend and take activities. There also will happen many spontaneous activities. And some buildings overhead space gives some facilities for the public, such as fitness equipment, stages, and so on.

Not only the entrance part, other forms of intermediary space will also offer these facilities. And there are some limitation for the users who just the staff inside the building. Also, in the construction process of the feeling of the field, the intermediary space can control the enclosure level of the area to accomplish the designer's purpose.

3.3.3 Heighten the artistic conception of space

Referring to the artistic conception in intermediary space of the public buildings, we will think of the combination of landscape. However, the mood is not only belongs to the shaping of the landscape. The layers changing among intermediary space and the promoting of the landscape levels will create various moods. In addition, the mood can also be reflected in the form of intermediary space, combinations, and so on.

First of all, the carrier of intermediary space will have its own unique mood. The constituting elements of intermediaries, such as porch, colonnade, rocks, water have their own artistic feelings. Since ancient times, specific components have their own specific artistic meaning. Such as traditional Chinese bamboo, in the gray space is often used. This artistic conception of Chinese characteristic of the bamboo will prevail in the intermediary space. Besides that, the Chinese porch bridges along the rivers are common intermediary areas which show implication of typical image of Chinese rivers villages. In Greece, the entire space of buffer area in the temple is surrounded by Greece type columns, therefore the entire space is very solemn, mysterious.

Secondly, the intermediary space through the perspective of extension space for deep and shallow, it can also pass a different mood. Admittedly, all of the buildings are exquisite artistic conception of space, but with a different traditional artistic conception there can also be differences. Intermediary space in public building construction has two classes: one is the distance of the depth, another is perspective. Theory of distance of the depth from Chinese painting, that is only focus on distance without pay attention to a fixed viewpoint.

The intermediary space could abundant the tastes of the space, and promote the role of spatial levels. As with other architectural space, the layers and levels in intermediary space mainly in the form of shape, color as well as light in the perspective, and the distance of depth without a fixed viewpoint. So, how could we build the artistic conception in the intermediary space, and how



3.12 Miho Museum

to promote the levels of gray space to achieve distance? Layers of smog make the scenery deficient, layers of propulsion make the scenery appears far, which is respected by the poet Wang Wei's (Tang dynasty) idea.

In addition, the artistic conception of space creation is inseparable from the architect's rich cultural heritage and personality. It is a reflection of architect's spiritual world. Japan's MIHO Museum displayed I.M.Pei's rich self-restraint. Architectural inspiration came from the Eastern Jin dynasty poet Tao Yuan-ming's "Tao Hua Yuan Ji" which is from ancient Chinese legend. Spatial sequences arrangement is very similar to the process of fisherman found utopia paradise. It can be said that MIHO is I.M.Pei's elaborately designed utopia. After a round square and a dark tunnel, the audiences suddenly see the skylight which feels amazing. Then across the gray bridge, the entrance to the Museum is emerging.

3.4 As a buffer space between the building and the city

Among various forms of the intermediary space, the same characteristic is as a harmonic area between artificial and natural environment to rich and transit the dual space. Then inevitably, the intermediary area has both characteristics of the inside and outside. Although the intermediary space is constituted by the combination of building elements, however, due to its public nature, is also a very important activity space for public. One hand, the gray space has material significance to city, that construct the architectural space and make it merge into the urban space in the system. On the other hand, the gray space also has a non-material significance to city, it partly supporting urban public activities.



3.13 Galleria Vittorio Emanuele II



3.14 Plan of Galleria Vittorio Emanuele II

Public buildings' intermediary space is a lubricant to city. That harmonizes the artificial and natural environment, and enriches the city levels. Milan's Galleria Vittorio Emanuele II is a very good example for such aspect. Promenade is enclosed by four buildings, plus the glass dome and arcade form a intermediary space with strong sense of enclosure. Where people can enjoy the natural ventilation, sunlight without influence of the weather. It is an excellent space to shoppers and tourists. Coupled with the architectural details of the carved sculptures makes the Galleria a very famous tourist attraction. It is true that the Galleria is enclosed by buildings, so this place should belong to the architectural space. However, the Galleria is also fully open to the city, and connects the Duomo Plaza and the Da Vinci Plaza, two important urban nodes, that makes people like passing through here. Visible, the space belonging to architectural environment also plays a very important role to the city.

From the urban perspective, the intermediary space can be said to be an extended urban space to the building. From the stereo perspective, the intermediary spaces provide a more informative space shapes for the building, also creates a half-private plaza for urban environment. The Masdar City by Norman Foster (Pic 3.13) contains many intermediary space for local people to use and bear the sunlight, which is also show a deep sense of local identity.



3.15 Masdar City

Architect Spiro Kostof notes that the urban public area is "a place for citizens gather and take activities". The intermediary space is designed to provide the people with a public activity venue.

Working, leisure, activities, communicating, these different types of activities require different architectural space to host. With the vagueness, ambiguity of the intermediary space has a variety of characteristics, and it becomes the most lively part of the building. So here, area nature can best meet the needs of urban public space. For example, building huge overhead area is an ideal space for green and landscape, and also can host some small shows. Colonnade along with the street could become the restaurant's outdoor space, which is an extension of the interior area.

Urban outdoors space is the most attractive part. Intermediary half-open space establishes a hierarchy of the transition from private to public, can adjust the different levels of privacy requirement. In construction, the intermediary space is also a periphery zone, where people can also feel the characteristics of two kinds of space, and can easily connect with other parts. Therefore, selectivity is very diverse. Hence, it could create a lot of spontaneous activity.

For example, the Forum designed by Herzog & De Meuron in Barcelona. Whole body is pushed up to the second floor, the ground level is a continuous space and totally open to the city. Next the building, there are some urban plazas. The building had a great intermediary space below it. Such space is very popular to the citizens. A lot of people come here to take activities and play skateboard. This is a typical case of building with intermediary space provides a dynamic field for the city.



3.16 Forum in Barcelona



3.17 Intermediary space in Forum

Chapter Four

The development of the high-rise building's space

4.1 The early age of development, focus on technology and ignore the space quality

Late 18th century to the late 19th century, Europe and the United States bring productivity and economic prosperity from the industrial revolution. During this time, rapid urbanization caused high population growth of cities. In order to build more in a certain land area. The buildings had to be built higher. On the other hand, the development of steel structure and the elevator contributed to the emergence of large amount of multi-storey buildings.

Owing to the expensive urban land, building towards the sky is more economic than buying more land for development. About the construction technology, because of its steel frame structure, the weight of it reduced, improvement of stability allowed the building to be built higher. Elevators were widely used, making the building with more than 5-storey a reality. Combining all these factors contributed to the birth and development of high-rise building.

By 1885, the first high-rise building finally born—The Home Insurance Company Building in Chicago(Pic 4.1). At that time, technology of other countries were still relatively backward, in the first few decades of high-rise building development was limited to United States domestic. It can also be said that the United States' high-rise history is the also the history of worldwide. In early period high-rise buildings are symbol of man's technological innovations, the ability to conquer nature. The high-rises are more symbolic than practical value. Coupled with the construction technology not very advanced, therefore the



4.1 Home Insurance Company

architectural design had to compromise with of technology. And the facade was still classical facade of the traditional three-levels. Actually, the high-rise buildings at the early era were nothing but the stretched multi-storey buildings. The location were always the central area of the city to show off the new form of construction. The functions are office and hotel. Due to technical restrictions, the entire base was covered fully with the ground floor usually. The distance to other buildings is the original distance used, the rain-proof cover at the entrance extended directly to the sidewalk. People can go directly into the buildings from the streets, where lack of space for the transition between the two.

In the urban space formed by high-rise buildings, citizen didn't get a better urban environment. In contrast, due to the inhuman scale of high-rise buildings, the streets look very narrow. People pass through here just to look up sigh for the high-rise buildings, and then hurried. Affected by urban environment made it only necessary activity, unable to inspire spontaneous activity. But due to the tall building was a new great breakthrough in technology of the construction. Its urban issues are negligible compare to its achievements. So there was not too much concern about the relationships between high-rise building and city. At that time, most of the architectural design is starting from the internal functions, taking into account how to arrange the plans and vertical traffic.

Between the end of the First World War and the great depression, United States entered a period of rapid development on high-rise building. There were two representative buildings: the Chrysler Building and Empire State Building. Both in terms of building heights and architectural design, the two buildings reached the peak of that time, showed the ability to conquer nature. But the relationship between architecture and city still didn't receive any adequate attention. Then the economic crisis and the Second World War make development of high buildings back to a standstill condition.

During World War II, the United States' national strength increased comprehensively, construction technology was increasingly sophisticatedly, and development of high-rise buildings gradually entered the rational stage of development. Representative of this period is the RCA Rockefellers. Both from the overall layout and architectural design can be referred as excellent examples of high-rise buildings. Especially in construction design combined with surrounding streets at the



4.2 Woolworth Building



4.3 Empire state building

bottom, it was no longer a nightmare to the next area. However, the 70-storey building's capacity is enormous, huge people flow makes pressure of traffic for surrounding streets become very large. Rush time more crowded around.



4.4 Open space next to Rockefeller Building

4.2 First Attempts for Communicating with the city

After the World War II, the construction industry worldwide showed unprecedented prosperity, high-rise buildings appeared in many countries, and the United States' development towards to skyscrapers. Absorption of experience from the environmental stress factors from early high-rise building development, at this period, high-rise building design focused on relations between the high-rise building and city. Architects tried to integrate architecture into urban public space. Designers used methods of overhead the building and set some small square around to show the friendly mood to the city, and also concern about the feelings of the citizen. The representatives were the Lever House by SOM and the Seagram Building by Mies.

Lever House is one of the few high-rise buildings have horizontal podium at that time in United States. Two floors of podium at the building's bottom, almost fills the base, and the tower only occupied one-fourth of the base area. Boundaries close to the streets, colonnade was on three sides, a courtyard in the middle of podium. Entrance hall is located inside the columns that form a buffer space between the buildings and streets. The other



4.5 Level House

intermediary space services the city, people can pass through here freely, alleviate the pressure of urban traffic greatly. This design makes the ground level into a coherent space, are no longer split broken by high-rise buildings, also give more comfortable feeling to people's psychology layer.

Seagram is a very good high-rise building example for using the space at the bottom to contact the square space of urban. Mies designed this building at the height of 158m and backward about 28 metres as the building's Plaza. There are two pools on both sides of the square as a landscape and used by staff work here as a field to leisure and communicate. In addition, the building itself is also designed to respond to the Plaza. External walls of first floor indented a certain distance, forming a colonnade of the facade, provide a space for transition of internal and external. Existing of this space, people walk on the pedestrian next the construction would not be very depressing and tension. And that make more meaning to the very elegant and exquisite Seagram Building itself.



4.6 Seagram Building

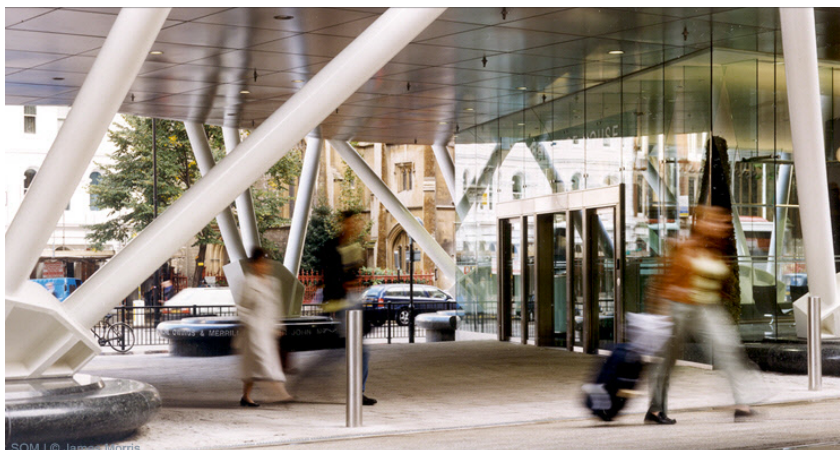


4.7 Seagram Building

However, at that time, there were still very few projects designed like this to make the bottom respond to the city. Most of the high-rise buildings just consider about their own functions, ignore the communication with city. In larger environments, people's feelings are still very poor at the city center. Coupled with the worship of functionalism. Four main functions of cities pursuing the Charter of Athens at that time, the city is divided into different functional areas. Different functional regions are relatively independent, thus caused a long distance for the office

staff from their houses. In addition, the skyscrapers can host a huge amount of people within a limited area in the city centre, causing overcrowding of people and traffic flow, resulting in deterioration of the urban environment. Function-oriented rationalism ignored people's feelings and urban experience. International-style modernization accomplishment gives the feeling as cold Monster. Excessive building heights make the street very narrow and dark, the lack of sunshine and green spaces, public life in the concrete jungle without sunlight all day long. City is almost filled with architectural space, so there hardly is breathing space for people. Lack of communication space between architecture and urban, these factors make a rapid deterioration of the urban environment. Although some buildings have set square and elevated ground floor space, but does not solve the problem of the entire city. High-rise buildings gradually became cities' tumor. High-rise buildings and cities is almost divided, contradictions between them is also increasingly intensified. This proves once again that just design from the architecture itself, and separated from the surrounding environment has been unable to adapt to the multiple needs of society. This not only caused great impact on high-rise building itself, but also caused confusion on the surrounding urban transportation, which led to the decline of urban centres.

Harsh realities warned people, urban environment and internal environment of the building is equally important. While devoting major efforts to developing high-rise buildings, the relation of indoor and outdoor environments becomes imbalance. Urban space was split apart, and streets became very depressed. Therefore, the reform of urban planning and the communication between the city and skyscrapers is needed.



4.8 Fleet Place House

4.3 The development of intermediary space from high-rise buildings

To reintegrate high-rise building into urban space environment as a whole, and changing the environment of the surrounding streets as well as urban experience, the key point is to alleviate the contradiction in terms of traffic around high-rise building. Main problems of urban traffic congestion were caused by excessive private automobile made the city streets unable to load. Since the 70 's of the last century, cities began to devote major efforts to develop public transportation, reduce the amount of private cars, greatly eased traffic problems. The city center district with the highest population density, if the high-rise buildings and underground rail system work together, it will further alleviate traffic pressures. The connection of the metro and high-rises make those who need to use the MTR go home staff no longer get out of the building. Therefore significantly decline in the flow of the blocks around. And this kind of traffic nodes transplanted to the inside of buildings also attract a lot of people work around come here to ride on the subway, the bottom of high-rise buildings became an open space. Building itself hosts a lot of pressures of urban traffic.

Judging from the urban environment, a large number of high-rise buildings make the CBD of increasingly higher volume rate, limited city area host more architectural spaces. The urban environment for people to live and work also became more crowded. People will have stronger demand for the open public space if they live in such environment for a long term. In the 70 's, CIAM according to Athens Charter amended machine like functionalism. Machu Picchu Charter was adopted in 1977, which clearly stated that new urban space to be pursued is the continuity of the urban environment. Also emphasized, "In our times the main problem of contemporary Architecture is no longer the visual play of pure volumes, but the creation of spaces in which people can live, emphasis is no longer on the container; but on the contents, no longer on the isolated building , no matter how sophisticated and beautiful,, but on the continuity of urban texture."¹⁶ As the Machu Picchu Charter signed, people began to realize that both the building and the surrounding space need concern. During the operation of the city, all activities



4.9 DAIMLER CHRYSLER Building

¹⁶ Charter of Machupicchu. URBAN AND ARCHITECTURAL DESIGN.1977

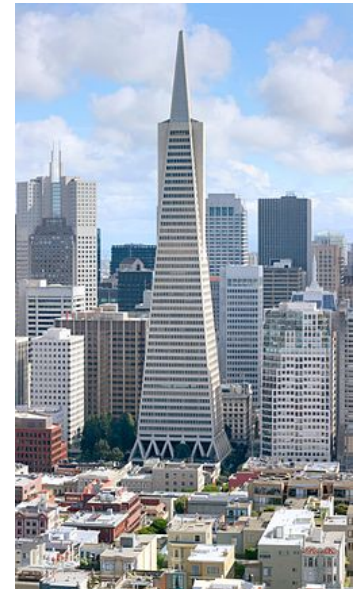


4.10 DAIMLER CHRYSLER Building

are continuous. Compared with the original construction provides a relative separated urban environment, which cannot form a coherent set of environment. Therefore, the architects began to study the solutions that can have a transition zone to create humanity space for people to contact and take activities.

After that, the combination of high-rise buildings with the surrounding environment was taken into account in the architectural design. Intermediary space of such design is a very important tool. Many node sections are designed as a buffer zone of architecture and urban space, open to the public, and combined with squares make a lot of very vibrant urban space. Achieve a high-level of integration of architecture and urban design goals. Take DAIMLER CHRYSLER(in Berlin) for example, is located next to Potsdamer Platz, where density is very high. In front of the constructions is a large urban green space. In order to respond with the urban green space, a huge roof shrouded all parts, formed a diversity of intermediary spaces. Correspond to urban green space both visually and functionally, gives the citizen a good psychological effect.

From the beginning of the 70, the rapid economic and technology development lead to another period of development of high-rise building. When technologies are no longer obstacles restricting the development of high-rise building, architects can easily implement their own design ideas without think about the structure. Care of the urban environment and considerations of building users psychological factors become very important factors for architectural design. During this period, a number of high-rise buildings with environmental awareness and social responsibility emerged. For example, the Citigroup headquarters in New York, Transamerica Pyramid (Pic 4.11/4.12), Saudi Arabia national commercial bank. After 1985, skyscrapers not only respond to the city, but also to the urban context, the space



4.11 Transamerica Pyramid



4.12 Section of Transamerica Pyramid

environment, and contribute to the ecology and climate. Design embodies the humanity-oriented concept. These ideas prominently concentrated at the bottom of the intermediary space and open space.

4.4 Humanity-oriented space design ideas

Minoru Yamasaki suggested that the modern architecture we need is representative of today's era. We need love, tenderness, joy, tranquility, beauty, hope and independence as a people. This sentence reveals the building's substance. Architecture designed to serve people, to provide a suitable living space. Therefore, architectural design must accord to human scale. Architects have to understand people's perception of architectural beauty, and cannot talk about architectural composition and space art without concerning the person's mental state. For example, some architects and proprietor blindly pursue the personality and style of the building, ignoring the humanization this fundamental factor. In fact, the building's personality is manifested naturally in the design process of pursuit for environment and humanity nature. Once leave people, the space users, fancy space and visual performance is no longer meaningful. Therefore, in dense urban environment of high-rise building must implement the maximum extent in humanity-oriented design. At the bottom of high-rises the nearest part from urban environment, should more adapt to human psychological, physiological demand factors. Seriously considering functions, spatial forms, façade materials, sunlight, green spaces as well as dimensions and other details, could only to better design the humanity-oriented space environment.



4.13 Shanghai Center

With continuing updates of architectural design concept, in recent years, many high-rise buildings designed with some intermediary space at the bottom to make expression of care and respect for people's feelings. Architects set intermediary space open to citizen to take activity and leisure, to eliminate the psychological sense of oppression and to stimulate spontaneous activity. Architects should pay attention to the scale of open space. In case of that, it could take advantage of various composition techniques and decorative elements to achieve a pleasant scale, which is comfortable and friendly. Combined with the set of landscape and water, making skyscraper intermediary space very lively, and pleasant to the users. Shanghai Center designed by John Portman is a good example. Fully open to cities at the bottom of the entire Mall, and the building is three floors overhead, supported by Chinese traditional pillars. The open area is filled with many porches, steps, Chinese landscapes as well as fountains making it a very intermediate space with Chinese characteristics. There are also many cafés and restaurants as well as shops for consumers to do shopping, leisure and hanging out with friends.

Architect Tadao Ando always pursues common spirit field in different architectural space design. He has a belief that architects' responsibility should be based on the revitalization of society. He believes that the architect has the responsibility to create space to soothe soul.¹⁷ As the time changes, we should use a different perspective to look at the design, set creating humanity-oriented space as the target.



4.14 Shanghai Center



4.15 Shanghai Center

¹⁷ Ma weidong/ Cao wenjun. Tadao Ando. Architectural Interview. Time Architecture. 2002(3), 88

4.5 Create an Environment-friendly space

4.5.1 Symbiosis with the Environment

Back to ancient Greece time, famous physician Hippocrates said, the nature is irresistible and invincible. But if you understand her rules, respect for her advice, it can be treated as allies.



4.16 Street View of CCTV Tower

By the 21st century, it has become a consensus that pay attention and to the environment where we live and seek harmony with humans and external environment. Sustainable development and ecological balance environment is the first important mission for people. However, some projects didn't realize such goals. The Surrounding area of CCTV Tower in Beijing is an example (Pic 4.16). Good ecological system has a very important significance for regulating climate, improving air quality, controlling soil erosion, improve the efficiency of resource use. In fact, human beings are an integral part of the natural world, in the 19th century, in many regions, human were also part of the food chain participating in the cycles of nature. But due to the rapid development of modern science and technology and expanding populations, natural environment suffered irreparable losses. The last a dozen years, human has gradually enhanced environmental awareness, suppose the environment is the first element of all development should take into account. If the environment is also damaged while in development, then it doesn't worth, in which ecology architectural design is also a part of environmental protection. United States famous landscape architect Ian-Mcharg said in his "design with nature": Natural is evolutionary. And there is a regular about interaction between the various factors of the natural world. There is also a limitation for people to use natural resources, and even some aspects are prohibited. Professor Wu liangyong from Tsinghua University, said: Watch the world with

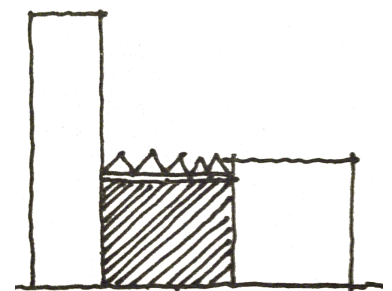
the eyes of history, we do not own the reality world, we just take temporary custody for the children.¹⁸ And he made the theory of general architecture, which emphasized the architecture-landscape-urban idea, it means the integration development. In the process of developing of architecture and cities, we should focus on the overall development of the natural environment at the same time.

In the city's CBD, there are full of concrete high-rise blocks, in that environment people are more eager to touch the nature, return to nature. Therefore create some natural space in the concentration of high-rise buildings area is highly necessary. Intermediary space in high-rise building could create natural atmosphere among the artificial environment. Intermediary space should be taken into account in the design of high-rise building. And the arrangement of green factors in the intermediary space can make the balance of the artificial and natural environment, accomplish the integration of architecture and landscape.



4.17 South-Eastern financial center

Many designs did very good on this point, combined the open ecological architecture and the natural environment together successfully. For example, the South-Eastern financial center building by SOM. The 1.8 million-square-foot complex includes a tower and a bank hall. Architects designed a glass roof between the two buildings. The huge roof is a steel-framed structure at the level of 12-storey above the ground. And there is an open plaza under it, fully planted with Palm trees. First several floors are retail stores. On the ground, some chairs, tables provided for citizens



4.18 Intermediary space in South-Eastern financial center

¹⁸ Wu LiangYong. The future of architecture. Tsinghua university press. 1999

to visit and rest. It becomes the most popular green square in that region. Architects apply a buffer area to reconcile the inside and outside space while designing the whole high-rise construction would create such dynamic atmosphere. That is both valuable to the building and city.

Nature of is fair to everything. How much we make efforts to protect the nature, nature will return the equal to us. When people build a large number of high-rise buildings in the city, would have to complement its destruction of the environment at the same time, to form a new balance.

4.5.2 Seeking for Organic fusion of the urban space

Urban space is the carrier of constructions, it restrict the building space. At the same time, buildings also have a certain degree of impact on the urban environment. Volume of high-rise building very huge. Hence, they make great impact on the urban environment. There are lots of instances of environmental degradation caused by the design of high-rise buildings ignoring to communicate with the city. Many farsighted architects have begun to focus on designing the project as an organic combination of architecture and environment. I.M.Pei said architectural design must pay attention to three points. First is the combination of architecture and environment, followed is treatment of space and shape, the third is to consider the feeling of users, solve functional problems.¹⁹ Architect John. Portman also attach importance to urban environment. He said: the issues we are thinking should beyond the construction itself, try to design some promotion factors for the development of the whole city, and do not only limited on the architectural space.²⁰ Indeed, from a macroscopic point of view, high-rise building's external demand formed of the urban environment's is not less than its internal functional requirements. Therefore, the individual buildings must accept the arrangements of urban order, and obey to the order. At the same time, high-rise buildings only defer urban context is not sufficient. They must initiatively participate in the urban environment, and become one active and effective element in the integrated city environment. Intermediary inside the high-rise building is a positive factor that can play such a role. This space can ease the pressure from the skyscrapers, and also could connect to the city and other



4.19 Intermediary Space by KPF

¹⁹ "ChongQin Architecture" 2011[1]

²⁰ John Portman & Associates, Inc. The future square. Time Architecture 2002(3)

buildings, what make the whole space Harmonized.

United States famous firm KPF made great researches for designing high-rise buildings. And build a very complete system of theories, then put into practice, has achieved very good results. The projects from KPF wide spread in many megacities. Most of the projects have very big impact on cities. Their philosophy is that treat the city as a whole. Every building is an integral part. They opposed seeing the constructions as isolations. They believed that artwork can exist in isolation, and the buildings cannot. There is a close relationship between the surrounding buildings and the urban/natural environment. Therefore, building must respond to the environmental system, so as to make the city formed a continuous whole. KPF successfully explored how to merge the building's personality into the urban environment.

4.5.3 Respect the cultural traditions

The cities with a sense of history will be attractive, distinctive, easily make people feel close. Aldo Rossi mentioned in "The Architecture of the City", the city or a landmark is people's collective memory, it hosts historical precipitation for decades or even hundreds of years. Therefore the vitality is not only reflected in the new buildings, also reflected in historical heritage buildings. Good architecture applies the new technology and fuse with local cultural symbols at the same time to make dialogue with culture and history. This is a kind of psychological sustenance. A cultural heritage building is able to meet the emotional needs of the people. There is a sense of belonging. The closeness cannot be brought by ordinary space environment. A familiar symbol will cause memories and emotions, resonate in people's thoughts, and meet psychological needs.

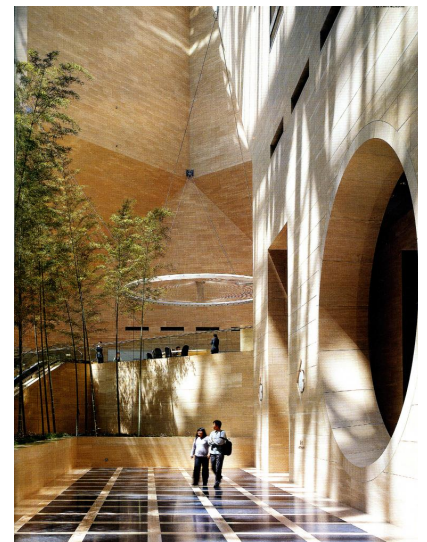
High-rise building exists barely more than 100 years, which is a new architectural form. Therefore, wisely merge historical symbols into high-rise building will bring better regional values. Architects should learn from the tradition, absorb nutrients from the historical buildings. Intermediary space of high-rise building is open to urban space. Such space can be integrated into the cultural characteristics of urban design to achieve coherence between architecture and city. In combination with the traditional form and context on building materials, architectural or landscape layout will achieve better results.

Headquarters of Bank of China in Beijing is a very good case. The 14-storey building is located in the Northwest corner of the bustling business district of Xidan, Beijing, is a landmark building of the entire region. Construction of bottom is recessed inwards, not give press to people. From Monday to Friday, at working time, building's atrium is fully open to the public. Whole building atrium are a large intermediary space, full of sunshine, joins the surrounding streets. Design of the entire space filled with many Chinese elements. Because I.M.Pei's childhood lived in the private gardens in Suzhou, China. The ability of grasp the Chinese traditional elements is excellent. In this huge Atrium inside, he uses bamboo, fake hills, water. And the introduction of the skylight. This space has a very strong characteristic of Chinese traditional spaces. Such atmosphere can evoke memories of Chinese classical gardens. Creatively involved Chinese traditional characteristics into the modern architecture.

Architecture is an important part of the national culture, and a symbol of tradition of a nation in a certain historical period. Using traditional elements is to make new construction carries people's collective memory. Such a design is not put traditional building back to city, but to combine those with historical and traditional values into new architectural design. Architect Paterson said, I do not think that apply a special or a typical classification as historical ornament is wrong, as long as the expression way is correct. As a child, who should have the characteristics of his parents, buildings are same. In General, that is to let such a symbol of new technology development of high-rise building also has the characteristics of regional culture, so that citizen will have a sense of cultural identity.



4.20 Bank of China HQ in Beijing



4.21 Bank of China HQ in Beijing

Chapter Five

Cases study

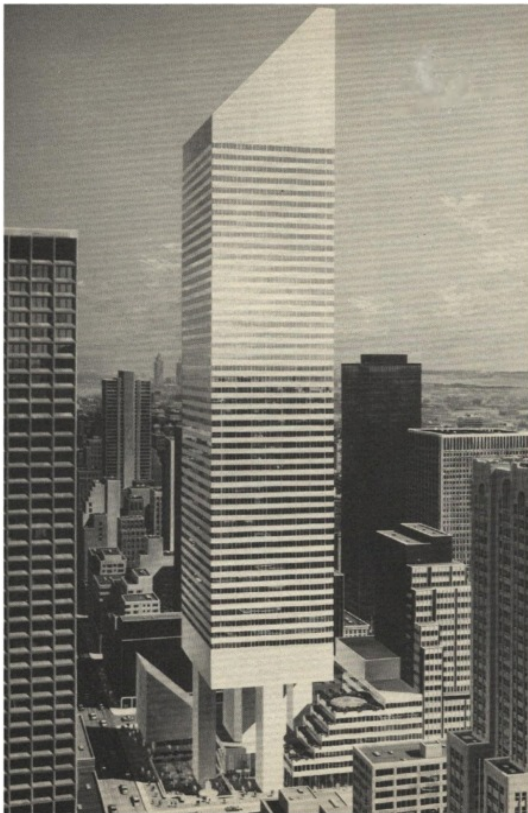
5.1 Citicorp Building (NYC, US)

Location: 601 Lexington Avenue (between 53rd and 54th Streets)

Developer: Citibank

Architect: Hugh Stubbins & Associates (design architects); Emery Roth & Sons (associate architects)

Erected: 1978



5.1 Citicorp Centre



5.2 Street View of Citicorp Centre

As early as 1961, Citicorp built its first headquarters in New York. Located at 339 Park Avenue, North of the Seagram Building. The 39-storey tower was designed by Carson & Lundin and Kahn & Jacobs. In the same year, Citi's rivals, Chase Manhattan Bank also

moved in their new headquarters designed by SOM. On a consideration of building environment, Chase Manhattan Bank's design is far better than the Citicorp Center. Huge plaza and sculpture landscape at the bottom designed by Dubuffet, there are also sinking zone and fountains, designed by Isamu Noguchi. Such a good architectural form let Citicorp feel the pressure. So, many years later, Citibank tried to change the color of the window to silver, this approach was successful to a certain extent. But still cannot change the image of the building to compare with Citicorp's status, because the ground floor of the building and the surrounding environment is still not changed. Citicorp began to feel that the building design was failed.

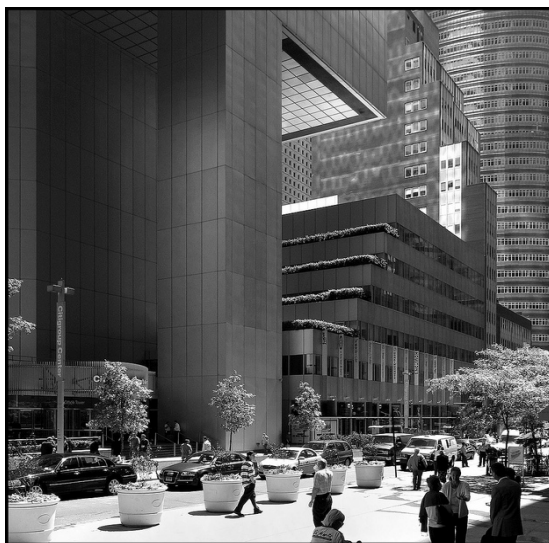


5.3 Sunken Square of Citi Center



5.4 Intermediary space and the Church

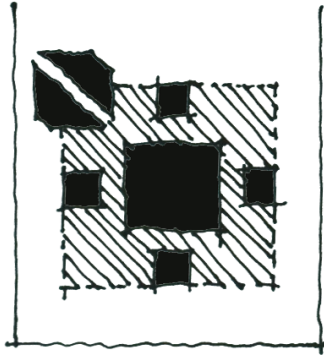
A few years later, the company decided to expand, at the present address. The biggest difficulty is the technical challenges. At northwest corner of the base is the St. Peter's Lutheran Church. Church allowed Citibank to destroy the Church and build a new one in the original place. Requirements are that cannot be connected to the building, and the building's pillars cannot get inside to the Church. Architects considered such a request presented put too many challenges for building structures, therefore the programme maybe difficult to achieve.



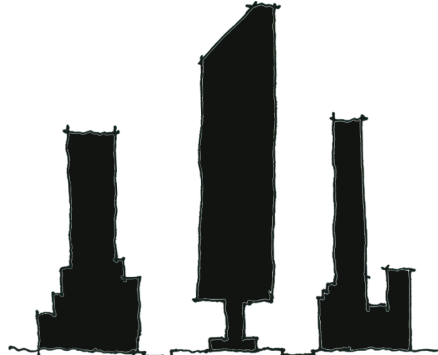
5.5 Street View of Citi Center

Thus, structural engineers William LeMessurier designed four 35M high huge pillars to prop up the 59-story tower. Four pillars located at the Centre of each side, rather than in the corner. Such solution designed to make the building across the Church of Northwest corner. In order to support the entire structure LeMessurier designed some inverted chevrons to support the system, let the weight of the building pass to the pillars, and then passed on to the ground.

Although this design is intended to avoid the influence of the Church, but the overhead design that does not make this high-rise building too much impact on the environment around the city, maintaining the original texture of city space.



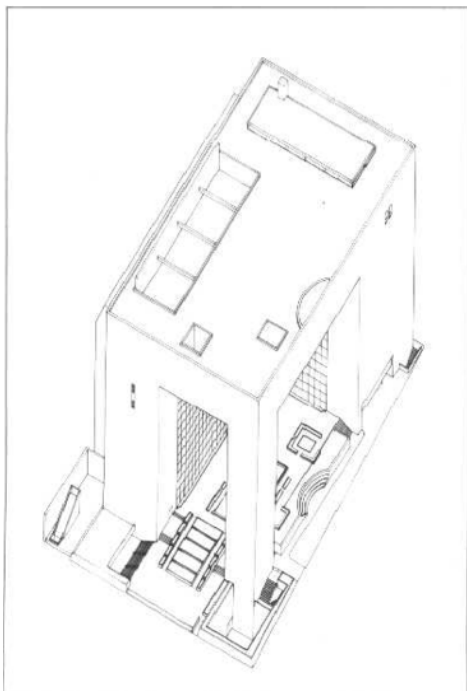
5.6 Plan of Citicorp Centre



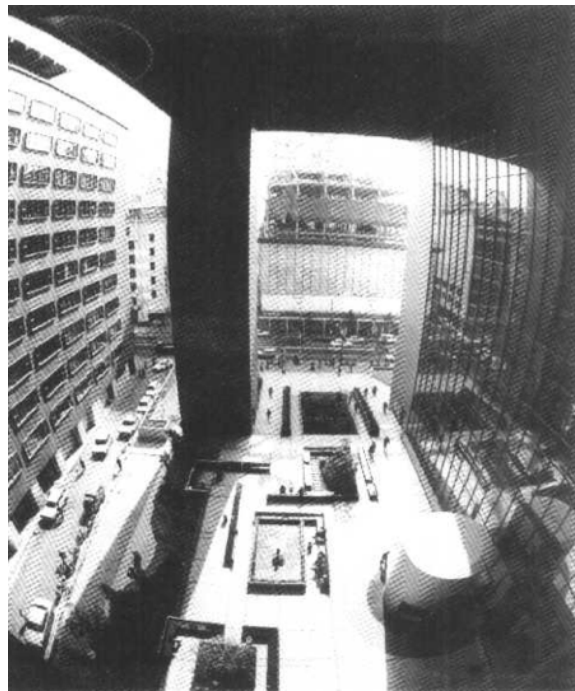
5.7 Section of Citicorp Centre

Intermediary space and architecture:

Citicorp center's intermediary space is the result of the overhead solution, formed a huge buffer area with the height of 35M. On the ground floor, a sunken Plaza designed for the citizen to take activities, there are also many cafes, restaurants, shops. If not looking up at the head of the monster construction, people do not feel this is an area of CBD. Such design gives the feeling here is a normal urban scales, there is no sense of oppression. The intermediary area is a good choice for people to stay, and take some optional activities.



5.8 Scheme of Fukuoka Bank HQ



5.9 Intermediary Space of Fukuoka Bank HQ

5.2 Fukuoka Bank Head Office (Fukuoka, Japan)

Architect: Kisho Kurokawa

Area of the site: 2904 M²

Area of construction: 30814 M²

Year: 1975



5.10 Fukuoka Bank HQ

The Bank is located in Fukuoka City Central Business District of 80X49M piece of land, building heights is 45M, coordinating with the surrounding buildings. Kurokawa designed a large open space under the eaves, with Japanese traditional "door" image, creates a volume between indoor and outdoor, like the "engawa" between public and private space. The wall towards to this space has been processed transparent. The portals to underground public cultural facilities are also arranged within this space.

In this huge transition space, there are 150 trees, more than 10 pieces of Japanese sculptures. The comfortable square, expressing emphasis on natural. External walls of the building are gray granite. The purpose is to enable the construction of entity weakened, becoming a shadow of urban space, interacting with the adjacent buildings.²¹

²¹ Zheng Shiling. Kisho Kurukawa. China Architecture & Building Press



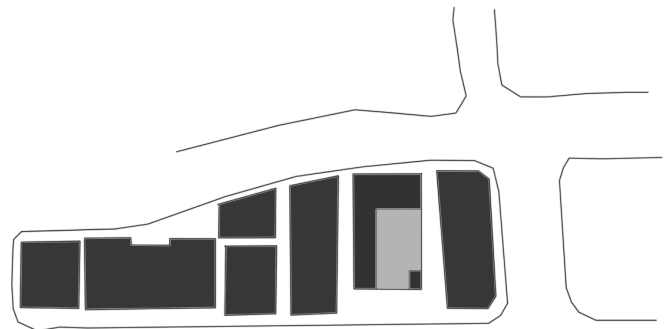
5.11 Intermediary Space of Fukuoka Bank HQ



5.12 Intermediary Space of Fukuoka Bank HQ



5.13 Section of Fukuoka Bank HQ



5.14 Plan of Fukuoka Bank HQ

Intermediary space and architecture:

This project is the best practice of Kurokawa for his intermediary space theory. Building enormous intermediary space fully displays the role of “engawa” from Japanese traditional culture. His transported this small space inside the 12-storey building, and make two different spaces have a similar temperament. The type of intermediary space from Citicorp and Fukuoka Bank are different. Citicorp’s intermediary spaces are located under the building. Relationship between the building and the void is up and down type. Fukuoka Bank is a subsidiary intermediary space next to the building, more similar to a traditional “engawa” space.

This void is more like the whole building atrium. Where as a preparation for entry into the building. Enclosure space consists of two walls and the huge roof. This roof has a limitation role to tell people the area’s edge. This space has become an active space of the whole building. The landscape, sculptures, and without affected by the weather of space atmosphere making the transition area very attractive.

5.3 Lippo Center

Architect: Paul Rudolph

Height: Tower 1 172M(44-stories)

Tower 2 186M(48-stories)

Construction area: 97,575 M2

Complete year: 1988



5.15 Street View of Lioppo Center



5.16 Lippo Center

Construction is made up of two towers, one is 44-storey, the other is 48-storey. The elevations is covered by glass curtain wall, and was organized by several bumps blocks of facades, this design makes very modern sense. Because of this shape, some people also call this building Koala tree. In Hong Kong's CBD area, these towers are very recognizable. With the future sense of the building, coupled with the huge volume of construction to create a strong sense of pressure. However, the open space at the bottom weakens such feeling significantly, get very good relationship with the city.

Architectural design at the bottom is a bright spot of the whole building. Building overhead on top of the podium, only the pillar connected to the podium and ground to support the huge volume. There is a big difference between shape of the podium and tower, building towers is very uniform with a specific form of body blocks, while the podium is showing multiple layers to show friendly attitude to the surrounding. The whole bottom podium open to the city, and there are many shops, cafes and so on. There are many bridges to connect the other buildings. Lippo Centre is connecting with the entire city block. And the pillars as well as special plan style make this intermediary space very characteristic, has also become a very attractive space in this area.

Intermediary space and architecture:

Intermediary space of the building is similar to the Citicorp. The difference is that the intermediary space is not empty, but comprised with podium. And the various functions of the first several floors make the podium very dynamic. Coupled with the green, landscape and fountains, also have the right scale to make the podium is very diverse, suitable for people.

The design of such intermediary space is Paul Rudolph's favorite design approach. He also widely used in many other designs of intermediary space to enrich the architectural spatial levels. For the way of applying intermediary space, Kurokawa's style is to create a relatively pure, not blend with physical space. Because it



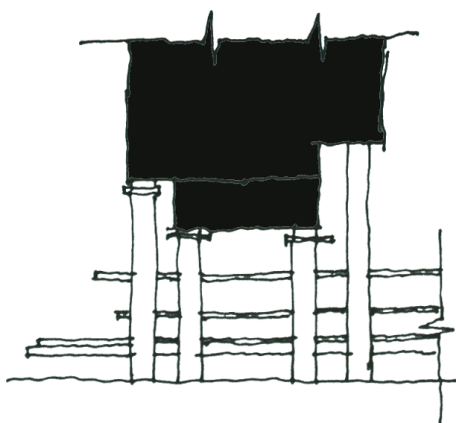
5.17 Intermediary Space of Lippo Center



5.18 Intermediary Space of Lippo Center



5.19 Intermediary Space of Lippo Center



5.20 Intermediary Space of Lippo Center

influenced by the Japan traditional space forms, the space he created always carry some "engawa" quality. Paul Rudolph like the intermediate region with multi-layer, also contains integrating functions, landscape and transportation.

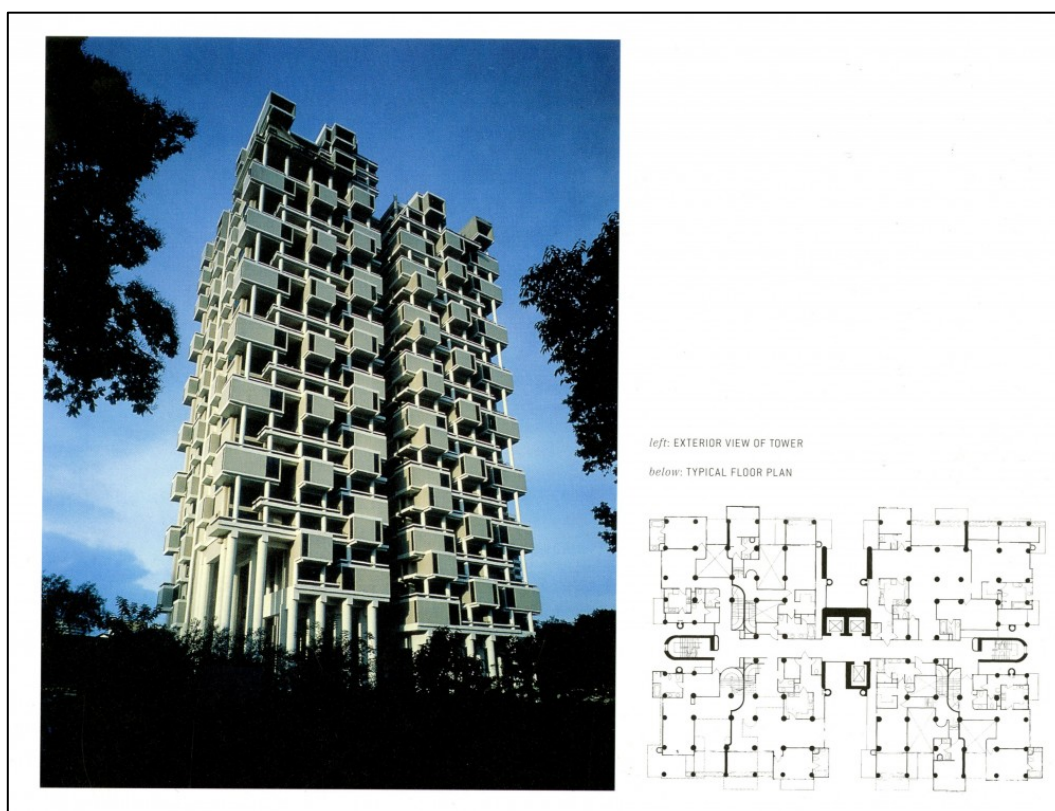
For example, The Concourse and The Colonnade in Singapore are very successful cases for Paul Rudolph use the intermediary space.

The Colonnade:

Architect: Paul Rudolph

Location: Singapore

Project Year: 1980



5.21 The Colonnade in Singapore

Rudolph called the space combination unit "twentieth-century brick", this building looks more like a free boxes that are positioned in the frame freely. At that time, Rudolph want to design a framework, and then the users select a location and type of the box. But taking into account the time, technical and budgetary problems, this design was not enforced. Instead, these moving boxes are fixed on the frame. Despite this, the modeling of the building also expresses interpretation

of the architect's original idea very well.

The combination of architectural space and intermediary space is the most prominent feature of the building. This design is also to adjust the Singapore perennial hot weather. In Singapore the surrounding environment is green, this is very enjoy things to have large windows and balconies in such city, where can enjoy the beautiful scenery outside the window. This layout also can effectively avoid the sunlight. Intermediary space belongs to private households, this space not only enjoy a very good perspective, while there are some natural wind. This can greatly alleviate puzzle by high temperature.

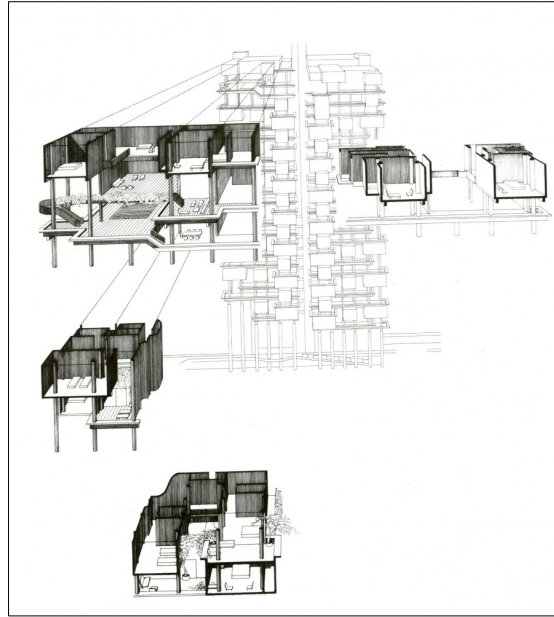
The massive structure's floor plan is divided into four rectangular quadrants, each bound by substantial room for vertical and horizontal circulation. Movement under the tower is encouraged, as the units are lifted off of the ground on a series of columns, which are lined in two closely-spaced rows, hence the name of the condominiums.

These columns lift the bases of the four quadrants at different heights; shifting floor planes are a common theme within the works of Paul Rudolph. Each unit is two stories high, with an open living and dining area, a large kitchen, and a balcony. The first floor features a guest room and bathroom, and the second floor houses two larger bedrooms. The precedent of this layout is Le Corbusier's Pavilion de l'Esprit Nouveau; the staggering of vertical heights and the lofting of bedrooms over the public areas create wonderful views and gathering spaces down below.²²

²². <http://www.archdaily.com/90352/ad-classics-the-colonnade-condominiums-paul-rudolph/>



5.22 Scheme Colonnade



5.23 Scheme Colonnade



5.24 Detailed view of Colonnade

5.4 The National Commercial Bank Jeddah

Completion Year: 1983

Site Area: 3 acres

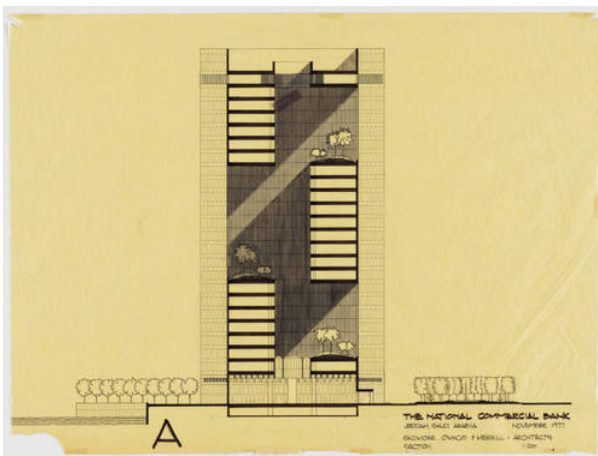
Project Area: 618,000 ft²

Building Height: 415 ft

Number of Stories: 27



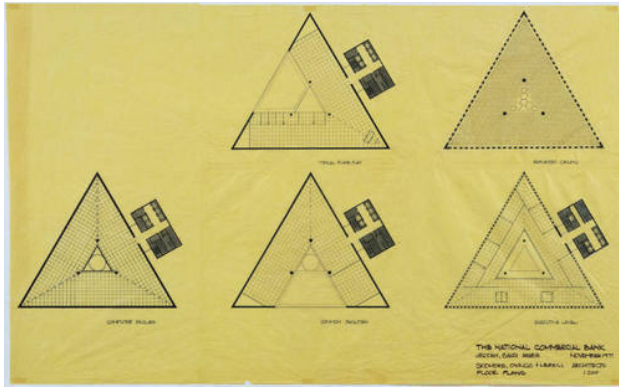
5.25 The National Commercial Bank Jeddah



5.26 Section of the Tower

The building is suitably designed for the climate and the windows look out onto a courtyard which is protected from strong sunlight. This courtyard feature stand as a modern reproduction of the traditional architecture in this area. The entire project is conceived with a view to saving energy since the building is a public building. The work comprises a triangular-shaped office block and a circular parking block, a simple design yet one producing a strong visual impact. The use of travertine to define the volumes give the finishing touch to the design.

Set in a three-acre plaza on the edge of the Red Sea, the project's geometry consists of a triangular with a 6-storey circular garage. The configuration of the site and local climatic conditions generated the overall form of the complex. The verticality of the bank tower is interrupted by three dramatic triangular courtyards chiseled into the building's facade. Two of these courtyards, seven stories each, face south toward s the old portion of the city and the Red Sea. The third courtyard faces northwest



5.27 Plans of the Tower

towards the sea. Office windows open directly onto these courtyards with an inward orientation typical of Islamic traditional design.

Interior spaces feature exquisite materials and finishes including black granite and marble. Dining facilities include a luxurious executive dining floor with flexible partitions and a colorful

employee cafeteria.

As for the choice of materials, clad in 5' x 9' panels of honed Roman travertine, the Bank's exterior finish was chosen to respond to local context and climate. The thickness of the panels was specified at 2" in order to maximize temperature regulation for the building and minimize heat absorption. Both elegant and serene, the travertine reinforces the overall architectural form of the complex.²³



5.28 Building from the city

²³ NATIONAL COMMERCIAL BANK, JEDDAH, SAUDI ARABIA. World Architecture. 2002(3)

5.5 One George Street:

Completion Year: 2005
Location: George Street
Building Height: 502 ft
Number of Stories: 23

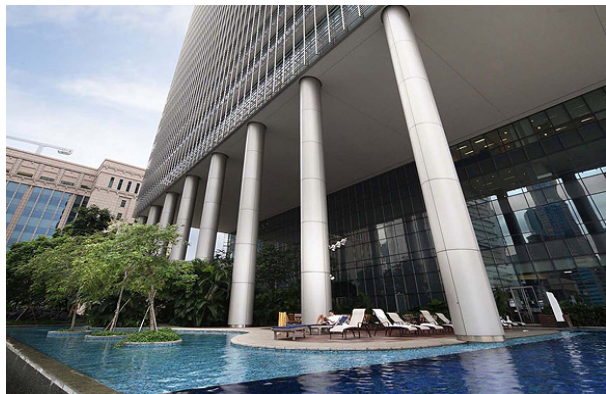
This project has two scales sections in the vertical direction of the office building, connected by a service area between them. This building is considered to be able to meet all of the functional requirements of a vertical city. A huge half-open area in the middle, provide leisure and business functions. Downstairs lobby with height



5.29 One George Street



5.30 Intermediary Space of the building



5.31 Intermediary Space of the building



5.32 Entrance Space

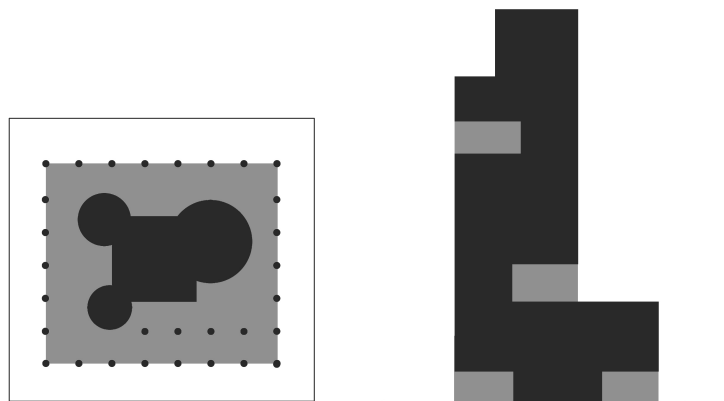


5.33 Entrance Space

of two floors. Park green environment can enter the building, also make architectural very well integrated into the city. On the first floor, the lobby is designed with three glass pods signifying three entrances of the lift cores. One for the carpark and low-rise floors, one for the medium rise and one for the high-rise office floors.

Sky Garden is located at the 5,12,15,22 floor. This solution is the practice for concept of city green extension, such intermediary space providing architectural good opportunities for accessing to outdoor space and landscape conveniently. Especially in the 5th floor, sky garden occupies most of the area. There are a gym and a swimming pool to service the whole building.

Bottom of the building is completely open to the city, height of 10M make the bottom space becomes very broad. Cross-ventilation also make here very cool.



5.34 Plan and section of the One George Street

5.6 Some proposals about intermediary space

A: TEK:

Location: Taipei, China

Architect: BIG

Volume: 57x57x57M

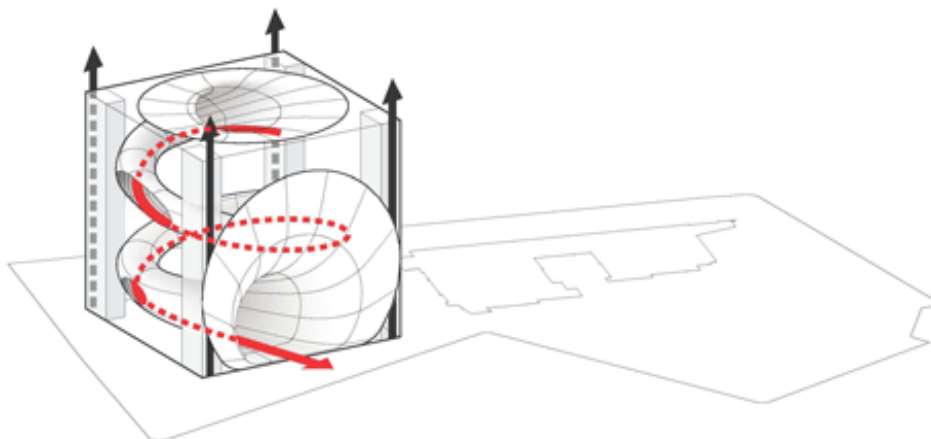


5.35 TEK by BIG



5.36 Inner space of TEK

Called TEK (Technology, Entertainment & Knowledge Centre), holes in the structure will create a spiral within the volume, forming access routes from street level into the building and up to its roof.



5.37 The Diagram of TEK's intermediary space(Picture from www.big.dk)

This building complex introduces a huge open space, so that the whole building and urban public environment are integrated. In such a public space is very characteristic. Free shuttle within the building from the public area, and stop at the giant windows to enjoy the city landscape. This fully coherent intermediary space is very rare, also give people a new space experience. People can enjoy artificial opening environment. People can choose either climb up or stop anywhere to sit down and rest. This form is also similar to MAD 's Fish Tank.



5.38 The Intermediary space of TEK




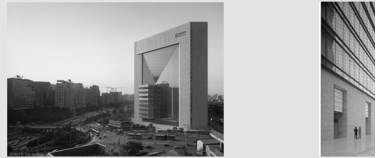
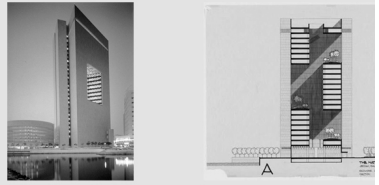
5.39 MAD 's Fish Tank

Chapter Six

The characteristics and design principles of the intermediary space of high-rises

6.1 The characteristics of the intermediary space of high-rises

In the last chapter of the cases study, there are lots of different types of intermediary spaces. Their design purpose, principles, elements, applicable people have a great deal of difference. But their common point is to provide people to enjoy both indoor and outdoor, humanity space for activities and rest.

	Suitable environment	The users	Example	
On the ground outside the building	Hi-density area/CBD	Staff/Citizen	Citicorp Center	
On the ground floor inside the building	Any area in the city	Staff/ Sometimes Citizen	New Poly Plaza	
Not on the ground level inside the building	Area lack of natural landscape	Only Staff	The National Commercial Bank Jeddah	

6.1 The types of intermediary space in hi-rise

6.1.1 The intermediary space connected to the ground

The ways of intermediary space in high-rise buildings, the most common form is such area connected to the ground. Create a connection in the middle of urban and architecture to form the transition of function and psychology. And this kind of intermediary space can be divided into fully connected and paralleled with the building two types. Architects designed such building space for staff and the public to escape from repressed psychological areas caused by high-rise buildings. Temporarily enjoy the humanity scale and natural factors.

Suitable environment

The suitable environment for this kind of intermediary space design is the high FAR region, or the region scarcity of land. If the land is relatively sufficient, buildings don't have to be designed in this way. Large areas of auxiliary sites around will weaken the pressure of high-rise building. Around buildings can set some squares, to tie in with the construction, providing activity venues. Because design such construction will cost much more, including many technical challenges. Overhead of the Citicorp Centre design is a huge technology challenge, and raised a lot of construction budget.

The users

Intermediary space of this way is open to the public of city. Anyone can come here to enjoy the open space in the crowded environment. Among them, most frequently users are the staff who work here and the citizens around the building. Maybe they will drink a cup of coffee with friends after work in the café or sit down to rest in the sunken plaza in order to alleviate their pressure of work. In General, the space give services to the city, enable the urban space as a whole and becomes more continuous, diverse as well as humanity. Let people get physical and mental pleasure in such space.

Design characteristics

Basically, the characteristics of this way is the overhead building or inward the first several floors to give back some space to the city. And the Colonnade could provide a richer space. The height of overhead is 2-5 stories. Let landscape enter the areas in order to achieve coherence in the whole region, Kurokawa's Fukuoka Bank Head Office have a very special way, the intermediary space is paralleled with the building, provides a large void area, also

achieved good effect.

6.1.2 The intermediary space inside the building

In fact, this type of intermediary space does not belong to the traditional type. Because the intermediary space was roofed, and at least one side is open. This interior intermediary space do not has an open side. However the intermediary space and this kind of space have a lot of similar features, such as wide vision, large space, a lot of green and natural landscape, let people feel similar to the outdoor space. And the same with the intermediary space that it also plays a buffering effect of indoor and outdoor space. This space organizes traffic across the building and gives users a half-open space to take activity. The space typically appear in a hotel, or in a museum. I.M.P is the master to design such space, he successfully designed that in the East Wing of the National Gallery and Le Louvre.

Suitable environment

This kind of shift the outdoors space to indoor intermediary space can be applied to any area of the city. Because this type is self-sufficient. Intermediary space within buildings is relatively independent from urban space. Between them will not occur frequent communications. The type of the space is comparable. Compared to the closed office space, this vast central atrium is an outdoor space. And compared to the natural outdoor space, here will turn into an indoor space, so this space owns dual nature.

The users

The scope of using this intermediary space is much smaller compare to the former one. Only restricted to staff of the building, and visitors. And some building will make this part open to the city, become part of the urban space. Usually such opening hours are restricted. For example, The Bank of China HQ in Beijing will open indoor intermediate space to the city, but only in working hours from Monday to Friday.

Design characteristics

Compare to the first type of space, this one has a completely different characteristic. First of all, this is a completely indoor environment, there is no interface to connect with city. This space is surrounded by transparent walls, that maintain visual connection with urban space. Very large space, and owns a lot of

outdoor landscape elements, such as trees, fountain, green and so on. Moreover, such space always introduce some skylights to bright the indoor part. For functions, here is the transition center for the entire building. All horizontal and vertical transportation are connected to here, that is to say such area is the transition space before people entering the building's functional area.

6.1.3 The intermediary space on the sky

This intermediary space is relatively unusual. It is different from the traditional intermediary space to transit the indoor and outdoor. The purpose of this space is very single, that is to provide some landscape and open space for building, while not worry about the influence of the weather, also enjoy relative privacy.

Suitable environment

Similarly, for this type of space, its purpose is to create an open space only for the building users. The design of this space is typically exist in an environment lack of natural landscape, such as the Arab region. Or in a high-grade architectural space to create some private landscape limited to the owner. Such as high-grade office or star hotels.

The users

Among three intermediary space types, this one is the most private. First intermediary space is open to everyone in the city, and the second is only to the user of the building, and partly to the urban public space with time restrictions. And this one is completely separated from the urban environment, which only open to the people inside the building. This part is a natural environment for people to alleviate from work pressure. Or provide a high style-enjoy space for some high-end crowd to rest and intercourse.

Design characteristics

Such space is normally inside high-rise building using subtraction to create some voids of space. With the roof to protect this space, and open to the air, enjoy a good perspective. Here usually layout tree, shrub and chairs for people to use. Some projects even provide swimming pool for people. Then the floor needs some special treatment, to withstand the weight of plant roots or swimming pool.

6.2 Composition elements of intermediary space

6.2.1 Physical elements

Intermediary space like the other types of space, requires certain conditions. Once possess these conditions can only comprise the space with its own unique characteristics.

(1) Interface

Boundaries are the first important element to define the space. It provides character of size, shape, location, etc. In general, the space of the building is made up of entity walls. Wall only has a limitation role. The real part being used is the empty space. But for intermediary space this particular area, its interface not only the entity walls. It could be a colonnade, roof or completely open interface. Intermediary space's interfaces need a roof, and at least one open vertical interface. If there is a wall as the interface, then that is the boundary. If there is no entity in some directions, then the size of the roof will fix the size of the space.

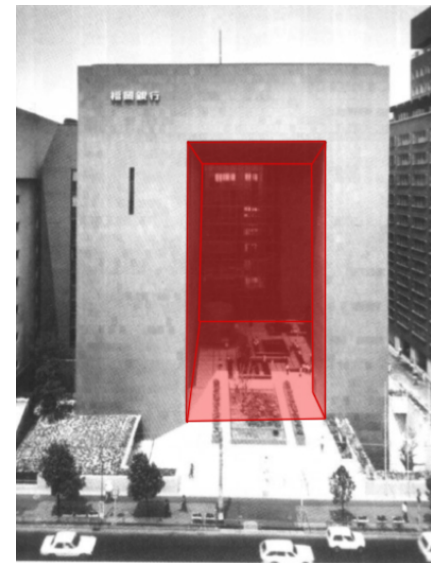


6.2 Intermediary Space in Citicorp Center

For example, Citicorp, there is no wall enclosure of its intermediary space, so the size of the roof defines its scope. In the Fukuoka Bank HQ, there are entities on two sides of the wall, and the other two are open, therefore these interfaces enclose the intermediary space together. So for the level of closure, Fukuoka Bank HQ is higher than Citicorp centre. Both of them are bank headquarters, these openness of design show their friendly gesture to society.

(2) Physical components

For the physical components of the intermediary space, there are two necessary points. First, should take some steps to imply people the boundary of the area. The common way of that is to design some steps to limit the zone of such place. Therefore, the transition area will be sunken or raised to different from the ordinary space, which also give some variable feelings. The second point is to show a natural image for the people what is also the main mission of the intermediary space. So, apply some landscape elements to join the very space is compulsory. The common procedure is to set some trees, shrubs, tiny hills, fountains as well as some chair for people to rest. Once own these elements, people could feel in a relatively protected area where is distinguish from the external environment and also enjoy the pleasant natural landscape to relax. Such area can offer an



6.3 Intermediary Space in Fukuoka Bank

ideal place to keep distance from the noisy urban streets and the embarrassing office rooms to enjoy a peaceful atmosphere with a good vision.

6.2.2 People elements

From the perspective of the whole, the people and building is two relative parts. They influence the other, and rely on the other. All the space once leaves people the user, it will be meaningless. So, the building created to serve people, to fulfill the people's psychological layer is the first important task. Therefore, designing the building can not just stay at the step of functional division. To construct humanity atmosphere is the higher requirement for the architect.

The intermediary space is the one to satisfy the people's emotional need, to alleviate the spatial transformation.

Alexander mentioned in his "A Pattern Language", make a transition space between the streets and the front door. Bring the path which connects street and entrance through this transition space, and mark it with a change of light, a change of sound, a change of direction, a change of surface, a change of level, perhaps by gateway which make a change of enclosure, and above all with a change of view.²⁴

And based on psychological research, Alexander classified the emotional layer.

1. Tend to action-towards public
2. Tend to isolation-towards private
3. Tend to neutral-between public and private

And Yoshinobu Ashihara made a similar expression in his "Exterior design in architecture". One of the methods to form the layers of space is to determine the function of space.

Exterior-half exterior-interior

Public-half public-private

Multi integration-medium integration-minority integration²⁵

Hence, no matter for the need of the psychology or the layers of building, this intermediary space is the key point to keep the

²⁴ Alexander. A Pattern Language. Oxford University Press (1977). P1160

²⁵ Yoshinobu Ashihara Exterior design in architecture. Van Nostrand Reinhold Company. P59

space continuous and united. This effect could be applied in the relationship between buildings or between the building and city.

6.3 Design principles

6.3.1 Control the scale

The space is design to serve people, so make the space suitable, comfortable, and friendly to people's psychology layer should be considered firstly. Professor Wu liangyong mentioned in his "Generalized architecture". The point should not be ignored is that the environment we designed is for human. Every physical element should suitable to the human's scale. The physical environment's existing, prosperity and changing all caused by people. So make the whole environment humanity and friendly is both a starting and an ending point.²⁶ And the high-rise building's huge volume and significant influence to the city, it should pay more attention on the scale controlling.

Humanity intermediary space should focus on the dimension and the proportion of the space. The dimension represents the absolute scale and the proportion shows the relationships between the comprising elements. The two factors influence the quality of the space together. Anyway, the intermediary space is a public space for people. Usually, such space is totally open to the city. So the principles to design the dimension of this transition space are different from the indoor scale. There is a one-tenth theory about the relation between the indoor and outdoor space. Normally, if we want to create a friendly atmosphere for the space, the scale of the outdoor should 8-10 times bigger than the indoor. And according to the Yoshinobu Ashihara's idea, that will be $2.7 \times (8-10) = 21.6-27M$.²⁷ In this distance people could understand clearly another person's face (70-80inches). So such dimension Modulus will lead to a friendly atmosphere.

6.3.2 Cultural and regional characteristic

The cultural and regional characteristic is the core of the sense of identity. Human is a species full of emotion. And the surrounding environment is the catalyst to activate the emotion. Different type of environment can give totally distinguishing feeling. And as the carrier of the collective-memory, the architecture has the obligation to pass and spread the culture and regional symbols.

²⁶ Wu Liangyong. Generalized Architecture. Tsinghua University Press. 2011

²⁷ Yoshinobu Ashihara Exterior design in architecture. Van Nostrand Reinhold Company.P31

Among the various functions, the intermediary space is the closest part to the public. Therefore, such space could play an important role on spreading the regional culture. However, such design should not just simply copy the traditional symbols. We need to use the new material and new form to respond to the history.

For example, the intermediary space in Shanghai Center and HQ of Bank of China did very good job on such design. The deep sense of traditional Chinese atmosphere recollects the citizens' memory. And both of them are the transition part of the building where open to the public. That is more effective. And the ways to apply such traditional elements are very innovative and merged into the high-rise building masterly.

In all, combining the intermediary space with the regional symbols can show the national culture in a very special way. On one hand, it will enrich the city's appearance. The other hand, it will make the ways to spread tradition Heritage Diversified.

6.3.3 Overall design

Any part of the building can not exist alone, it should belong to the whole construction system. The intermediary space is also not an exception. Though the types of the intermediary area is various, it also should obey the rules to form space.

As a part of the whole construction, its function is connected to the other parts, and work together as a unity. The appearance should also similar to the building. In addition, the initial task of the transition area is to combine the city and building. The function of it is to unite the whole space, so its form should be more conformity to the construction.

And for the comprising elements, the landscape, furnitures and sculptures, they also should show a unified form, including the material, the pattern and the color.

Based of these two principles, the whole high-rise building could show a unique face, become a united system.

6.3.4 Diversification of space

Robert Venturi stated in his famous 'Complexity and Contradiction in Architecture', I like elements which are hybrid rather than "pure", compromising rather than "clean", distorted rather than "straightforward," ambiguous rather than

"articulated".²⁸ And the intermediary space matches this declaration very much.

As mentioned before, the intermediary space is the most dynamic area of the whole building, because it carries different activities and connects the surrounding functions. Therefore, it should contain various space forms to meet the requirements.

For the interface of the intermediary space should be diverse. Because the transition area has different neighbors, and the interface to the neighbors should change. When it connects the office part, it should be relatively formal, and when it connects the public area, it should show a lively face. And the color, the material should change when meet a different need.

For the intermediary space itself should also designed diverse. Only in this way could give people more choices to stay here. Such as play, leisure, communication as well as reading, the space should offer a wide range of elements to meet the needs.

28 Robert Venturi. 1977. Complexity and contradiction in Architecture. Museum of Modern Art. P16

Conclusion

One century before, famous architect Louis Henri Sullivan said: "the skyscraper is the result of the logical economy power." During more than one hundred years, human's ambition to pursue the height never stopped. Undoubtedly, this phenomenon shows the ability to conquer the nature, and the skyscraper always the representative of the advances economy and technology. During last decades, the world's tallest building title was replaced again and again. Especially in some developing countries. They spent great effort on the high-rises to prove the international status. Such as the Petronas Towers in Malaysia, the CCTV Tower in Beijing, the Khalifa Tower in Dubai, etc. Everybody should admit, they are all the great achievement for the architecture and technology. However, sometimes people pursue the title blindly. The only thing in their eyes is the significant image and ignore the effect the building takes. As a part of city, the building should take responsibility to serve back to the city, to response to the city.

Compare to the skyscraper's technology, the research on how to combine the city and surrounding area is relatively slow. And the skyscraper is a complex which contains so many aspects. Such as architecture, aesthetics, society, culture, urban planning, landscape, transportation as well as sustainability.

Of course, there are many ways to combine the skyscrapers with the city. The intermediary space is only one of them. For this paper, I just classify the types and projects of such space. I suppose, we should do more effort on researching the methods to promote the integrity of the city. In one word, create a continuous, friendly, full of regional characteristics' urban atmosphere is the main task we gonna do.

Acknowledgement

After several months' struggle, the thesis paper is finished. However, I suppose this is not the end of the my studying period, and need more knowledge in my future. Writing the paper is really gave me another chance to reorganize my knowledge of the past several years.

I wish to express my sincere thanks to the Politecnico di Milano to give me a precise opportunity to have an experience to studying aboard, it means a lot to me as a Chinese student.

Second, I want to give my sincere gratitude to Professor Remo.Dorigati. He spent a lot of time on directing my paper, and gave me so many valuable advices. With his help, my paper was raised to a much higher level. His thoughts and ideas influenced and inspired me in lots of aspects.

I also want to thank my classmate Liu.Yening and Chen.Yan, who helped me so much during the period of doing the thesis. Liu.Yening gave many very useful advises to help me conquer some obstacles.

Besides that, my parents also gave me huge spiritual support.

At last, I also place on record, my sense of gratitude to one and all who, directly or indirectly, have their helping hand in this venture.

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