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Position Paper

The evolution of atrium's power

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- Introduction, position of the paper

The procession of building is always along with its power, when we trace back and think about the architecture with different epoch, we see the form of space is the symbol of social relationship, this kind of relationship has the tendency to regulate people's daily life through a certain way, or we can call it a certain power.

Mies van der Rohe, generally regarded as one of the modern architects who brought the architecture design back to the rational way. When we think about Mies' building, we find there are three architectural types always been used in his design: the courtyard, the tower and the public hall. Each of these types indicates a rule: a courtyard possesses a place by contact with the ground directly, a tower suspends people in a realm that would not be disturbed by surrounding but visual is still maintained, and a public building defines a space that achieves and organizes its task of collectivity as well.[1] This typeology establishes a specific relationship between people and the nature by position people in different role, which also determine the relationship between people themselves.

Atrium, a specific type of courtyard is the building type always been used for gathering public. In this paper I would like to research how courtyard gains its power in its history of development, which I believe affect on our SADD project: United Nation in Manhattan, New York. The typicalness of UN as a public building is about its political role, which requires architecture has a stronger power to divide and regulate behavior of the people in it. Academic life or social life[2], this is an important issue the new designer of UN compound need to think about. Different group of people such as visitors, delegates, business, press and employees prefer privacy in different degree, but there are still some collective space should be shared by these different groups. In my design, the power of courtyard and atrium are what I would like to relies on to solve these problems.

As long as we all agree with the idea above, we find the UNEC project in Manhattan is quite interesting because of this political role. This means one hand the building should be used in an effective and comfortable way, the other hand; it can foresee the behavior of its visitors and express its controllability. In the issue the study of power of space is necessary for UNEC project.

- History of atrium, a renovation of old concept

As one of the common ways to configure building with big volume, courtyard is a kind of enclosed area with a space enclosed by a building that is open to the sky.[3] This is a very traditional architectural idea, it not only can buffer the interior climate change within minimum exterior surface in technical aspect, but also enclose people in a certain space which still allow communication happens between human can the outside world. For this reason, these areas are often used as the primary meeting place for some specific

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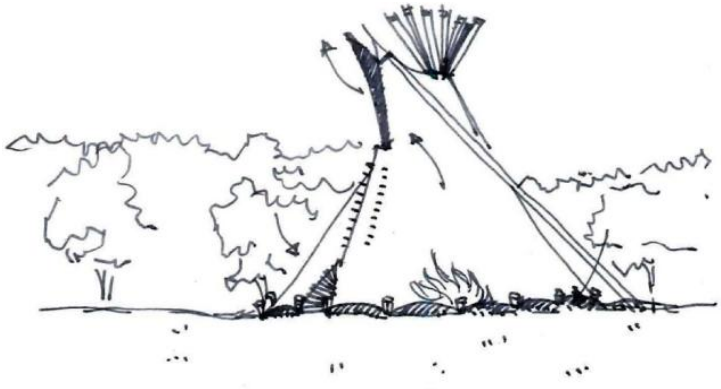
[1] *Machines A Mediter*, Richard Padovan
[2] *UN HeadQuarters, Practical Application of A Philosophy of The Domain of Buildings*, Le Corbusier, 1974
[3] *The Modern Courtyard House*, London, Lund Hunphries, 1973

purpose. Atrium, a covered courtyard space without or between building, usually enclosed by space with several levels and act as arrival and circulation focus, indicates its significant role in architecture design in modern time: Along with the technical renovation over the centuries, this very old architectural concept with 2000-year history has been renovated based on the rising of glass and iron technology. Since new elements such as covered court, arcade, and galleria are import to the space, the use of atrium is extended to high-rise building and some skyscraper.

- Approach atrium, a research method

The wildly spread of atrium building can be attribute to the power of this special space. So what is this power after all? Power is the reason things appear and the further influence they can bring about. Architects use their knowledge to propose a concept to challenge people's understanding, when this concept been accepted as expected, the space based on the concept gets the power. So we can believe power comes from the virtues of concept, in this paper, is to question the purpose: why we use atrium?

There is an effective way to assess a building concept devised by *Bill Hillier* who thought architecture was designed and building for function of *shelter, economy, accommodation and culture*.[4] These four interlinked elements can not only describe the reason atrium space are used, but also indicate different process the power of space plays its role. If the diagram of Teepee can be considered as one of the prototypes of today's atrium, we can see the small opening used of lighting and ventilation was designed to adapt to natural climate, which ensure a comfortable interior micro climate. The concept of atrium was developed under this basic concept for so many years, till the 19th century, the newly developed technical brought the atriums into architecture in that period in a structure of green house through which the sun light be transferred instead been reflect to other directions. The green house effect reduced the cost of central heating in a controllable price in many large enclosed spaces those years. Here atrium affects it power on making use of the resources in a rational way. The two points above lay emphasis on buildings' However people see a disaster modernism bring to the city, public buildings as landmark nibbled up the space of street which was clearly defined and classified, massive buildings as industrial production make the city become a gloomy, congested and smoky space[5]. In this particular period atrium extent its role as a coordinator and the power of space was used as a tool to modify the relationship between building and the earth's surface. Till today the atrium building has shifted its puritan quality to the one that really bring the public life back to the buildings.



Teepee

[4] Reference to *Commoditie, Firmenes, and Delight*, Sir Henry Wotton
[5] *Atrium Buildings: Development and Design*, Richard Saxon, 1983

Through the history of development we see the concept of atrium building was transferred from a solid and warm container to an interface which really can organize urban lives of citizens. This is almost the way all types of power can be developed: When things get rid of its restriction and get the freedom, it will definitely turn its attention to a wilder world. Hence, we have reason to believe the four point *Bill Hillier* put forward are not on a equal level, on the contrary, they presents different point the power of space works for and the causal relationship behind these element express the processing atrium space gradually gaining this power in the city. Enlarging particular building type in this particular purpose of functionalism is the method to research power of atrium building.

- Departure of Atrium, development of power

1. Shelter Function & economic function

It is a common view that atrium was first designed to enhance the interior climate of building. With atrium, sunlight can shine into the building but extreme climate such as rain and strong wind can be insulated. Moreover, the heat and air exchange can be speeded up especially in the case atrium used as a buffer space between interior and exterior. These years, the shelter function of building is always linked with its economic function. Even compare with normal building, atrium building looks luxury, however, at the same time when the space was built in an impressive way, the space to more extent focus on the way it make use of the resource such as money, time, energy, material and manpower in an effective way. One of the most intuitive change atrium brings about is the space with large depth lower the requirements of buildings' level, which minimize the energy consumption in thermal insulation and vertical transportation.

On the other hand, atrium space improve the indoor climate though the following two ecological effects: the green house effect and the chimney effect. The greenhouse effect keeps radiation of the sun in the inner space and the chimney effect blows the warm air up. The cooperation of these two effect makes courtyard become a bioclimatic space applied in some sustainable building design because there are different combination of courtyard and other kind of space, the various way of connect space offers lots of possibility of decries the energy use.

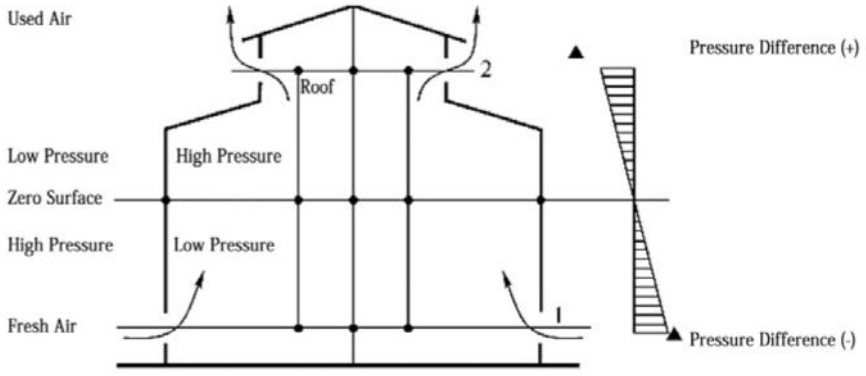
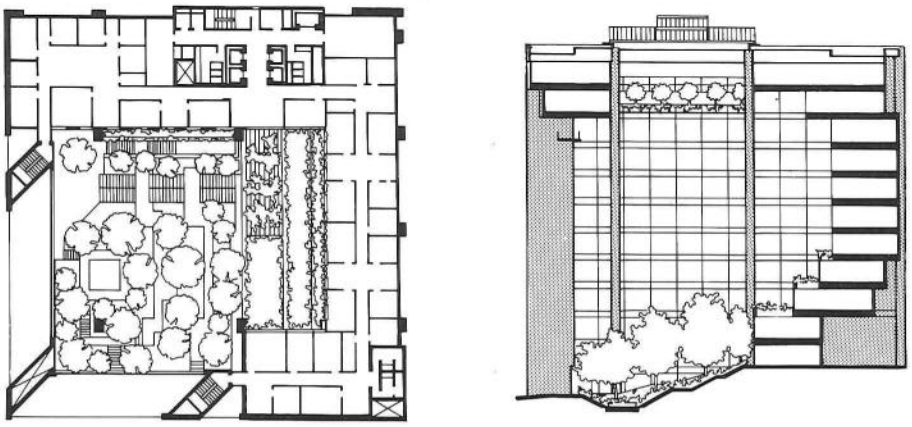


Diagram of chimney effect

Till here, atrium has achieved the basic function of building as a shelter, however, as a boundary concerns both inside and outside, this kind of glass house has always been understood as a metaphor

for the outside world. The power contained in this original concept lead to a desire of the outside world, which makes architect began to think about the changes atrium can bring about on a dreary office space, In their imagination, this definitely will a space surprised all the pedestrian who has just take a glance in. Plants are firstly used to create this exterior illusion, putting plants on the ground, floor are emphasized just like they are normal earth surface outside. By this means atrium space was offered a sense of informal garden and building floor can be used as street.

The Ford Foundation, New York (1967) is one of the pioneers of the living atrium concept. The building has had a first try of cultivation of temperate plants in large scale."A dense, complex, jungle effect has been created and the garden is now an extraordinary sight, the full storey change of level makes it feel very natural and almost wild."[6] The glass material make the sunlight comes for the top and the side of the atrium. The plants not only can purify the air, modify the temperature and humidity in the space, but also make the atrium space colorful and vivid.



The Ford Foundation

Today atrium's shelter and economical function has to more extent an attitude toward the sustainable issue which was widely concern this years, the atrium space shows an attitude that sustainability can not only be achieved in a very high-etch way, but also an ordinary way as long as you pay attention to the organic relationship with the ground and the sky. There is one way to connect this relationship and buildings together, which is to make use of the power of space.

2. Accommodation

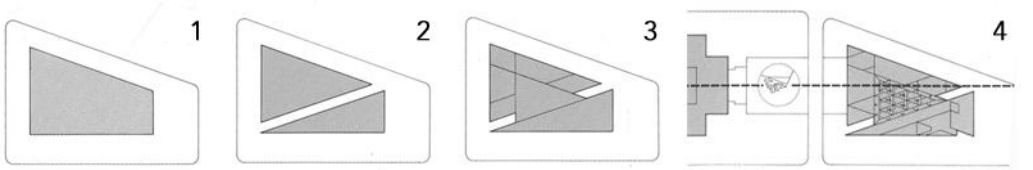
Beside the living atrium, some other experiment was also taken such as using atrium of connect different buildings on the street, but the real relationship between atrium and the city was actually established as the moment its accommodation was taken into account.

The accommodation function focuses on building and the earth surface. As a relative reasonable way of land use, an court form building stand on the full site is one third as tall as a tower stand on one quarter of the site with the same built volume, in additional to this, the court as an central square is far more easy to be perceive than the same size outwards as pavements around.[7] On the other hand, the atrium form

[6] *Atrium Buildings: Development and Design*, Richard Saxon, 1983
[7] Reference to *Land use and build form study*, Cambridge University Press,1966

makes it is possible to make use the irregular topography. As a way of volume segmentation, the atrium brings about more possibility to buildings' depth and shadow which make the interior space more humanized.

The National Gallery of Art, Washington DC provides a good example in this point: the site defined by street line is a characterless wedge, in this location; the new gallery has its role to relate the present building itself with the avenue in the urbanism level. A problem is the shape to the site is so graceless so the designer I M Pei cleaned the trapezoid in two to weaken the form and imported a triangle atrium to make the special geometry can be used. As a result, the completed composition became both stable and dynamic: one of the triangles in the volume is used as gallery and the other is the study centre. The atrium is an isosceles triangles bridging between them. The dramatic result and vistas of city which the building creates make it a masterpiece.



[8]

The implementation of The National Gallery of art

3. Culture

In the points mentioned above, the role of atrium is more and more emphasized in the city. But only at the time it extends its influence to people's social live, the concept of atrium can be proved and the power of space can be reflected to reality.

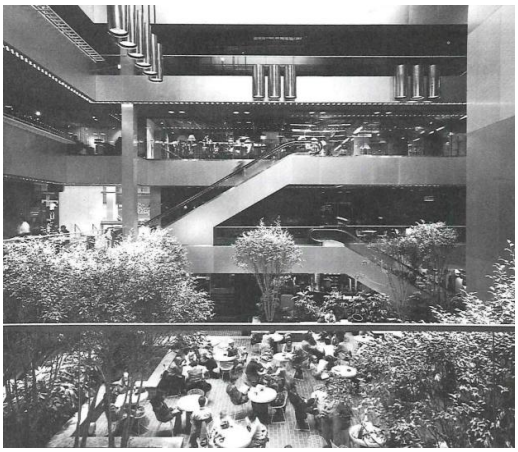
Atrium encourages people communicate and share concentration by putting people in a big void. It brings the urban elements like street and plaza from a external world under lots of limitation to an ideal indoor space. Compare with normal building, atrium building is not a destination of citizen, but one point of route, or we can call it public space in the city.

As a public space, atrium is the ideal entrance. It not only can help people to understand the routing of the building but also establish and transition from normal visitors to users. It has a dramatic space character like a stage which can let people perform themselves; people with different behavior also make the space colorful. Another thing making atrium space interesting is it stand on the intersection between the public movement in the city and the private purpose of building, for this reason, atrium is obligate to use its power to make up the quality of the city.

The Civic Center of Scarborough (1976) achieved its public atmosphere by its circular central atrium which is for one fourth of its circumference to an exterior park. This Atrium is always used as a civic focus for ceremonies ranging from weddings to political events. Another atrium building at Citicorp in New York is also like an internal garden in which a tower flats on its center space which supported by four columns. To one part there is on outdoor square with a triangle church fitting under the base, the other side, is a

[8] *Atrium Buildings: Development and Design,* Richard Saxon, 1983

seven storey atrium space around. The lower levels are public facilities used as subway, shops, gallery and urban landscape; tables and chairs are placed on the tiled floor for stroller and customer. The import of public makes this center a success in commercial and urban terms.



The atrium at Citicorp, New York

- Conclusion and reflection

In these two examples above we see the atrium is not only used as a public space but also a transition point organized the people flow in the city. At this moment the power of atrium space really works on our city. As a form of space based both sharing and dividing, its concept is finally been proved by people's behavior and its power is been admitted.

These are the central features of atrium, even only the outwards space of atrium are really been used by us and the inward more or less looks like an additional part we get, the interact of them really create space which is more interesting and useful than the normal building, this is the power of atrium space, along with the development of the society, this power is also involutes. From the shelter function to economical function, from the accommodation issue to the culture issue, the focus of the power of gradually shifted from the relationship between human and nature world to human and the society. Here we can see this power structure directly links to the pattern of people's life. From the group life of ancient time to the latter period individualism was woken up, then to the modern time public life came back to people's everyday life, the design of atrium was used to solve one and another problem in people's live, which cause the dramatic change of atrium building, and the power of space, are also been updated, which also give atrium space a prominent role nowadays in a broader level: to collecting people.

Nowadays the culture function of atrium space is taken seriously; however, when we see the role of atrium as a gathering place in the city, we also face to the new challenge that is a discreet security presence is required. As a space city centered and open to public, it may disturb by the outside world easily. So today is the time to use the power of space to divide the public and private routing in order to avoid the conflict happens. One of the common suggesting of design is to put the private offices and dwellings on the higher levels and leave the public function like bank and shops on the ground level. By this means the ground can be linked to public transportation in a better way. To share the space but still divided in the main idea to deal with the problem. But when the problem is reflected to a more complex

situation like the United Nation project in our SADD studio, this kind grade separation need more study from the function of the project to the different type of users. The paper discussed the growth and the alternate of the power of atrium space, though this research, I believe I can import this power to the next dimension, that is, the security issue.