Connectivity in the city: Comparative Study between Nanjing and Zurich

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[Abstract]
This study analyzes connectivity in the city at the urban block level, and focuses on the dimensions of urban design. The urban connectivity means the integration of the urban elements, including blocks, plots, buildings and public spaces. This connection reflects on the morphological integrity, the contextual continuity, the cultural inheritance and the impetus behind.

The research is based on the comparative case study between Nanjing, a typical city undergoing rapid urbanization in China, and Zurich, a developed city during the small-scale urban renewal. The connectivity in the urban commercial center in both cities is analyzed with the following aspects. 1. Urban form. While the city center in Nanjing is developing to be vertical with the point block, the super-block and the infrastructure system, since the three-dimension connection is believed as the key factor consuming urban resources effectively, the city downtown in Zurich is still be horizontal growing slowly with the traditional urban block and public spaces in-between. 2. Urban context. Compared with connective strategies of the block and public spaces relationship in Zurich, the urban connectivity is set up both on and under the ground without context in Xinjiekou district, where the place is just like the drawings of Archigram in the 1960s. 3. Socio-economic factors. It shows the intrinsic logic. The political, economical and cultural factors plays more important role in the process towards connectivity.

Rather than determining the better mode, this research would like to represent the different phenomena and logic of urban connectivity with the case study, which is at the block level. And, both Asian city and European city could take the connective urbanism as a tool to deepen the knowledge of urban transformation and learn from each other.

Keywords: connectivity, city block, urban form

Introduction
The rapidly progressing privatization, globalization, commodification or even “Disneyfication” of the urban public realm has generated a bland, artificial uniformity that displaces or exploits the variety of local places, businesses and cultures (Kerstin, 2003).

Meanwhile, Koolhaas argues that architecture and city is becoming disjunction, as buildings in modern city is not constrained to urban fabric anymore, but becoming a “small city” itself (Koolhaas, 1995). It leads to overwhelming emergency of isolated islands in metropolises.
The “connectivity” in this paper is contrasted with the urban phenomena of disjunction. Although the traditional mixed-use urban system changed to the morphological and functional archipelagoes, the city is not constructed on the utopia of arithmetic and geometric, but on the humane integration of function, form and the public. Instead of modernism and post-modernism, Nan Ellin supports the Integral urbanism. She writes, “Hybridity and Connectivity bring activities and people together, rather than isolate objects and separate functions” (Ellin, 2006). Actually, every urbanist and architect knows the importance of the connectivity, for example, Kristina Hill writes, “Projects in urban design, architecture, and landscape architecture that aren’t made with an understanding of flows and connectivity are destined to fail” (Hill, 2003). Alison and Peter Smithson write, “Our concern is for the poetry of movement, for the sense of connectivity” (Alison and peter, 2005). E.M. Forster writes, “Only connect! . . . Only connect the prose and the passion, and both will be exalted, and human love will be seen at its height .Live in fragments no longer. Only connect, and the beast and the monk, robbed of the isolation that is life to either, will die” (Forster, 1910).

Since many research have already explored the connectivity in the city in the different domain, its content is varies by different definition. This paper gives a specific framework of understanding connectivity based on the morphological study at the block level. It analyzes the relationship between block form and the intrinsic logic – social, economical and cultural factors behind.

**Connectivity at Block Level**

As stated above, connectivity could be studied at wide various dimensions and different level of a city. The study focuses on the dimension of urban design, specifically, the level of district, block, plot and building. Conzen make a point that the Town Plan is a constituent form complex of the townscape, and a variable combination of four plan-element complexes of site, street-system, plot pattern and building pattern (Conzen, 1960) ) (Figure 1) The “connectivity” in this study means whether the urban block could be as a medium make the former four elements as a whole.

![Figure 1](source: Wowo, 2010)
The reason for choosing the block as a fundamental unit of the research is that: the block itself is definite as “a connecting elements between the city as a whole and the single houses which compose it” (G. Giovannoni). In other words, the block could be subdivided into a number of smaller lots and buildings on one hand; it is also the basic unit of a city's urban fabric on the other hand. The transformation of urban form can be understood clearly by analyzing the dynamic of the block pattern. And the types of the connection between blocks, as well as block and buildings, reflects the different urban form between traditional cities and modern cities:

The western traditional city is the organization of blocks, public spaces and monuments. The dialectical relationship between the urban block and urban public space tends to be the basic structure of a city, and the monuments are the symbol of the city. Especially, public spaces and blocks define each other, for example, continuous façades of buildings in a block also determines the interface of the public street, and the public square can be seen as a piece of open land between urban blocks. Consequently, the connected network of blocks and public spaces compose the urban form. In contrast, the block in modern city has no meaning of one self-contained structural mass. It is nothing more than a basic unit composed of a series of lots joined together, bounded by four streets (Meyer, 2005). public spaces become the leftover spaces and lost spaces between the free-stranding buildings. （Figure 2）

Figure 2  Traditional block and urban spaces versus modern ones (source: Wowo, 2010)
Thus, when we think of the block as a unit of measuring connectivity in the city, in the historical city, public space - block relationship shows the connection. And in the modern city, the connection between blocks, which only means a piece of ground, is weaker. As a result, how to create the connectivity in the modern city has been a dodgy problem for a long time: the traditional integration of the block and buildings are ruined by the modern layout of buildings; the public space and the block relationship collapse and replaced by the urban isolated archipelago with the busy avenues for cars. Hence, the urban designers try to focus on the interior of the block. For one thing, they transfer the block to super-block by even changing the carriageways between blocks to the controlled president streets. They pin their hopes on the integration of buildings within the self-sufficient super-block. For another they believe that the single building block has a more “clear” pattern in both geometry and function than the traditional block with the plots organized together.

In China, this situation is more typical, since both the number and size of its metropolises have developed rapidly, urban planning and urban design could not keep pace with the rapid development of construction, and they could even hardly control the process and be responsible for the consequences. The planners try so hard to “learn form the modern west” that is believed as the modern plan of the super-blocks with wide streets. At the same time, mega-structure building, like the concept from Archigram, and the idea of three-dimensional city is becoming a prevailing solution to merge the segregated urban tissue.

In brief, the research study the “connectivity” at the block level, which means the integration of the urban elements, including blocks, plots, buildings and public spaces. This connection reflects on the morphological integrity, the contextual continuity, the cultural inheritance and the impetus behind.

**Framework of Study**

1) urban form
For one thing, the external connection of blocks is studied. It means the connection between blocks, between blocks and urban public spaces, and between blocks and urban infrastructure. For another, the internal connection of a block is explored to find out if the plots and buildings play an organic role on organizing the block as a whole.

2) urban context
On one hand, the dynamic of urban block shows the connectivity over time. The evolution of plot pattern and block pattern demonstrates how the urban context was influenced by block forms. On the other hand, it examines the different type of block fabric, circulation patterns, and building forms to explore the special characteristic and sense of a place, where offers a
space for communication and promote personal exchanges.

3) impetus behind

The political, economical and cultural reason is the intrinsic logic of the different types of connectivity between the East and the west. The identity of connection and the understanding of connection are influenced by the place and time. It explains the processes and factors involved.

**Case Selecting**

The Xinjiekou district in Nanjing and the western part of the old city in Zurich are selected as the comparative study cases for the reasons as follows,

1) The same type of urban area - city commercial center.

2) The time-honored history. First, they are both historical cities. Nanjing, found in 472BC, was one of the earliest established cities in south China, and it was the capital for over ten Dynasties. While Zurich is the largest city in Switzerland, the history of which goes back to its founding by the Romans in 15 BC. Second, the districts are also shaped for a long time. The Xinjiekou area is the traditional settlement district until 1929, when Nanjing was made the capital of Republic China and the government put forward its Capital plan (Wowo, 2007). Since then the Xinjiekou area has become a commercial center with a crossed major road in the city. On the other hand, the western part of the city center in Zurich has been a commercial center since the middle ages when it became a vital communications place connected north Europe and Italia. Bahnhofstrasse, the main downtown street in the area, is first completed in 1894 connecting the paradeplaze with the railway terminus for the first Swiss railway opened in 1847(Baumann, 1972).

3) The famous commercial district nowadays. The Xinjiekou district is the third most important CBD (center business district) with the highest density of commerce in China. Similarly, Bahnhofstrasse is the third most expensive street for retail property in Europe, and the district is one of the finest and wealthiest areas all over the world.

4) Similar areas. The Xinjiekou district is about 45ha; while the western historical city center in Zurich is about 55 ha.

Thus, they represent the identity of the commercial city center in Europe and in China, which is suited for comparative study. (Figure 3, Figure 4, Figure 5)
Figure 3  The location of Xinjiekou district in Nanjing (left) and the western part of the old city center in Zurich (right) (source: Google map)

Figure 4  The satellite map of city center in Nanjing (left) and in Zurich (right) (source: Google map)
Findings

The study sought to analyze two strategies of connectivity at block level: the connectivity with peripheral city block in Europe under the two-dimensional strategy, and the connectivity with point-block and super-block under the three-dimensional strategy in China. Through the case study in city center, it could find more specific problems, methods and logics. Although it does not imply an optimal manner, it could deepen the knowledge of contemporary urban phenomenon and helps the European city and Chinese city learn from each other.

Urban Form

In the urban morphological dimension, Conzen’s town plan elements are the foundation of connectivity in the study. It includes land uses, building structures, plot pattern and cadastral (block-street) pattern (Conzen, 1960). The urban design could hence be developed from microcosmic to macroscopic, that is, form the most dynamic element – land uses, to the most stable one - the layout of urban blocks and the public space between them. Correspondingly, the connectivity is explored in five key issues as follows. The former two demonstrate the structure of blocks and public spaces, and the latter three show the organization of the block itself.

1) the connection between the block and block
2) the connection between the block and the public space
3) the connection between the block and plot
4) the connection between the building and plot
5) the connection between the building and building

The first two key issues show that of urban fabric – the form of block fabrics, public streets and spaces in an urban district. Making these elements as a whole with the block-public space relationship is emphasized increasingly by urban designers.

1) The western historical city center in Zurich

In Zurich city center, the block could be seen as the “figure” and the public spaces could be seen as the “ground”. Since the block divided the private from the public, this public spaces
has a clear-cut form. There the public street shared by people and vehicles and shaped by the surrounding blocks, and the public square take up an entire land of a block. The connection between blocks has no directivity. Because of the gridded and lightly trafficked streets, people could go across the street easily and enjoy an active social life, the activities on the street and the accessible to every block is equal. Hence, the degree of connectivity in the whole area is relatively homogeneous.

2) The Xinjiekou district in Nanjing
The block in Nanjing is not the distinction between the private and public any more. City block makes the inside out. Contrasted to the development of the block’s periphery, the “entire development” becomes the primary strategy. As a consequence, the block is not enclosed but open with public spaces within the super-block and interior public spaces within the single building block. The public spaces system is hence hierarchical. The laddered road system makes it go further. The crossing artery is the core of this urban area. These heavily trafficked streets are for vehicles going through the district, the whole city and even the city-region. Since only the sidewalk of the street could be seen as the public spaces there, the hierarchy of the public space is that the sidewalks of main avenues – the urban street - pedestrian streets within the block – interior public spaces. Meanwhile, the connection between the blocks has the directivity. Because of the hierarchy of roads and public spaces, the connection is much weaker between the blocks separated by the busier road. Although these “inside public spaces” could protect people form the heavy traffics, how to reconnect the urban fragments is still a fiendish problem for the urban designer. Followed with the Archigram, who has given the solution using infrastructure, they started to pay attention on the metro and the related underground public spaces instead of the traditional public squares and streets. (Figure 6, Figure 7, Figure 8, Figure 9)
Figure 7 the hierarchy of the public space in Nanjing versus the public space network in Zurich

Figure 8 the directivity of the connectivity between blocks

Figure 9 the connection between blocks through underground public spaces in Xinjiekou area
The last three key issues show that of block fabric – the pattern of buildings and spaces within the block. First, the connection between the block and plot reflects the structure of the plot. Since the block in historical cities is relatively small, the organization is very clear. In the modern city, however, the block is much more complicated, which sometimes are composed by several types of plot pattern. Besides, the evolution of plots in the traditional block is much more stable than in the modern super-block. Thus the modern block is like the “collage block” with various plot patterns over time in Nanjing. Second, the connection between building and plot demonstrates the density and the regularity of the block. For example, the most easy and common way to control the building’s position in a plot is the governmental roles, i.e. the building should keep aligning with others. Third, the connection between buildings shows the connectivity most visually. Although, in the traditional city, the buildings are standard and the connection between them is not emphasized, the buildings are still integrated under the structure of the block. On the contrary, the connection between buildings is always a Precondition in architectural design, but it is still chaotic and disordering from the angle of the block.

1) The western historical city center in Zurich
In Zurich city center, the plot pattern is both compact and simple, thus the block has nearly the same type. Furthermore, the positions of buildings in the plot show coherence, i.e. the continue façades in visual and the most available commercial areas facing the street in functional. Buildings are thus organized as a whole in the periphery enclosed block.

2) The Xinjiekou district in Nanjing
Contrasted with the strategy in Zurich strengthening connection between blocks instead of within the blocks, Nanjing is going in the opposite direction. Reorganizing the urban block became more prevalent during last decade. The politicians and planners believe the “collage block”, especially the old shabby buildings, is the symbol of poverty and backwardness. And it is seen as the argyle townscape. They encourage the point block and super-block with pedestrian streets. The former is making the connection between different parts of the mega building replacing the plot pattern in a block. The latter is creating a highly integrated isolate, which reject any other connections with surrounding built environment. Transferring the urban road to the pedestrian street is the way that combining the blocks into one superblock. Actually, they are the same in essence: the controlled piece of land isolated from other urban public spaces. The difference is only the central public spaces within the block are inside or outside. (Figure 10, Figure 11)
Urban Context

Connectivity in the city should also be studied in the dimension of urban context, including the sense of history and the sense of place.

1) The sense of history

It means the continuity of the building typology and the urban morphology. The “collective memory” in buildings and city is the connection between the past and present. Following Jacobs, many scholars have rethought the functional principle of modern cities. Colin Rowe
advances a new theory of the “collage city”, instead of the “modern city” which is just a Utopia for him. This study examines the sense of history by the dynamic of urban block and plots. The city center in Zurich and Nanjing represents two different kind of transformation. Nanjing is experiencing the rapid urbanization from the last three decades, while Zurich is growing slowly from the middle time to present. Consequently, the cities' style and feature have been protected in the old center in Zurich, where the old and new co-exist. While in Xinjiekou district, it is difficulty to find out the urban identity. It is transforming to a generic city characterized by high-rise buildings, and only with very few historical buildings and blocks isolated by modern built environment. (Figure 12, Figure 13)

2) The sense of place
The western old city center in Zurich is a mixed-use zone, where could not easily be divided and separated from the whole urban district, not only in function but also in the sense the place. The networked public spaces connected strongly with the public lives. Small coffees and other public facilities offer the possibility for community and leisure, and enhance the vitality of this district.

On the other hand, the center area in Nanjing is like the decoration on a cake, sticking out above the built environments. This business zone could be clearly cut form the surrounding residential districts. And only from there people could find the public facilities and public services, especially the cheap ones. A large number of people go through this area, but it is like a transfer center rather that a public place with active social lives. In contrast to the city center of Zurich, where the public space and block are finely connected, the wide avenue and super- block system could not give a clear sense and entire image of the place for the public.
The sidewalks and small squares at the crossing are only the open spaces, but not the public places with the sense of beauty as well as safety. However, the underground public spaces and the subway became an interesting place for public lives. These underground commercial streets offer a lot of shops and coffees with a cheap price. Actually, their role is not only connecting the public spaces but also linking the public activities together. However, most people dislike and complain about the environment underground, where there is poor ventilation and no sunlight (Xuan, 2009)

**Impetus Behind**

This part shows the intrinsic logic: the social, economical and cultural background.

In the social dimension, the development of western historical city center in Zurich is always under the control of urban design by the government, which shows harmony and coordination over time. However, the urban planning and urban design in Nanjing started only from the time of Republic of China. After the interruption by the war and the Great Leap Forward, the governmental officer and urban planner accepted nearly all the principle of “modern planning”. The transport-oriented principle and the car’s rapid development need the wide road with super-block. Meanwhile, the protection of traditional urban fabric and historical buildings are totally ignored for a long time. Nowadays, they still not focus on the continuity of the block and district, but only rescue the old buildings on a “protection list” made by the government. But these buildings thus isolated form the block and surrounding modern areas as well.

In the economical dimension, the street-block maximizes the storefronts in the commercial area in Zurich. After the Chinese economic reform, the economic interest is also becoming the central aim for business. The businessmen hope to improve the existing urban fabric for more commercial use. They cooperated with the government tend to make the super-block “entirely development” – the inside-out. On one hand, the companies like this new block development. Since there is not the public spaces any more, but a private-public spaces in the single building block or a collective spaces shared by buildings in the super-block. The companies could thus compete to attract people to their islands for more advantage. On the other hand, it is also helps the government to improve the quality of urban spaces, which is actually get more influence form by the private.

In the cultural dimension, the extroversion of western culture and the introversion of Chinese culture influences different from of connection in the city, which could be examined with the urban block in the west and east on the history.
1) Connection within the block
Referring to the plot pattern, the buildings are the main part of the plot in the historical western country. The courtyard, both private and semi-private, is accessorial. In contrast, the courtyard is the skeleton of the plot in Chinese traditional block, which is surrounded by buildings. Thus, the western buildings enclose an open space in the middle of the land which is extroversion related to the buildings, but in ancient China, the courtyard housings cover the whole land with the open spaces inside. (Figure 14)

2) Connection between the blocks
Public spaces are the connective medium between blocks. In the ancient cities, as mentioned above, public spaces and the block relationship only works in the west. In China, public spaces were restricted by the feudal government. Thus, the typical public space—public square, is missing in ancient China. But the “collective space” with varied urban lives within the block replaced the “public space”, for example, the alleys in the residential block and the temporary market in the courtyard of the temple. And the small urban streets, like Hutong, some of them are dead end, are not seen for the public by the residents, but for the block on both sides only. In the Chinese ancient culture, people prefer the lifestyle living only in their own block with the access street, as the idiom saying that “hearing the bark from neighbors but never in contact with each other”.

As a result, it explains why Chinese people like the introversion urban space rather that the extroversion public spaces which were preferred in Europe.

Conclusions
This study clarifies the meaning of connectivity in the city and its relation with the urban block. It illustrates the significance of connectivity—preventing the separation of the city form, the discontinuing of the urban context and the isolation of the people, and restructuring the urban spaces. Specifically, it is based on the morphological study with the analysis of context as well as the impetus behind, which could be seen as a framework to study on connectivity at the block level. With the comparative study of city commercial center in Zurich and in Nanjing, it demonstrates two types of urban pattern with different connectivity. In general, the primary connection in Zurich city center is between traditional blocks with a clear public spaces and the block relationship. In contrast, the connectivity in Chinese city is between point blocks or super-blocks, where the block shows the characteristic of introversion and
connects with other blocks by the infrastructure and underground public spaces. In the urban context dimension, the traditional western block develops slowly with the coherence of the old and the new. The public spaces between blocks connected strongly with the activities, services and public lives. While the Xinjiekou district shows the collage identity in different times. There is the poor sense of place on the ground but the positive and vital urban spaces underground with the metro. The intrinsic logic for the two type of physical connection is the social-economical development and different attitude towards the connectivity influenced by the culture. This study compares these two kinds of connection but not give a “better one”. Actually, it could be an opportunity for them to learn from each other. For example, the Chinese urban designer should with an eye to the western gridded street blocks with the public spaces in between, not only focus on the three dimensional urban spaces with the infrastructure.

**Reference**


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