essential pattern of the planning: the road systems and buildings are wriggling in order to be placed in the same altitude level. Also affected by the altitude difference, the Ganzi Temple, in the north-western part of Tibet，adopts another solution, strictly a architectural measure, combining all the buildings front-rear. The arrangement fit the sloping of the mountain well.

Fig. 3-8 Mountain: Ganzi Temple

River: water source is always the indispensable element in the formation of the traditional settlement. Generally, most settlements started along the streams or around the wells or pools, and expanded later. Especially in the area with rich river systems, where towns and villages spread in or around river systems, the trend of the water forms the pattern of settlements. For example, in Tangmo Village, (She Town, Anhui province, started from Tang Dynasty, 923AD.), a rivulet flows through the center part of the village, and the settlement spread around the river. The trend of river forms the curving road systems, including nine bridges, and some public open spaces are arranged along the stream. The stream also shaped the special local culture and custom.

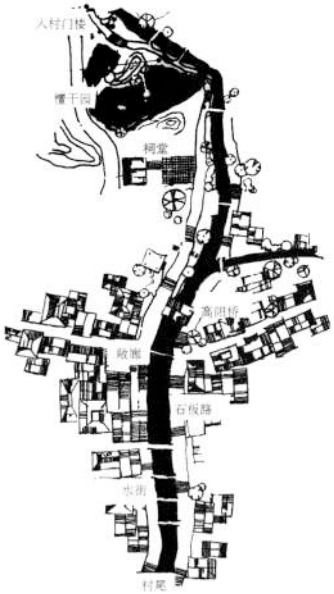

Fig. 3-7 River: Tangmo Village Plan

Mountain & River: the two geographic factors affect the planning of settlements from verticality and horizontality in the same time. The planning outcome of the essential pattern responds to the factors. All the elements in the settlements, including road-system, building arrangement, public space and etc., are limit to the special geographic condition by contour lines, referring to the Zhanqi Village (Anhui province, China, since Tang dynasty, 702AD.).

Fig. 3-9 Mounain & River: Zhanqi Village /Source: Author

Climate: in some specific region, the local exceptional climate dominates the arrangement patterns of settlement, which would be propitious to the ventilation, heat preservation, lighting and other architectural physical environment demands. In torrid and droughty area, such as settlements in Tulufan (Xiangjiang province, China), the pattern shows a crossing way, as to make sure that each building could receive enough ventilation. （图片吐鲁番）In south western of China, such as Dai nationality village in Yunnan Province, where is wet and torrid, the arrangement pattern is similar to that of Tulufan, but with slim basement and large eaves. For example, around Jingpo, Dehong and Xishuangbanna, settlements are usually situated in the huge arbor forest with high density and similar orientation. Each house separates from others by small garden, and the basement is in aerial. The arrangement makes for better ventilation and volatizing the humidity from the ground. While, settlements in Gansu province adopt the distinct way to resist the frigid winter and torrid summer: cave dwelling. They arrange the house under the ground and utilize the thick earth to maintain the confortable temperature indoor. (云南民居 窑洞 中外传统民居P1014＋278) （F14 F15）

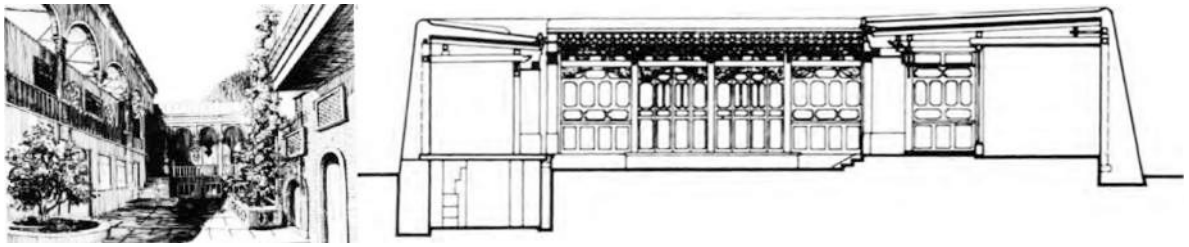

Fig. 3-10 Climate: the local dwellings in Tulufan
Source: 中国传统民居建筑. 山东科技出版社. 1994：96-98

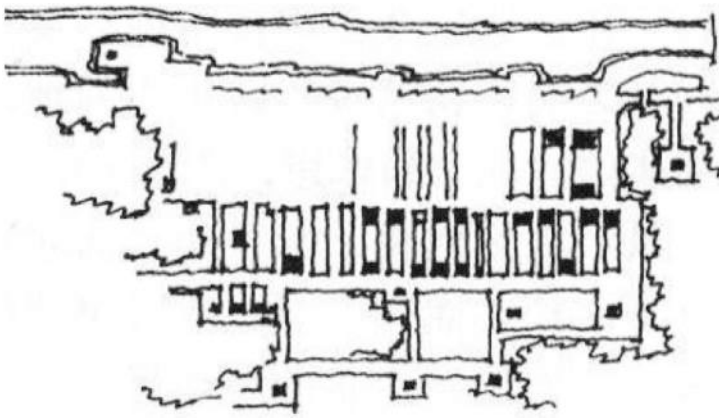

Fig. 3-11 Cliamte: Traditional Local Dwellings in Yunnan

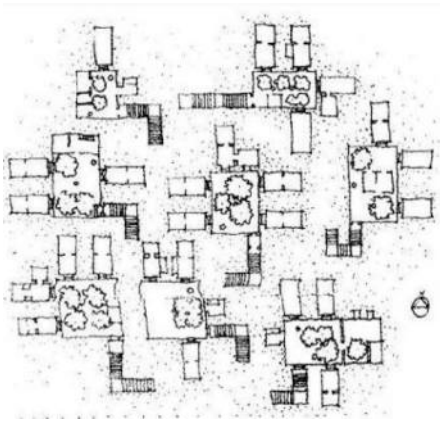

Fig. 3-12 Climate: Dwellings in Shanxi

Natural factors mainly lay their affects on the settlements with the small scale, which locate in the mountain region, with less population. It's a kind of city called "shan-shui" city, named by <Guanzi> (7C BCE), a thought collection of a philosopher lived in the "Spring and Autumn Annals" (722~481 BC). It claims that settlements should combine with the natural landscapes, not limited to the rigid shape and form. The natural landscape should be used as part of the settlement, affecting the texture. Further, the local custom and culture constructed on the imagination to the mountains and water system.

Artificial factor: (politics, clan, religion and custom)

The artificial factors concentrate on the diverse aspects of the human social world, which profoundly impact on the pattern and the organization mode of settlement. It's a great progress for human settlements planning depending on the artificial reasons. Besides submitting and utilize to the nature, human created new orders based on their own demands to reorganize settlements. Artificial factors include all the factors based on the human society, concretely including politics, clan, religion, custom and etc. There are some distinguished characters between the orient and occident world. In some condition, diverse factors domain the same aspect of pattern in settlement planning, such as the impact of religion and clan on the pattern of building complex. And, in other conditions, the same factor impacts on settlement planning and gets disparate outcome, such as politics affecting on the mode of organization.

Politics: Since the ancient, both in orient and occident, the politics factors impact or, in other words, construct the essential laws in the settlement planning. The core part of the politics is the adoration for the power. The politics power in the human social world generates the classes and order, which rule the whole world and make it operating well.

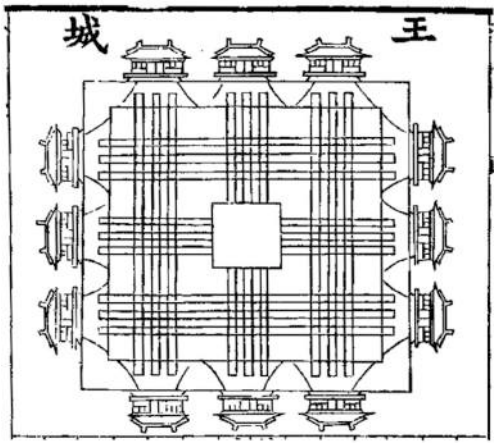

Fig. 3-13 Politics: Kaogongji
Source: 《三礼图》中对《考工记》营国的描述

The planning patterns of settlements reflect of the influence of politics powers on human society. In Zhou dynasty, about three thousand years ago, the rules of city, strictly settlement, planning were ordained as part of essential national regulation. The article named <Jiangren-Yingguo> (means: artisan – designing capital), which was embodied in the great work <Kaogongji>, records concretely about the urban planning regulation, including the form, scale, structure, road system, method and etc, which implied the social order thousands years ago and transformed it into the planning principle.

The politics factors lay out as the concentrative domination. As recorded in the article, capitals is usually in rectangular forms with royal palaces laying in the center of the capital; the road system is in square grid with the main roads in north-south and east-west direction; and the square land among the roads are dwelling areas or other function areas. Beijing, a historical capital in China since Jin dynasty 1153 AD, experienced diverse planning in history, but the primary arrangements do not change much since Yuan dynasty (1271~1368 AD). Even today, you could find that the Forbidden City lay in the center of the city, and the tessellated road system shapes the blocks, especially the traditional building complex Siheyuan (quadrangle). The compact paths in the blocks, which is called Hutong, and the dwelling complexes provide the convince of general administration.

Different from the oriental square grid planning, the urban planning in occident applies the radiated lines and geometric shapes to express the respect to the paramount authority.

Fig. 3-16 Politics: Beijing Plan in Ming

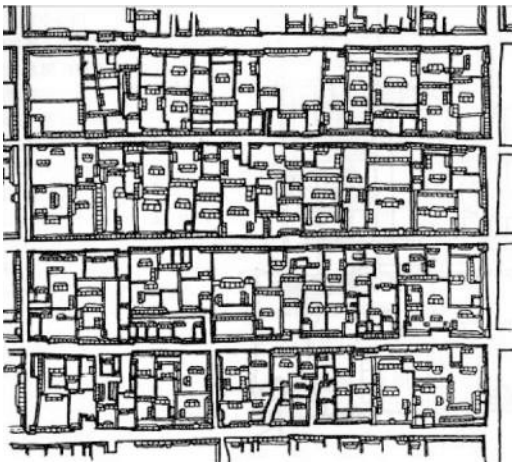

Fig. 3-15 Politics: Beijing Typical Dwelling Mode-Sihevuan

Clan: Early as in primitive society, the consanguineous relationship as a tie held primitive men closely together, which formed the embryonic form of settlements. The original settlement patterns show the centrality and levels. The clan hall and sacrificial altar located in the center and dwelling houses encircled around. The clan held the members close together to get the group ascendency in fighting for the same aim and acquiring the further development. Developing in thousands years, the clan today still shows it's impact on the settlement arrangement. Because clan halls today not only the places for sacrifice, but also administrate and solve the affairs in family and clan. For example in Hong village, Anhui province, China, since South Song dynasty (1131~1162 AD), the clan hall locates in the core center of the village surrounded by dwelling houses and the roads emanate from the hall. With the further development, the enlargement of the settlements leads to the appearance of branch clan halls, which monumentalize the ancestors of the family and administer the family affairs. Xidi village, Anhui province, China, since North Song dynasty (960 year ago), is the village following the order of clan. The whole village is under the same chief clan, and, according to the kinship, is divided into nine branches. Each branch seizes separate zone and locates in the center of the zone. In traditional Chinese, it's the clan system organizes and supports the essential social order, which is different from that in the occident society by religion system.

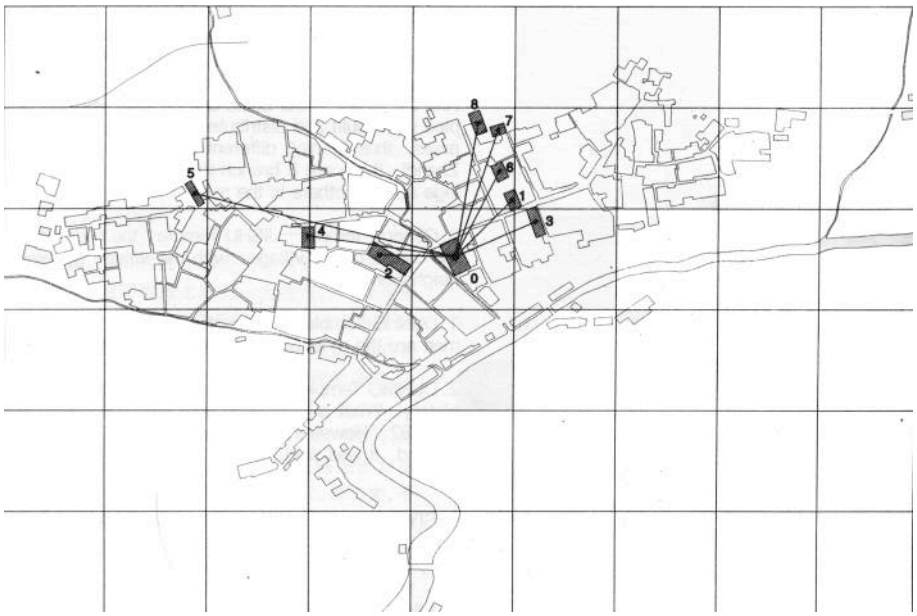

Fig. 3-14 Clan: the Clan Halls Distribution in Zhanqi <瞻淇>

Religion: "If there is reason for suspecting some dim ancestral continuity in this custom, there is even better reason for finding in the rites of the caves the social and religious impulses that conspired to draw men finally into cities, where all the original feelings of awe, reverence, pride, and joy would be further magnified by art, and multiplied by the number of responsive participants."[1] While in the 5~6 century, the decline of the Roman Empire provided a favorable environmental condition for the naissance and prosperity of Christianity. The control of the Christianity, in the blooming time, penetrated the whole social life and territory, from metropolis to hamlet, including every community and small village or even settlement group. Religion buildings take possession of the center part of the essential unit of the settlement, and always play as the landmarks providing the exterior referencing point and congregating citizen behavior. While, in orient society, the regime and relevant governments own the absolute power in controlling the most urban planning. Only in some remote towns in the southwest of China, local religions get a high position in the social life, and affect the planning of the settlement. For example, in Yunnan province, the Theravada Buddhist and primitive religions are the main faith for local people, and conquer a greatly high position not only in the daily life but the mental world. The temple, one for each settlement, locates at the important positions, such as the main entrance or high lands; dwelling houses are facing to the temple, arranged around it in sector shapes and in lower height, showing the respect; the road system radiates from the temple.

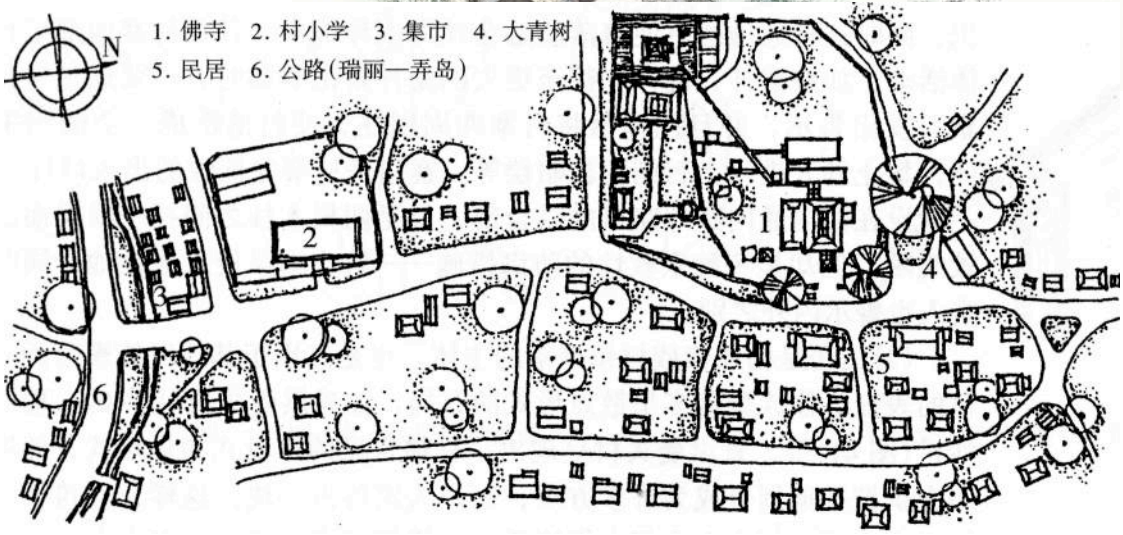

Fig. 3-18 Religion: Village in Yunnan

[1] Lewis Mumford. *The City in History* . Brace & World. 1961: 8

Fengshui: “In complicated landscape region, with multiple mountain and water systems, the location and construction process include the consideration about the influence from natural and artificial environment. The summarizing of the experience engendered the thought and conception, consisting of experience, mystery and superstition, called fengshui.” The application of fengshui is in a wild range, including nearly all the aspects of construction, from position selection, urban planning to house design and furniture arrangement. While in the settlement planning, the method of fengshui remedies the defects and continues the tendency of natural landscape, and creates new meaning dimension in blessing and aesthetics. <Fengshui Bian> described the common characters of blessed planning patterns: “Wind is held by mountains around, without conflicting airflows; water rounds in proper humidity, without raid by water flows. The settlements should face to the south, clinging to the mountains on the north, embosoming with massif around, encircling by river or lake. The buildings continue the gesture of the landscape and forming the suitable dwelling location in blessing, aesthetics and psychology.

Fig. 3-19 Fengshui

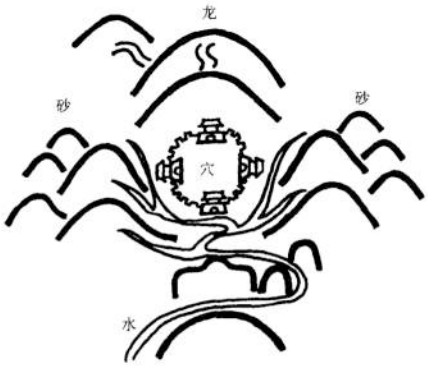

Fig. 3-20 Fengshui

3.1.3. FORM: Composition (Texture)

In this part, the organizing system and district core would be discussed as the composition of districts. The structure of a mature settlement should compose centrality, hierarchy and order. While in oriental culture, the space order of settlements could summarize as “rise, continuity, turn, and combination”. Rise means the starting point of the settlement or main entrance, and always set the logo or symbol construction. Continuity means persisting the space order, when entering the settlement; and constructions, such as temple, ancestral hall and college, be arranged in hierarchy order attracting further visit. Turn shows a diverse condition, in behavior or vision, which means close to the central of the settlement and expresses the change in general building and road order, preparing for arriving at the center core. Combination, or joining point, usually means the core center of the settlement, because the core of the settlement is the combination or joining point of the roads and waters, and the arrangement of crucial construction mark the significance of the location. The central parts of settlements gather public service institutions, such as government, commercial market, school and piazza, and also assemble the daily behavior and reach the climax of space order. Further, the district cores assist to constrict the space order and centrality; differing from that of the systems, cores, especially in periphery districts, own the potential for territory extension, becoming the new growing point.

With the outspreading scale and enrichment of both physical and spiritual life, the structure of settlements developing from the original single core or axes in space order, transforming into multiple cores and grid connection structures. The auxiliary cores and

areas are potential to becoming the fresh center districts. While interior of a district, the core and the systems construct the essential structure, and combine and contract with district cores around.

System: Social life is a complicated combination, including multiple aspects, which lay their own aspect on and magnetize the population. System is immateriality content, or human behaviors, is the main composing of social life, such as politics, religion, clan, commerce, entertainment and etc. The diverse systems bond population and relative buildings closely together. In one settlement, the existing of the diverse systems affects the human behaviors in the same time, and forms the culture identity in a special location according to the influence of each system. The systems combine diverse districts and construct a comprehensive association in the settlements. In other words, system is kind of interconnection in social life.

Core: With the influence of traditional systems, the evolution of settlement, especially the interior structure, shows the common character of centrality, which is expressed by the complex core systems. Several main cores lay in the center of the settlement and subsidiary cores in the center of each district. The cores, the road system and buildings in different levels constitute the centripetal space order of settlements. The core could be in divers functions: politics, religion, clan, commerce, entertainment and etc. For instance, in traditional China, commerce, or in other words barter trade, started from the wellhead in the settlements, where gathered most intersection of human activity. So the commercial market was called *well-market* in China since it appeared. And another interesting phenomenon is the appearance of the Wazi, a combination of the entertainment stage and commercial market. <Duchengjisheng> (Special records in Capital): Wazi was the name for an open area, which was easy of access. The open area centralized multiple social activities, primarily entertainment performance and commercial trade. Nearly all the social classes could be found here. The generating process of Wazi started with collection of citizens; the collection of citizens caused the original barter trade; the further development of trade alluring more people arriving and also the entertainment actors; the rise of commerce and entertainment drove the relative service, and finally formed the local social culture. The forms of core in districts would be diverse, including piazza (or open area), commercial market, entertainment zone and etc. The image shows the development process of a village with the control and innovation of the cores.

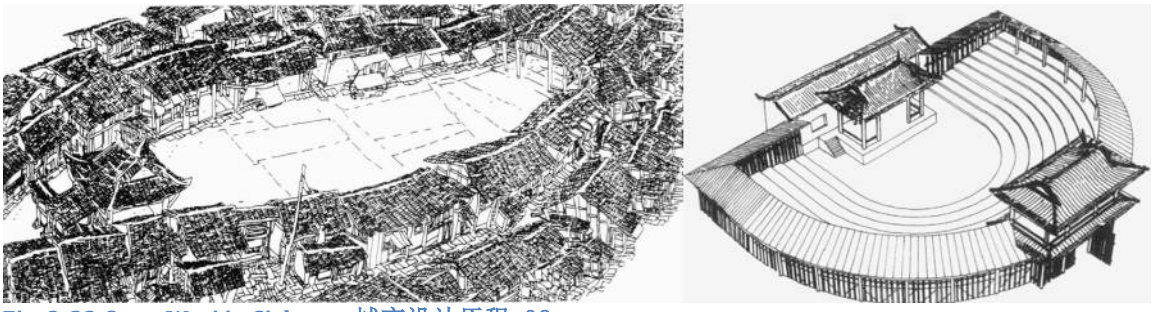

Fig. 3-22 Core: Wazi in Sichuan 城市设计历程 38

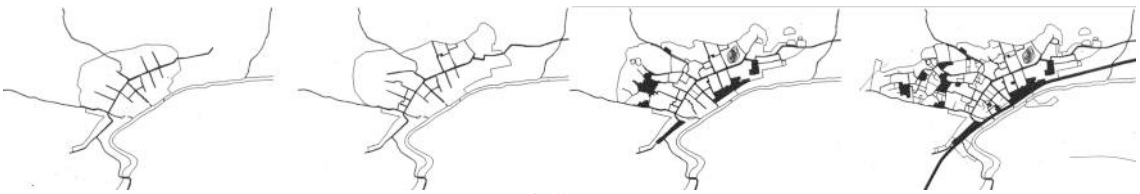

Fig. 3-21 Core: Development of Zhanqi Village <瞻淇>

Single core: the core zone domain the most citizen activities and combine the multiple roles in social life. The core usually lies in the center part of the settlement, the joint area of the road systems and the architectural center. The center or core zone general marked by piazza or landmark buildings.

Linearity core: the center zone of settlements is along the main road or river crossing the center part of the settlement, which plays as the axes. Several cores would be laid along the line or axes, and the line or axes lead the space order to the main center.

Core network: with the further development of settlements, the daily activities of citizen in both physical and spiritual become more complicated. So the territory of the settlement was enlarged, and in the new area formed the new cores. The new cores associated with the existing core forming the core network. The core network strengthens the existing the space order and extends some new characters of the settlements. For example, in some towns, the clan plays the role as the core in districts. The whole settlement is controlled under the clan systems. Enlarging the scale, new clans exists to charge the order in new zones.

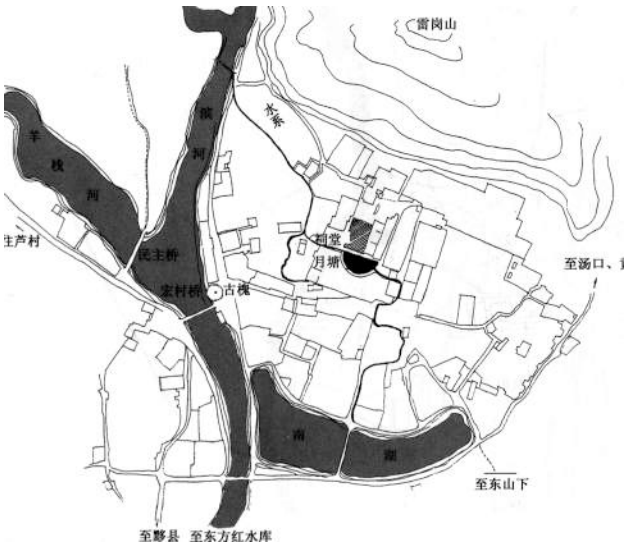

Fig. 3-24 Single Core: Hong Village in Anhui

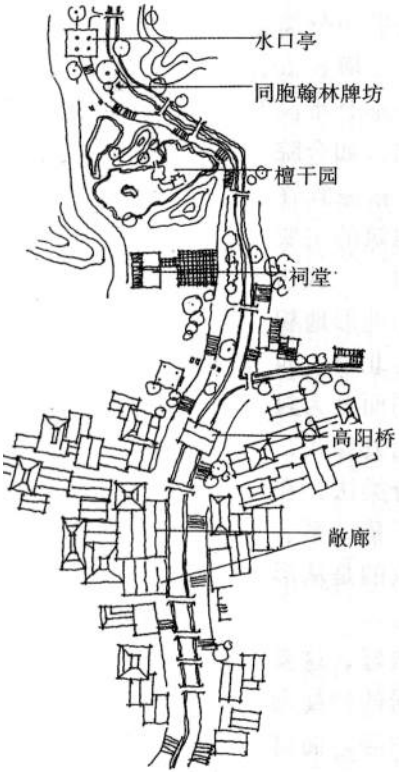

Fig. 3-23 Linearity Core: Tangmo Village in Anhui

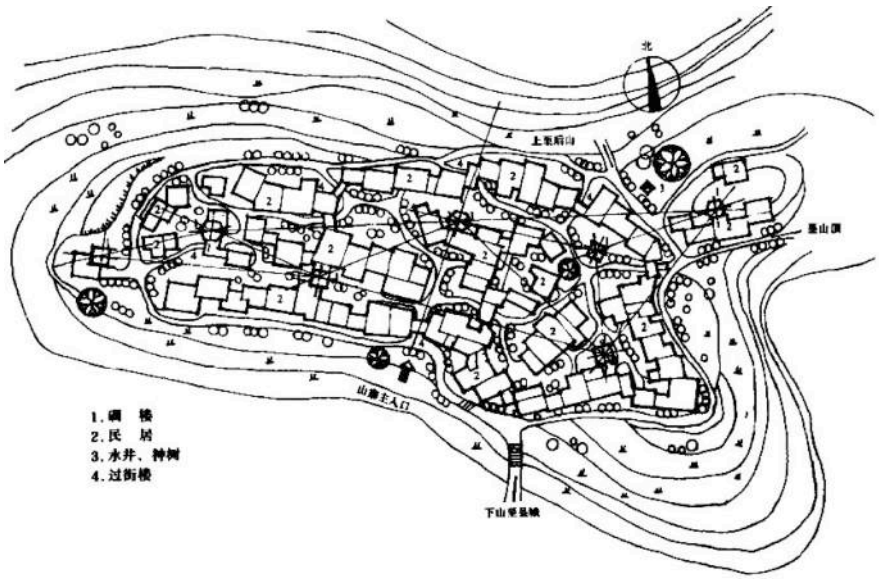

Fig. 3-25 Network Core: Qiang Castle in Sichuan

3.1.4. FORM: Building and Courtyard (Unit)

The building unit is the essential structure of a settlement. The diversity of the basic units leads to diversiform settlement. The basic unit of settlement is a single building and a courtyard.

Single building: in occidental world, the form of single building constructs the settlements. Buildings are arranged close to each other and form the texture of settlements. Single buildings possess similar characters in appearance and construction. In the settlement with high density of population, such as Venice, buildings are arranged closely with each other, or called building complex; in some villages or less density settlements, single buildings are arranged as villa. Single buildings are arranged with similar density, construction, appearance and factors.

Fig. 3-26 Single Builidng: Venice

Courtyard: while considering the condition of courtyards, the constructors, such as buildings and bounding walls, enclose the yards, the constructor and the yard, close and open space, from the basic unit of settlements. The courtyard acquires extra functions and experience from the form of enclosure. The close connection of the courtyards forms the texture of settlements, such as courtyard house in Beijing, which is a classic form of traditional residence appearing about three thousand years ago in Zhou dynasty.

Arrangement: the arrangement of courtyard accords to the natural landscape and holistic planning of the settlement, with similar scale mode and composition. Generally, the shape of courtyards is in regular rectangle, which is limited by the road system and the distribution of land. Central axes, space level and organizational order are the principal characters of courtyard. The specific function division and strict space order rule the living pattern in courtyard. And the ancestor cared much about the combination of built and natural environments. The design of garden assists to build a harmonious condition, which already reached a very high level in Tang dynasty.

Artistic conception: in traditional aesthetics view, void and solid are essential elements in forming courtyards. The solid scene in garden and the void emotion would communicate and affect each other, and the combination would create imaginational space. The owner of courtyards would conceive abundant conception in the design of courtyard, and it’s a way to show the accomplishment of the owner.

Space pattern: while in oriental, the arrangement of courtyards is constructed and influenced by the social conception. The social conception, such as feudal level, clan, society and etc., constructs the common formation of courtyards. Practicality: limited by the area of land, the diverse function and walking path must be well arranged in proper scales. Privacy: courtyards provide a peaceful living condition for the user, protect from the interruption exterior, and create the space order to meet the social conception. Flexibility: courtyards own the capability to adjust the change of environments, according to patterns of family and function needed.

Enclosure interface: the interface of courtyard is composed by buildings and bounding walls. The two kinds of constructors share the similar visual elements, structural components and also arrangement. Generally, buildings and some full height founding walls are arranged

as the explicit partition for different functional partition. Some half height and hollow walls or buildings blur the boundary and induct the vision and activity.

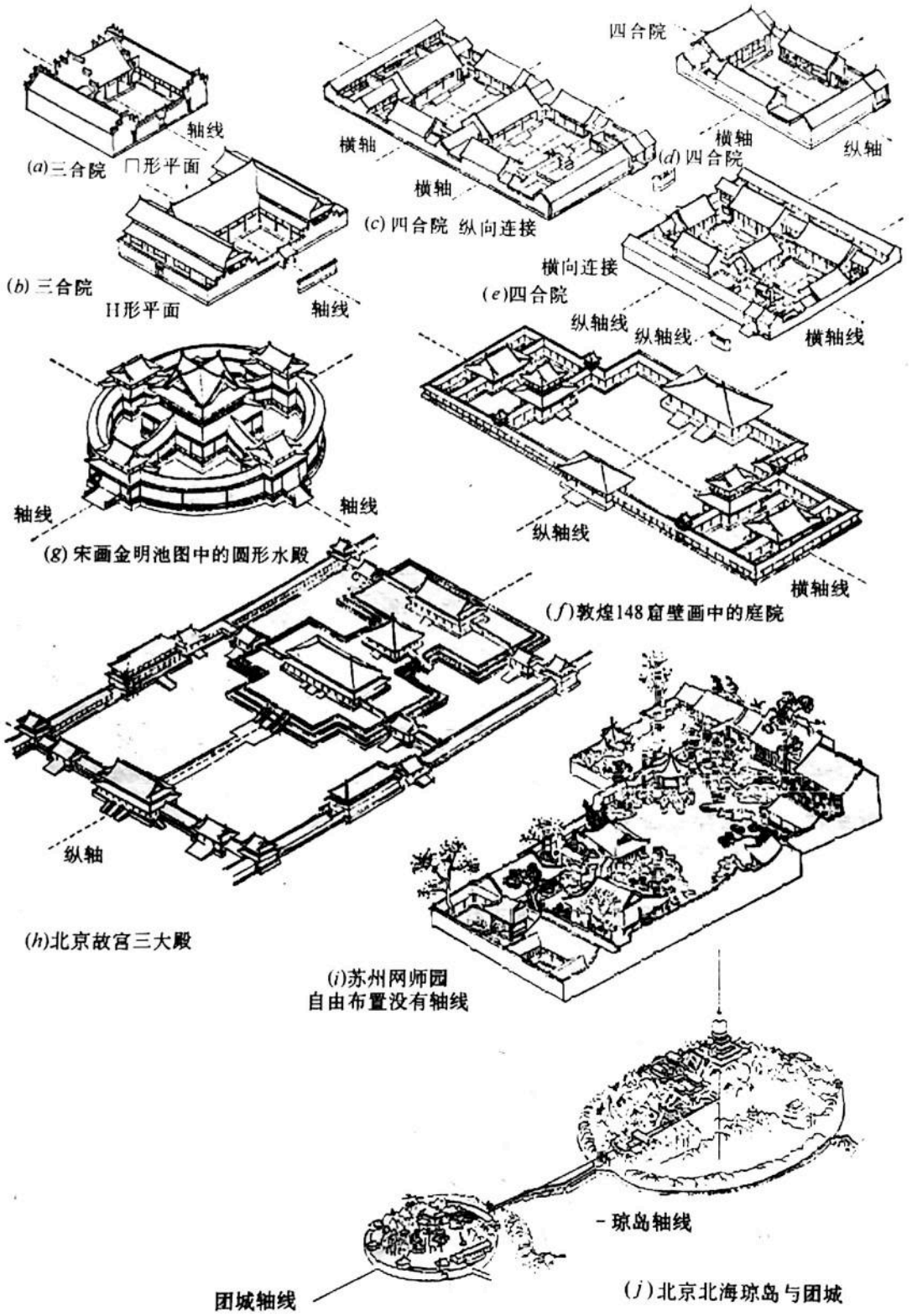

Fig. 3-27 Courtyard: the collection of Chinese Traditional Courtyards <中国建筑史 >

3.1.5. Form: Structure

In ancient, wood, as the building materials, was well accepted and utilized in Asian area because of its acquiring facility, wild adaptability, earthquake resistance, convenience construction and maintenance, and so on. Hence, the wood determines the specific construction logic in China and Southeast Asia, including structure, tectonic, decoration and others.

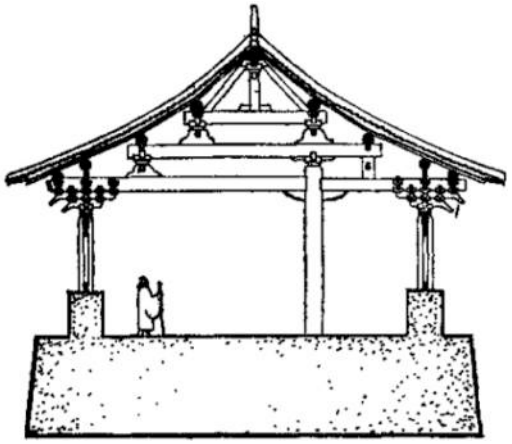

Fig. 3-28 Traditional Structure《华夏意匠》

The wooden structures follow some rules and experience, which determine all aspects of structure and tectonic, such as style, material. Diverse ages produced separate rules. The earliest known official construction rule is《周礼-冬官考工记》, in Zhou Dynasty about 400B.C., which records the rules and principles of handwork construction in the previous 500 years. In Song Dynasty, the 《营造法式》(1068-1077 A.D.)is the most perfect collection of the rules and principles, which precisely describe the construction in details, and develop the concept of standardization and modulization in following ages. The later principles follow the classification and construction in 《营》, and make further improvement, such as the 《鲁班营造正式》(about 1500 A.D.) in Ming Dynasty, 《工部工程做法则例》(1732 A.D.) in Qing Dynasty. And 《木经》(1086-1093A.D.) is the collection of folk wisdom and experience in thousands of year to solve the other aspects.

Generally, the wooden structure applies in palaces and folk dwellings, and even in tower and multilayer buildings, which shows the advanced development of the construction technology in ancient. The Chinese traditional wooden structures include two styles: beam-lifted style and crossing bracket style. The beam-lifted style connects the pillars with through beams, and purlins are arranged on the top of pillars. It applies the slim materials in the style, and applies in the dwelling houses. While, the crossing bracket style arrange the beam directly on the top of pillars, and purlins are arranged on the top of beams; short pillars are arranged on the top of larger beams to support the shorter ones. The style applies the strong materials and in the large spaces such as palace or hall. The walls, usually made by bricks, wood or bamboo, play as the enclosure system in the traditional buildings, and do not support the wooden system. So, the old word about traditional building show that, removing the walls from the building, the wooden structure stands.

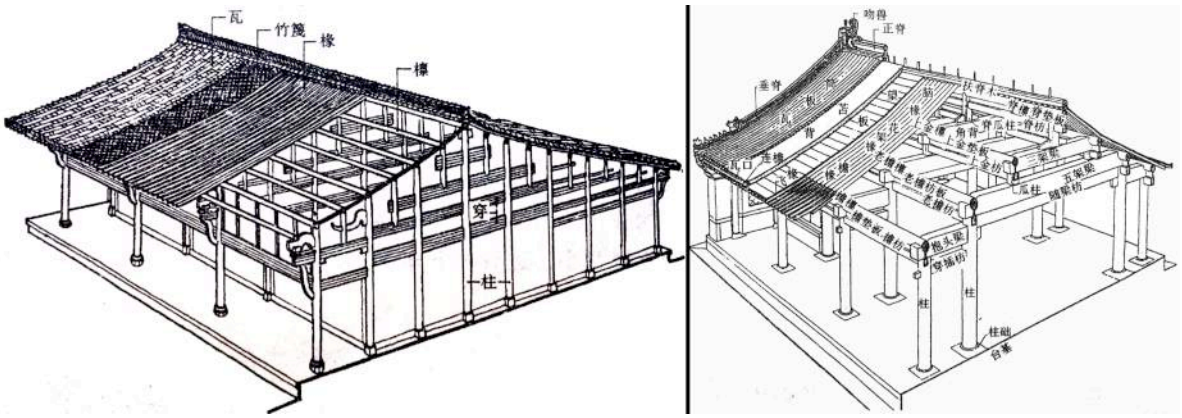

Fig. 3-29 Structure: Beam-Lifted Style (left) and Crossing Bracket Style

Source: 中国建筑史. 潘谷西. 中国建筑工业出版社. 2001:3 (Chinese Architecture History.CA&BP.2001:3)

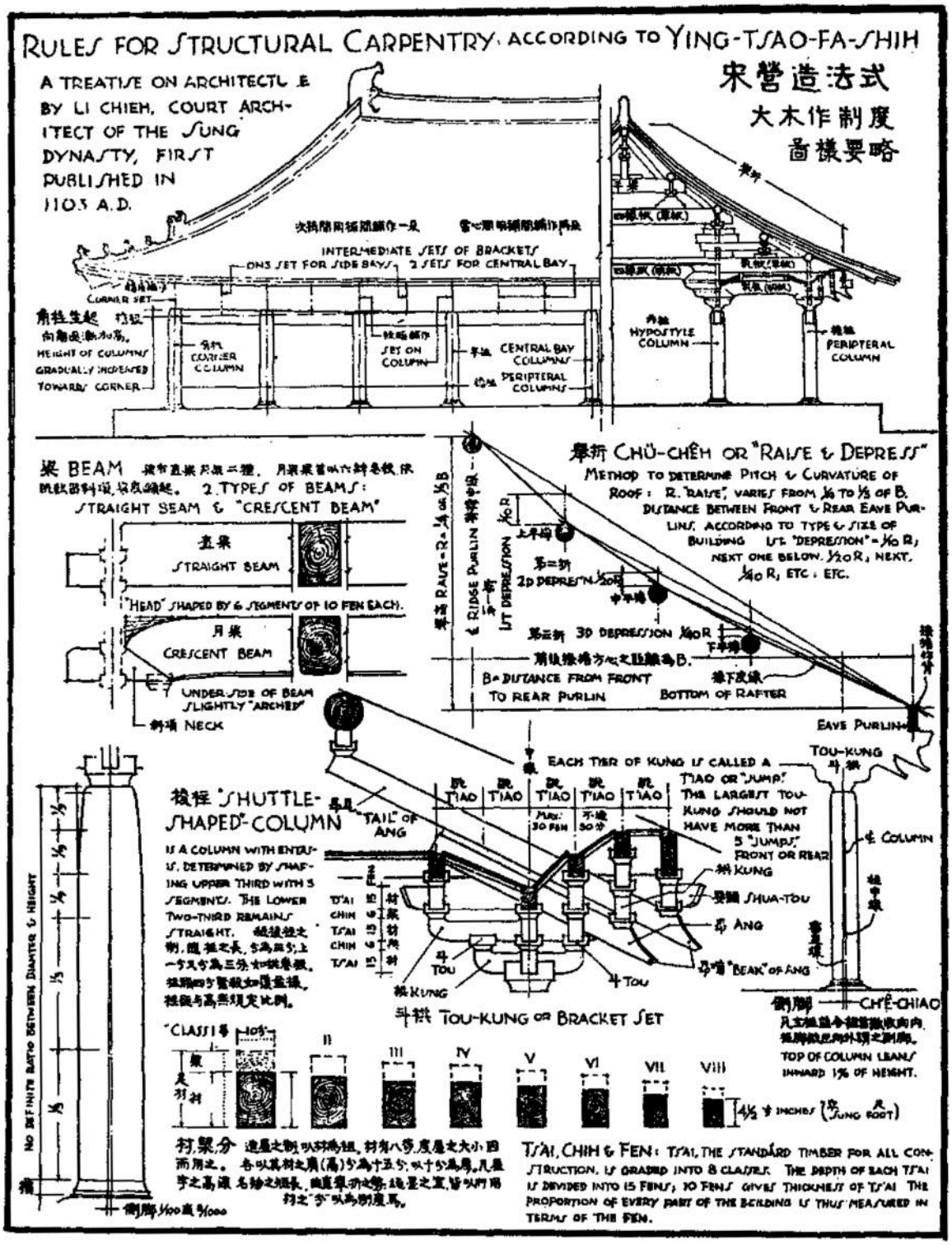

Fig. 3-30 Structure: 宋《营造法式》
Source: <华夏意匠> CATHAY’S IDEA. TUP. 2005: 196

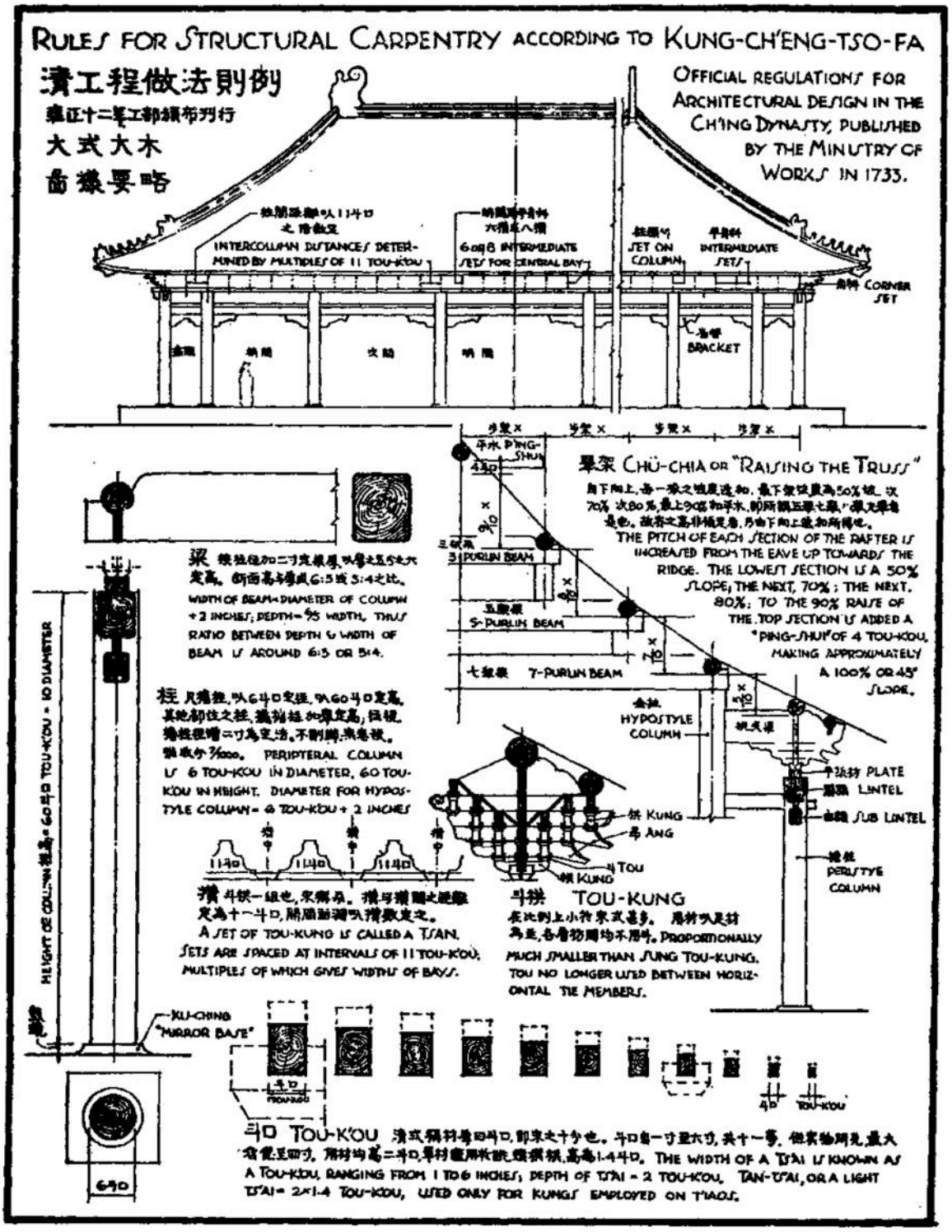

Fig. 3-31 Structure: 清《工程做法则例》

Source: <华夏意匠> CATHAY'S IDEA. TUP. 2005: 197

3.2. Value

While studying the historical or traditional buildings, a kind of feeling strongly impacts my minds. When I'm trying to touch it, it flashes by. With the further study, I try to attribute it into the `Zeitenabstand`, or the time distance. The time distance transforms the general stuffs or phenomenon in historical `contemporary` into the precious value in modern `contemporary`. The transformation process includes the alternation in both human society and natural environment, and the amelioration of the buildings to adjust the world. Diverse values integrate and attach on the buildings.

The maximum of buildings lost in history, while only the minimum survives. The lost promotes the worth in survival.

3.2.1. Monument Value

At the beginning of the 20th century, the Austrian art historian Alois Riegl stated in *The modern Cult of Monuments: Its Essence and Its Development*, about the concept of `values of monuments`. According to its origin, existing meaning and evolution context, the value of monument divides into `deliberate monuments` and `unintentional monuments`. However, the definition of the values of monument by Alois Riegl is so broad that including diverse other values, which would be mentioned following. The monument value mentioned in the research is the essential meaning of the concept.

In its oldest and most original sense a monument is a work of man erected for the specific purpose of keeping particular human deeds or destinies (or a complex accumulation thereof) alive and present in the consciousness of further generation… The erection and maintenance of such 'deliberate' monuments, which can be traced back to the earliest documented periods of human culture, have all but come to a halt today.[1]

From the quotation, the 'deliberate' monuments means the construction settled with the fixed meaning and position by the designers' egoistic original aims for the special pertinence and the special kinds of objects, such as Trajan's Column (Colonna Traiana) in Trajan's Forum, Roma, Italy, was established for the epic wars between the Romans and Dacians (101-102 and 105-106); the Paris's Triumphal Arch (Arc de triomphe de l'Étoile) honors those who fought and died for France in the French Revolutionary and the Napoleonic Wars. The deliberate monuments get a close connection with the category of the monuments. And the settled meaning is `*keeping particular human deeds or destinies (or a complex accumulation thereof) alive and present in the consciousness of further generation*`, which solely concern the original status and information transfer.

The 'unintentional monuments', differing from the 'deliberate' monuments, acquire the monumental values from the users or historical events after been built. The monumental value collects in the long period after built. The values are various according to the diverse users and events, which is different from the pre-settled positions or meanings. Hence, the unintentional monuments concern about the collective status, as the collective memory (view in 2.3.2), which is a kind of unintentional monuments.

The survival condition of the monument value includes the physical carrier and the settled meaning concept two aspects. The physical carrier is the integrated condition of the monuments. The settled meaning concept means the original aim since built for deliberate monuments and the additional meaning. The alternation of either of the two condition would lead to the broken down of the monuments. In short, once lose interest or be destroyed, the value of monument disappears.

[1] Alois Riegl. The Modern Cult of Monuments: Its Character and Its Origin. Oppositions Reader, 621-651

3.2.2. Historical Value

When discussing the historical value, the 'historical' is the essential concept to understand. '*We call historical all things that once were and are no longer. In keeping with the most modern conception, we include therein another view as well: that everything that once was can never be again, and that everything that once was forms an irreplaceable and inextricable link in a chain of development. Or, in other words: everything that succeeds was conditional by what came before and would not have occurred in the manner in which it did if not for those precedents.*[1]'The concept of development is the basement for understanding the concept of 'historical'.

According to modern understanding, all human activity and all human fate of which we have evidence or knowledge may claim historical value: in principle, we consider every historical event to be irreplaceable. The historical value of historical buildings gets a close connection with the specific periods, in which '*represent especially striking stages in the development of a particular branch of human activity*'[2]. The reading of the historical value attaching on the historical or traditional buildings would get the clue or information of the architectural development condition and achievement in the specific historical periods.

The historical values of historical or traditional buildings get a close connection with following two aspects. Frist is the original condition. '*A monument's historical value increases the more it remains uncorrupted and reveals its original stage of creation: distortions and partial disintegrations are disturbing, unwelcome ingredients for historical value.*[3]'Second, the consistent development process is also the important source of historical values. Since the end of the 19th century, the attention on historical buildings has transformed from the original or still states into the persistent developing process. So the renew traces are also kinds of historical values.

3.2.3. Ages Value

The ages values of historical and traditional buildings means that, since been built in the time flows, the structure, material, form, color, technology and other internal aspects of the buildings under the process of natural and artificial factors gradually go from integrated to departed, from new to old, from intact to ruins, the collective traces during the process form the ages value in traditional buildings. '*Age value is revealed in imperfection, a lack of completeness, a tendency to dissolve shape and color, characteristics that are in completeness, a tendency to dissolve shape and color, characteristics that are in complete contrast with those of modern, i.e., newly created, works.*'[4] The time flows in the history produce the 'traces of age' on buildings, which append the ages value on the kind of buildings.

> *Over time the natural environment acts upon the outer surface of a building in such a way that its underlying materials are broken down. … Buildings are single substantial structures that can be demolished by men or nature or both in time. In architecture, the gradual destruction of buildings by nature in time is weathering.*
>
> *In the mathematics of the environment weathering is a power of subtraction, a minus, under the sign of which newly finished corners, surfaces, and colors are "taken away" by rain, wind, and sun. But is weathering only subtraction, can it not also add and enhance? Deleterious consequences can be*

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[1] Alois Riegl. The Modern Cult of Monuments: Its Character and Its Origin. Oppositions Reader, 623

[2] Alois Riegl. The Modern Cult of Monuments: Its Character and Its Origin. Oppositions Reader, 624

[3] Alois Riegl. The Modern Cult of Monuments: Its Character and Its Origin. Oppositions Reader, 634

[4] Alois Riegl. The Modern Cult of Monuments: Its Character and Its Origin. Oppositions Reader, 631

complemented by the potential value of sedimentation and the accumulation of detritus on a surface through the action of the weather. This process always marks, and these marks may be intended, even desired. This sense of weathering is often associated with a romantic appreciation of the appearance of buildings that have aged: their mellowed brickwork, moss-covered stone, and seasoned timber.[1]

From the statement of the Mostafavi, we could get profound understanding of the nature process on buildings. On one side, the trace of ages possesses dual natures. The subtraction means the disorganization process under the torture of weather, and the addition means the complement of the 'desired' 'ages value', which '*are in complete contrast with those of modern, i.e., newly created, works*.' On the other side, the objective understanding of the ages value of historical or traditional buildings depend on the traces on buildings left by ages.

The cognition of the ages value of traditional or historical buildings has transformed from the 'origin state' to the '*continuous and unceasing cycle of change in nature*[2]'. The ages value of the buildings stresses on following aspects.

First, avoid the over artificial intervention from the natural process. The natural and artificial traces in ages are the important directing indication of the building.

Second, the conservation of the buildings and their traces in history does not mean standing by and do nothing to the buildings. Proper renew measures are for the perfect and balance conditions for use and existing.

Third, the inappropriate transformation measures would obliterate the historical information attaching on the buildings, which means the destruction of the historical and ages information of the building.

3.2.4. Ecology Value

The ecology value means the balance and advantage among the buildings, human and nature three factors during the long existing periods since been built. Human construction activities in any kinds would all cost a mass of human, material and financial resources. And the all the sources obtain from the nature, and transform into the sources applicable for human society. In some degree, the construction activities cost for the nature. While, for the existing buildings built in history, there are two kinds of future for them, being removed or reapplied (renew).

First, the demolishment of the existing buildings would cause great pollution for the natural environment. Japanese study shows that, in all pollution of the environments, the part caused by construction industry reaches 34%, which including the pollutions of air, water, light, solid, electromagnetic and so on.[3] And from the result of the study, we could also know that the over demolishment of the workable building contribute greatly the terrible figure.

Second, the construction industry is the greatest client of the energy company. Each year, about 50% of cost energy all over the world is spent on the construction and using process.[4] The high cost of energy includes the production, transformation, construction and other stages.

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1 Mohsen Mostafavi, David Leatherbarrow. On Weather: the life of buildings in time. Cambridge. The MIT Press, 1993:1

2 Alois Riegl. The Modern Cult of Monuments: Its Character and Its Origin. Oppositions Reader, 631

3 李宛华，吴耀东．可持续的建筑与可持续的环境．世界建筑， 1998，1：84－85 （LI Wanhua, WU Yaodong. Sustainable Buildings and Sustainable Environment. World Architecture. 1998,1:84-85）

4李宛华，吴耀东．可持续的建筑与可持续的环境．世界建筑， 1998，1：84－85 （LI Wanhua, WU Yaodong. Sustainable Buildings and Sustainable Environment. World Architecture. 1998,1:84-85）

Third, the existing buildings are the collections of the human, material and financial resources in the ancient time. The material values should be well applied in the modern society.

From the *1999 Chinese Sustainable Development Strategy Report*, the unbalance between the free occupancy of the environment source and the self-conscious maintenance of the environment quality causes the environmental red ink all over the world in the developing process.[1] Properly application of the existing buildings and renew make the best possible use of existing buildings. Respect and maintain the existing multiple balances among the building, human and environment. Proper renew application also includes the transformation in culture and values.

[1] 董卫, 王建国. 可持续发展的城市与建筑设计. 东南大学出版社. 1999:7 (DONG Wei, WANG Jianguo. Sustainable Development of Urban and Architecture Design. Southeast University Press. 1999:7)

Chapter 4. MAT BUILDING

A `new` architectural phenomenon rises in the 1950s. In the phenomenon, architecture presents the horizontal extension form with the special organizing strategies embedding in the landscape or environments and indicating the context and relationship between the flexible forms and the environment. The Greater Columbus Convention Center (by Peter Eisenman, 1990~1993), Yokohama International Port Terminal (by Foreign Office Architects, 2002) and 21st Century Museum of Contemporary Art (by SANAA, Kanazawa, 2004) are the great works echoing with the architectural phenomenon. The appearance of the architectural phenomenon seems according with the flourishing of the `field` phenomenon and correlation studies all over the world.

While, the naissance of the `field` phenomenon was in the middle of the 19th century, and then fell into silence. The study of `field` once animadverted on the over-stressing on the object of modernism, and promoted an essential swerve of modernism. And also brought the emergence of a specific archetype in architecture, mat building or field building.

As the name implies, the mat building is a kind of architecture horizontally extending on the ground with particular fabric pattern or texture, as a thick mat covering the ground. The development of the mat building in the early stages contained complicated conditions. While, the common characteristics sharing with the modern development makes them considered as the renaissance in the contemporary.

The mat building, as a fresh or even strange term for the modern architecture, was in neglect for a long time. And even in today the related studies are still not able to solve all the confusion and limitation on it. However, the `field` still possesses the positive designing strategies enlightening or applying in the contemporary architectural activities.

Fig. 4-1 Otterlo Meeting 1959 (also CIAM '59), organized by Team 10, 43 participants. Meeting place: Kröller-Müller Museum, located in the Hoge Veluwe National Park. Dissolution of the organization CIAM.
Source: http://en.wikipedia.org/wiki/Team_10

4.1. Background Information

The clue of the mat building phenomenon appeared in the early of 19th century, while the official emergence was the result of the abruption of the `Team X`[1] from CIAM in 1950s. Till 1974, Alison Smithson first defined the concept of mat building.

In the middle of the last century, when modernism reached the floruit, architecture and other subjects became the art and practice of social system, and chased for the politics-economy progress and Enlightenment Planning.

CIAM is a classic architectural organization with the huge influence especially in Europe and America. As considering architecture as an economic and political tool to improve the world through the design of buildings and urban planning, the organization focus on establishing the architectural principles of Modern Movement. CIAM admired the strictly rationalism and promoted the mechanical functionalism and functional city or division, 'Existenzminimum', strictly standardization, economic benefits instead of aesthetics, and so on, some of which also caused the dissatisfied of the young generation architects, such as *Team X*, who chased for new targets.

First, the transformation from material improvement to individual freedom occurred in the purpose of architectural design, as the earlier quantity standards, such as illumination, ventilation, and individual areas, made by CIAM could not suffice the demands of most after war architects demands. They turned for the experience of urban environments, especially the community experiences.

G. Candilis (1913-1995, the core member of *Team X*) claimed: *`the habitat is above all an environment where man lives, living solitary or living jointly.* `[2] In the statement, the

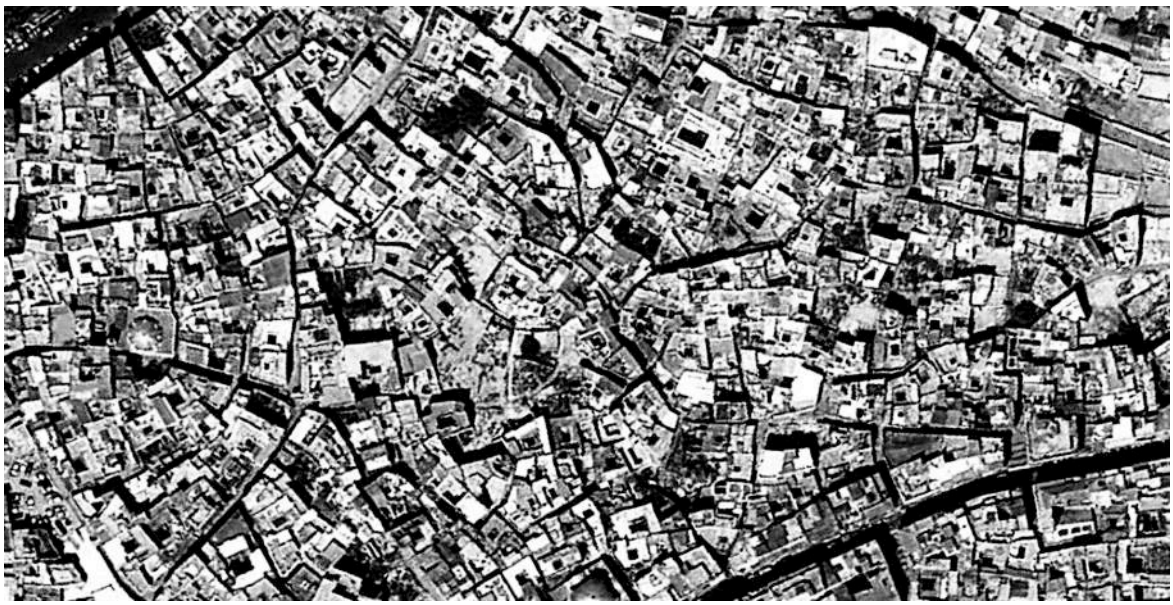

Fig. 4-2 The Casbah or Kasbah in traditional Islamic Cities
Source: #MILITARIZED ARCHITECTURES/// Urban Insurgencies: Algiers's Labyrinthine Casbah vs New York's Weaponized Grid Plan. The Funambulist: architectural narratives. 2011.Oct.5.

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1 `Team X` composed by architects and other participants started in July 1953 at the 9th Congress of C.I.A.M. and created a schism within CIAM by challenging its doctrinaire approach to urbanism. The first formal meeting took place in Bagnols-sur-Céze (1960); while the last meeting was in Lisbon (1981). Its theoretical framework, disseminated primarily through teaching and publication, had a profound influence on the development of architectural thought in the second half of the 20th century, primarily in Europe. The core members of Team X included Mr. and Mrs. Smithson (Peter Smithson 1923-2003 and Alison Smithson 1928-1993, UK), J. Bakema (1914-1981, Holland), Aldo van Eyck (1981-1999, Holland), G. Candilis(1913-1995, Greece), S. Woods (1923-1973, USA), De Carlo (1919-2005, Italy). They referred to themselves as "a small family group of architects who have sought each other out because each has found the help of the others necessary to development and understanding of their own individual work." (Smithson, Alison [ed] *Team 10 Primer*, The MIT Press, 1968) ----------WIKIPEDIA

2 Candilis, Georges, 'Le mythe de l'habitat individuel', in: L'Architecture d'Aujourd'hui, 1968, February/March: 22

habitat took the place of *dwelling*, and indicated the importance of collective habitat and living. The statement promoted the turning of CIAM, and the emergence of *Team X*.

The major ideas of *Team X* included organic group, flexibility, growing & alternation, and urban & habitat. "*…they not only dismissed the Sittesque sentimentality of the old guard, but also the rationalism of the 'functional city'. They critical drive to find a more precise relation between physical form and socio-psychological need became the subject matter for CIAM X…*"[1] such as Casbah or Kasbah in traditional Islamic cities.

Second, re-introduce the 'phenomenology' or 'community life' experience to the modern architecture. One method is to establish 'the new monumentality', stressing on the influence of the individual architects. '*There must be occasional buildings which raise the everyday casualness of living to a higher and more ceremonial plane, buildings which give dignified and coherent form to that interdependence of the individual and the social group which is the very nature of democracy.*'[2] For S. Giedion, '*New Monumentality aimed at creating the symbols of community within an urban framework that was still rationalistic*[3],' Another method is to introduce the clear and identified organization and social movement, such as designing the huge and constant infrastructure, establishing the framework, and freely arranging the infilling. The Team X inclined to the latter. '*Team X wanted an architecture that was the expression of community. Whereas one accepted architecture as a mediated representation, the other sought a primal language in which form and meaning would be one. In attack-tendencies, it sees societies as information systems designed to maintain 'homeostasis'----decentralized wholes in which no one level is 'in control'*[4].' The former is the logo individual; the former is the new space construction, and formed the 'field theory'.

Le Corbusier's attention and influence were not only lay on the modern urban, where high-rise buildings collects, but also on the vernacular buildings, which established the close connection with the new generation of CIAM. Even early in the 1920s to 1930s, Le

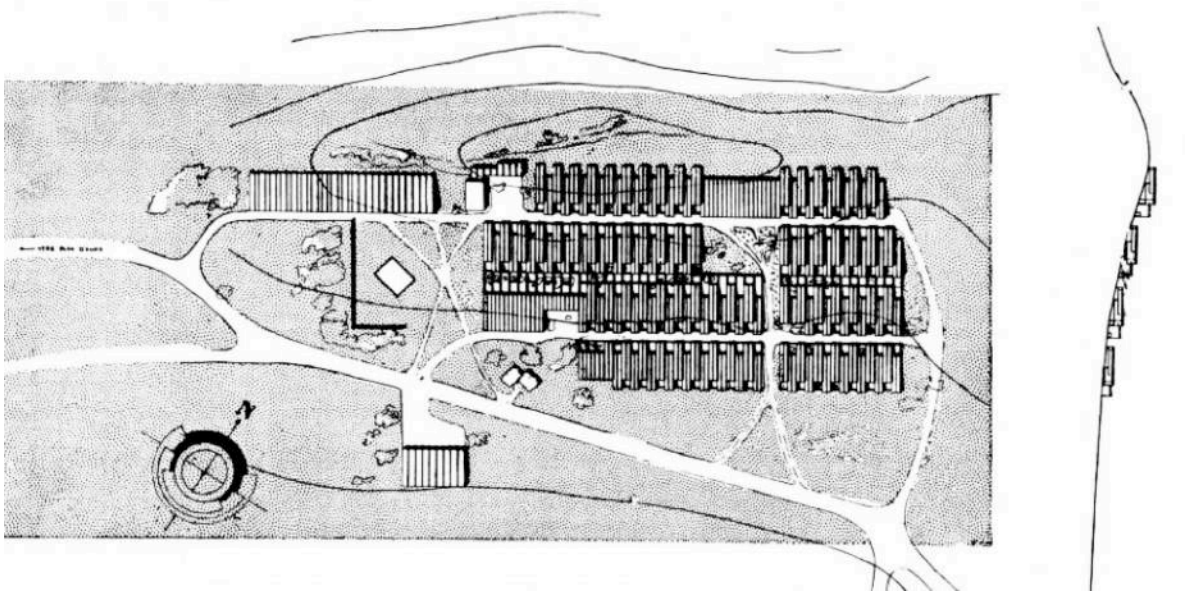

Fig. 4-3 Le Corbusier, plan of the "Permanent city" of vaulted two story row houses built of rammed earth (pisé) for the Mediterranean coast near Mont Saint-Victoire, le Sainte Baume, France, 1948. Copyright Fondation Le Corbusier. Source: Hashim Sarkis, Pablo Allard, Timthy Hyde. CASE: *Le Corbusier's Venice Hospital and the Mat Building Revival*. PRESTEL. 2001: 51

1 Kenneth Frampton. *Modern Architecture: a Critical History*. London: Thames and Hudson. 1980: 271.

2 Elizabeth Mock's words in Alan Colquhoun, Modern Architecture, New York Oxford University Press, 2002:212~213.

3 Elizabeth Mock's words in Alan Colquhoun, Modern Architecture, New York Oxford University Press, 2002:217

4 Elizabeth Mock's words in Alan Colquhoun, Modern Architecture, New York Oxford University Press, 2002:217~218.

Corbusier started the attention on Vernacular buildings, and, in 1948, the Casbah style in the plan of the 'permanent city' (near Mont Saint-Victoire, Le Sainte Baume, France, 1948) enlighten the Team X. He accepted the thought of 'younger architects', which was expressed in his final work----Venice Hospital. The Venice Hospital is also considered in 'light of contemporary architecture's fascination with mat building'.[1] And the Team X animadverted on the spirit of Charter of Athens, while in the mean time, accepting the influence from Le Corbusier and, even, enjoying his acquiescence, which objectively promoted the development of Team X.

4.2. Definition and Strategies

What is the mat-building?

Alison Smithson once defined it as "*…epitomize the anonymous collective; where the functions come to enrich the fabric, and the individual gains new freedoms of action through a new and shuffled order, based on interconnection, close-knit patterns of association, and possibilities for growth, diminution, and change.*"[2] The Alison's definition expressed the original comprehension of mat-building. Briefly, anonymous individuals follow the order to compose the "anonymous collective", which is called mat-building. Under the organization of the order, the anonymous individuals gain the new freedom and enrich the fabric. The order allows the mat-building with interconnection inside and growth, diminution and change in future. The definition describes the relationship between the essential components: order, anonymous individual and the whole.

While, T. Hyde pointed out the defect in Alison's definition: ambiguity. Whether the "mat-building" means a designing operation (a gerund) or a designing object (a noun)? The ambiguity influence how we recognize and read mat-building. T. Hyde also points out the Alison Smithson's definition on mat-building containing the redundant private predilection. Alison's definition expresses the Smithson's interest on Wood's Stem organizing system, while ignores the "organized casbah" by Aldo van Eyck and P. Blom. In Hyde's view, the Alison Smithson's definition briefly describes the grid in the project of Berlin Free University.

In my view, the mat-building experienced a transformation from the formal operation in its naissance stage to the activity operation in its renaissance stage. The organizing strategies replace the structure logic becoming the linchpin of mat-building, which allows more flexible and liberal space available in building. In substance, the mat-building is a kind of low-rise and high-density building complex generated by operation strategies in

Fig. 4-4 Definition and Composition of Mat-building
Source: Author

[1] Hashim Sarkis, Pablo Allard, Timthy Hyde. CASE: *Le Corbusier's Venice Hospital and the Mat Building Revival*. PRESTEL. 2001: 13

[2] Alison Smithson. *How to Recognise and Read Mat-Building---- Mainstream Architecture as It Has Developed Towards the Mat-Building*. edited by Hashim Sarkis, eds. *CASE: Le Corbusier's Venice Hospital and the mat Building Revival*. Harvard University. 2001. 90

horizontal direction; its space is well organized by the operation strategies, and possesses the characteristic of open, tolerance, self-adjustment; in form, the specific units, fabric (or texture) interconnect with the operation strategies, and the operation strategies enable form the ability of alternation and growth.

The operation strategies play as the overall organizing methods in the mat-buildings. They transform the specific notions as the form of organizing strategies and introduce them into the building designing process to create the spaces with specific characteristics and establish the united, connected and self-adjustment entirety. Operation strategies determine formal performance of mat-building. The operation strategies are reproducible and adjustable, which enable the mat-building with the possibility of change, diminution and growth. The existing operation strategies, such as matrix strategy and urban strategy, shape the existing mat-buildings. While, in future, the operation strategies will improve the existing ones and extend to new fields, which would greatly broaden the organizing predominance of "mat" and produce new activities. "…this is still developing."[1]

Strategies through the operations make the "overall shape and extent …highly fluid", and value the internal relationship and rules. The operations strategies move one "from object to field" providing diverse activities and experience.[2] And the strategies, which mat-buildings based on, "give space to the active unfolding of urban life without abrogating the architect's responsibility to provide some form of order."[3]

4.2.1. "Mat"

"Mat" is a kind of form strategy, which shapes the formal characteristics of mat-building: like a "mat" covering on the ground. In naissance stage (1950s-1970s), structure got the dominant position in the formal strategies. While, in renaissance stage (1990s-), activities and experience replace the structure and the "mat" acquires new freedom. The "mat" strategy includes several essential factors: horizontality, fabric and unit.

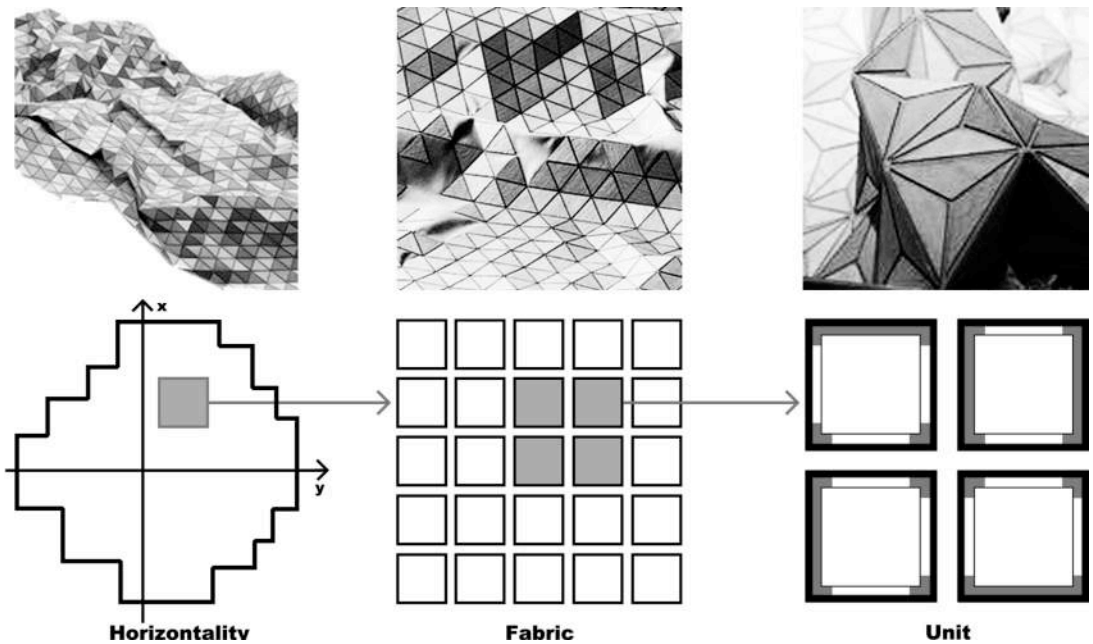

Fig. 4-5 MAT：Horizontality +Fabric +Unit
Source: Author

[1] Alison Smithson. *How to Recognise and Read Mat-Building---- Mainstream Architecture as It Has Developed Towards the Mat-Building*. edited by Hashim Sarkis, eds. *CASE: Le Corbusier's Venice Hospital and the mat Building Revival*. Harvard University. 2001. 91

[2] Stan Allen. Field Condition. Points + Lines. New York. Princeton Architecture Press, 1999:92

[3] Stan Allen. Mat Urbanism: The Thick 2-D. Hashim Sarkis(ed). CASE: Le Corbusier's Venice Hospital. Prestel Publishing Led, 2002:122

Horizontality means the building extending in horizontal ground and producing the homo-spaces in low-rise and high-density. It makes a building like a soft mat extending along with the ground. The huge scale in the horizontal directions, comparing with that in the vertical direction, reduces the importance and influence of the facades, which means the building could liberally respond to environment and even blur the limit of boundary creating a transition field. The Venice Hospital plan is a classic case indicating the horizontal growth.

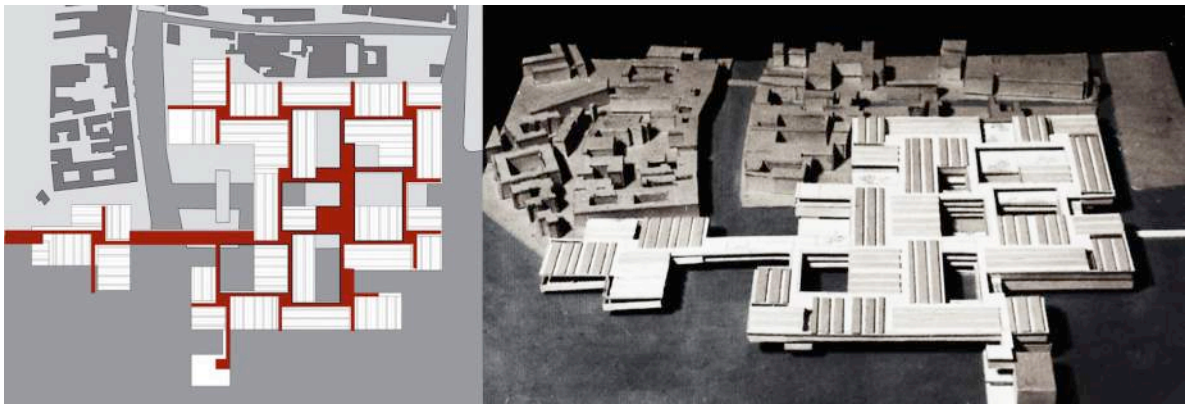

Fig. 4-6 Horizontality: Venice Hospital Plane + Model
Source: Author + CASE: Le Corbusier's Venice Hospital and the Mat Building

Fabric means the specific repeating and regular patterns in the plan, just like the weaving patterns in the mat. The fabric expresses the unity of buildings and controlment and operability of organizing strategies. The traditional fabrics mainly include Stem, by Candilis and Woods, and Cluster, by Netherland's Structuralism. Berlin Free University and Beheer Center are the classic cases for separate. The structural framework influenced the early fabrics in benefit for construction and reconstruction; while in contemporary, the fabrics more imply the interior activity arrangement.

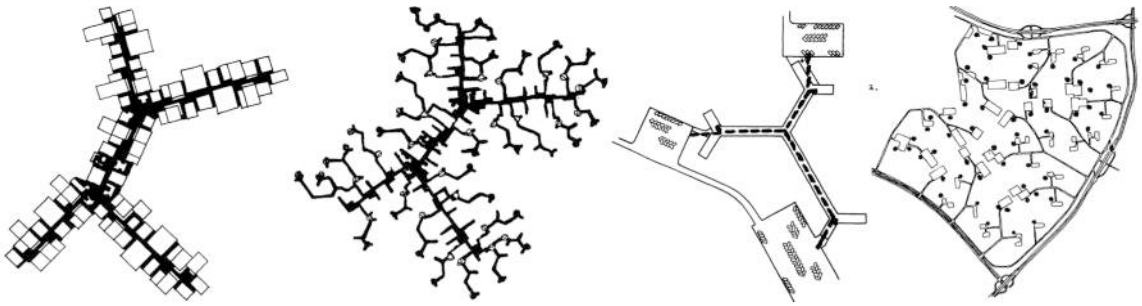

Fig. 4-9 Fabric: "Stem" idea (Cean) by Woods
Source: Jürgen Joedicke. Candilis-Josic-Woods: Una decada de arquitecturay urbanismo. EDITORIAL GUSTAVO, S.A. 178

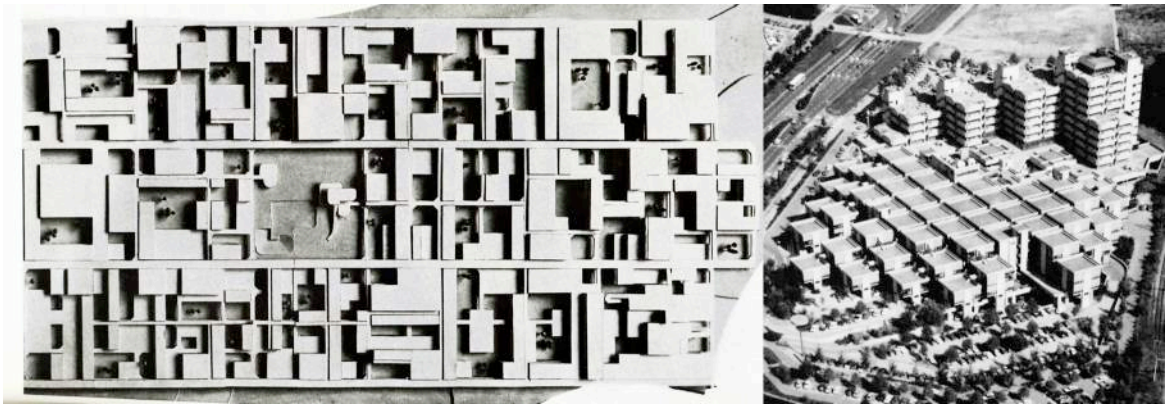

Fig. 4-7 Fabric: Berlin Free University by CJW
Source: Jürgen Joedicke. Candilis-Josic-Woods: Una decada de arquitecturay urbanismo. EDITORIAL GUSTAVO, S.A. 228

Fig. 4-8 Fabric: Beheer Center by Herman Hertzberger
Source: Team 10 1953-81:inserach of a Utopia of the present. 210

Unit was produced to answer for the demands in structure, and was organized by strategies to establish the mat-building. The specific strategies lead to the specific fabrics, and all strategies lead to the horizontal extension. While in the renaissance stage, with the fading of structural limits, units blur the boundaries and extend the containing space developing into matrix effect. In mat's unit, the alteration and possibility replace the form-function correspondence. The original partitions among units are removed to form the open area or possible combination space. The Beheer Center and Amsterdam Municipal Orphanage explain the traditional units.

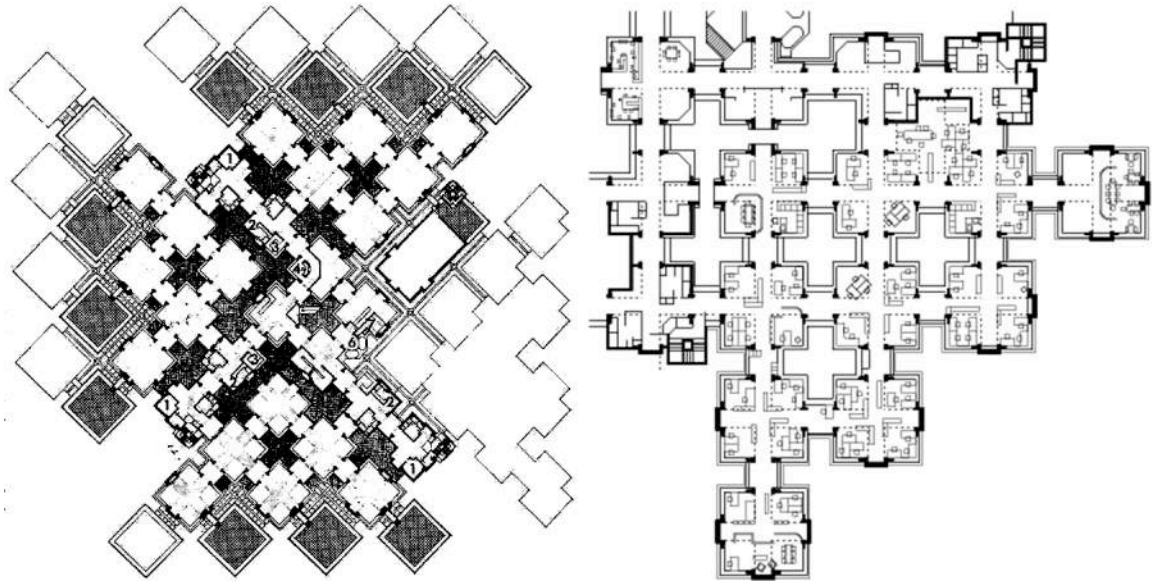

Fig. 4-11 Unit: Central Beheer Office Building by Herman Hertzberger
Source: CASE: Le Corbusier's Venice Hospital and the Mat Building. 109 + Author

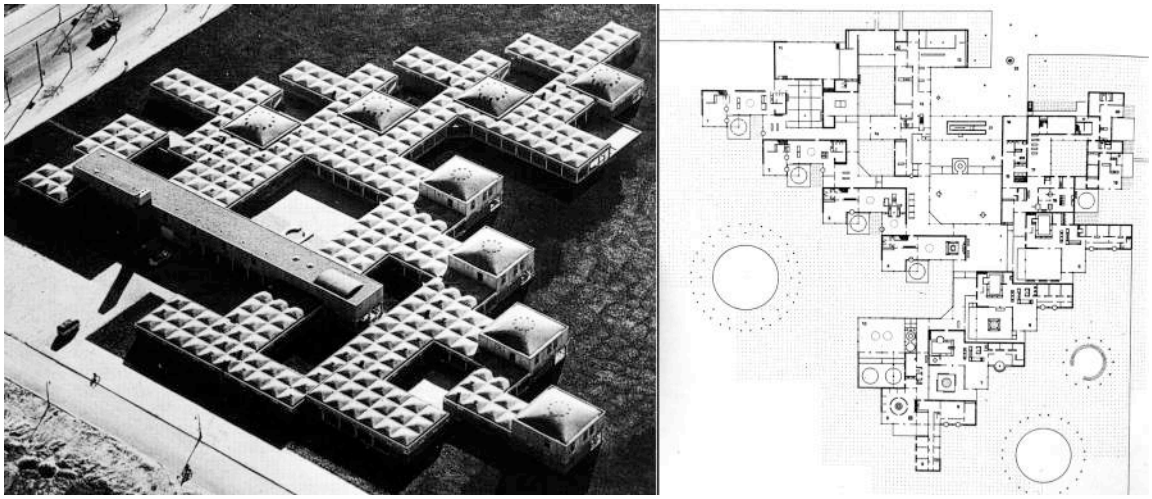

Fig. 4-10 Unit: Municipal Orphanage by Aldo van Eyck
Source: Team 10 1953-81:inserach of a Utopia of the present. 68-69

4.2.2. Network

Network is a kind of operation strategies controlling the internal organizing framework in mat-building, which arrange the buildings with “a high degree of variation” “within the fixed fabric,” “through local adjustment and through the activation of void spaces.” In the network, “the parts fit together, and the character of void spaces formed by their architectural matter.”[1] The network was considered substantially constructing the “mat” or “field” assembling.

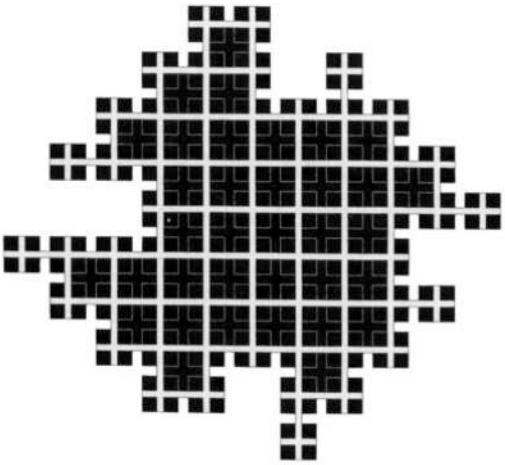

Fig. 4-13 Network: Beheer Center Office by Herman Hertzberger
Source: Author

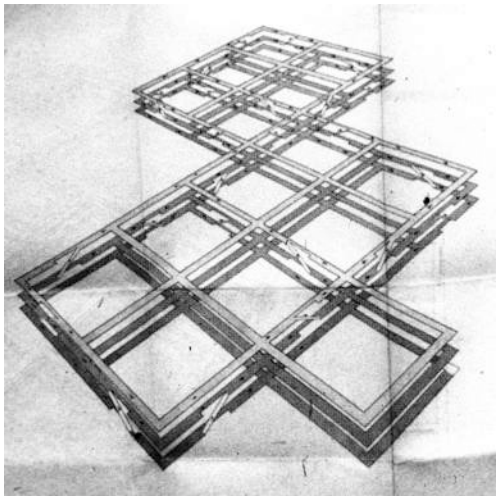

Fig. 4-12 Network: Module Frankfort Competition by CJW
Source: Jürgen Joedicke. Candilis-Josic-Woods: Una decada de arquitecturay urbanismo. EDITORIAL GUSTAVO, S.A. 206

In the early mat buildings, the network strategy was constructed on the ideal structuralism and the animadverting on early modernism. The network attempted to explore profound modes of human life, unified the meaning and form to produce a new architectural language, and intended to create a building form, which could contain the community life.

Influenced by architectural theory and disappointment with early modernism, the members of Team X initiated and popularized the new organizing framework. The members tried to explore the possibility of network strategies with diverse angles of view.

Aldo van Eyck, who is well known for his contribution in architectural education, expressed his imagination of “mat” in the project of Amsterdam Orphanage (1955-1960). The project attempted to use the “modern standardization” to express the complication and alternation of field characteristic in traditional towns. Aldo van Eyck introduced concept of the “modular” in both the fields of industry and mathematics. The industrial modular brings the strict control and extending possibility into the organizing systems, which is well accepted in the later years. The mathematics modular applies the zooming scales to shape the humanity in space characteristics. In the project, the building takes the squire in 3.36m as essential unit, repeating and extending in the plan. The courtyard and partial second floor are contained in the plan. The interior paths connect the rooms and spaces. The diverse scales of room match the children in different ages. The exoteric building implies the possible future.

[1] Stan Allen. Mat Urbanism: The Thick 2-D. Hashim Sarkis(ed). CASE: Le Corbusier’s Venice Hospital. Prestel Publishing Led, 2002:121

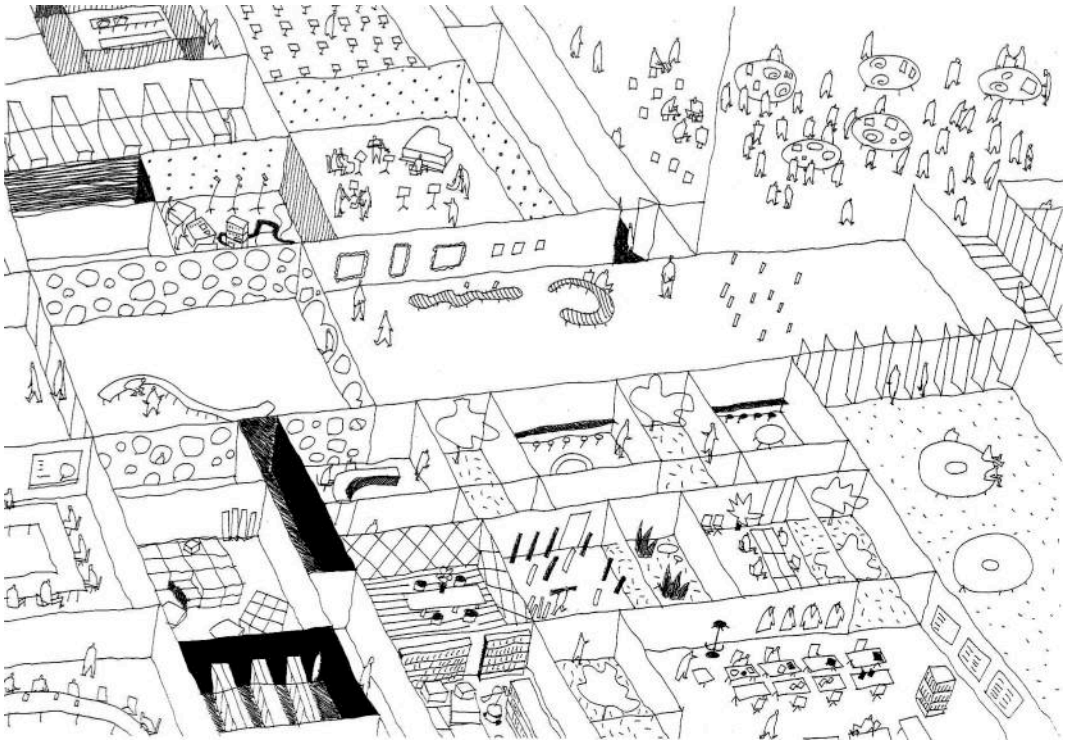

Fig. 4-15 Network: Stadstheater in Almere by SANAA
Source: El 77(I) +99. 292

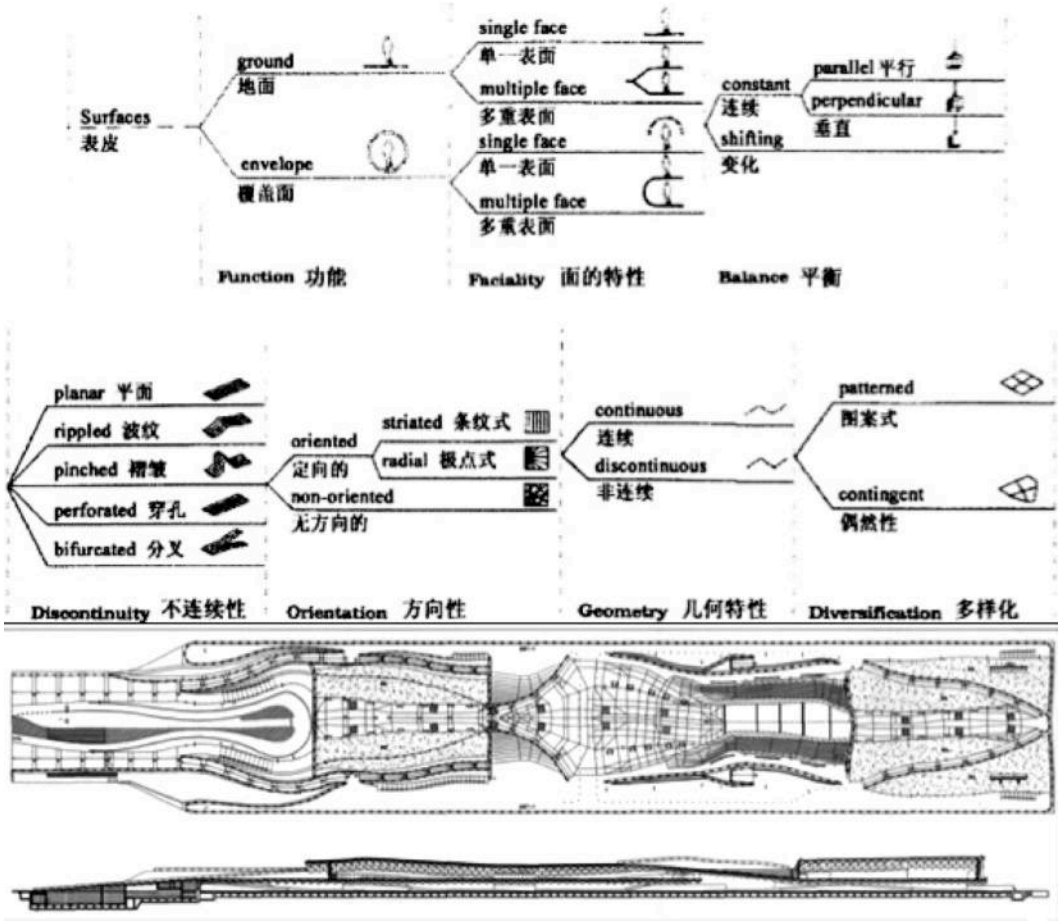

Fig. 4-14 Network: FOA's System Tree in Yokohama International Passenger Terminal

Shadrach Woods, who is famous as a practitioner of “mat” with his team, CJW, put forward the concept of “stem”, which was acquired from their design and traditional urban prototype, Casbah. The “stem” base on the concept of movement. The movement in different distance, speed and quantity shapes the routes in the building. The routes system was arranged as the essential framework organizing the whole building. The architects apply the knowledge of urban designing in the architectural design to construct the complex activities and experience in the building. The most classic case is the Berlin Free University, in which the route system shapes the building and leave possibility for possible alternation. The system makes the building as a segment of the urban. The similar cases reference to their, CJW Company’s, Frankfurt Competition (1963) and Toulouse University (1971-1973).

While in renaissance stage of mat-building (1990s-), network breached the limits of essentialism, and is inclined to the connection of relativism. The network transformed from science field to the hermeneutics field, which means the traditional principles, such as structure and logic, substituted for new ones, such as deconstruction, hermeneutics and game. In the transformation, the topology, which replaced the geometry, controls the form and framework in the structural network, which focus on the “week form”. In the meanwhile, the network focuses the attention on the accident event of feeling and activity in designing, and the contents combine and shape the organizing rules of network. Peter Eisenman applies the diagram languages to code the interiority, autonomy and exteriority in design, such as the Greater Columbus Convention Center. FOA explored the Phylogenetic tree concept to define the event and experience in the design of Yokohama International Passenger Terminal. SANAA combines the cognition of both the Holland Structuralism and Japanese traditional structure, and creates the new connection among activity, apace and material in the Stadstheater, in Almere, Holland.

4.2.3. Matrix

When talking about the term “matrix”, we mean the concept describing the general pattern in landscape ecology. The matrix means the part with the most proportion, the most connection and the most influence in the landscape; and possesses the porosity and connectivity in form, which contain the possibility of evolvement, substitution and growth.

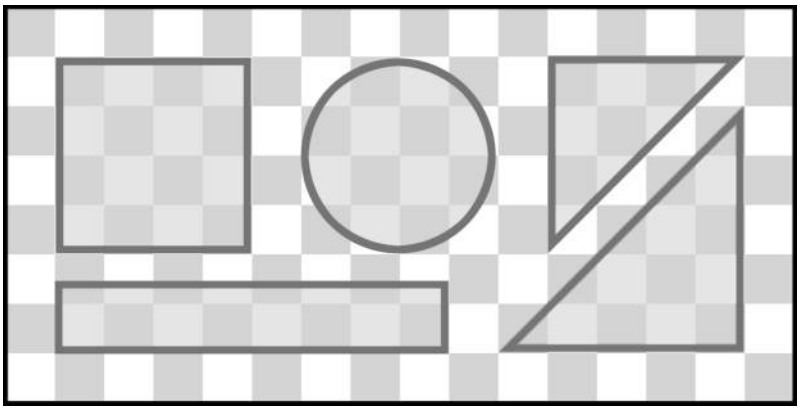

Fig. 4-16 Matrix / Source: Author

Mat-building, as a kind of extending field, shares deconstructing the form of architecture, and, in the same time, promoting the emergence of new forms. The porosity and connection conduce to the containing and transforming the heterogeneous spaces. In the naissance stage of mat-building (1950s-1970s), the operation strategies weakened the traditional image form, while the essentialism limited the operation strategies for further liberty. In the renaissance stage of mat-building (1990-), the diversified operation strategies strengthen the productive capacity, which match the “formless” trend in contemporary art and architecture field. The mat strategies turned from the combinatorial typology to the operational matrix.

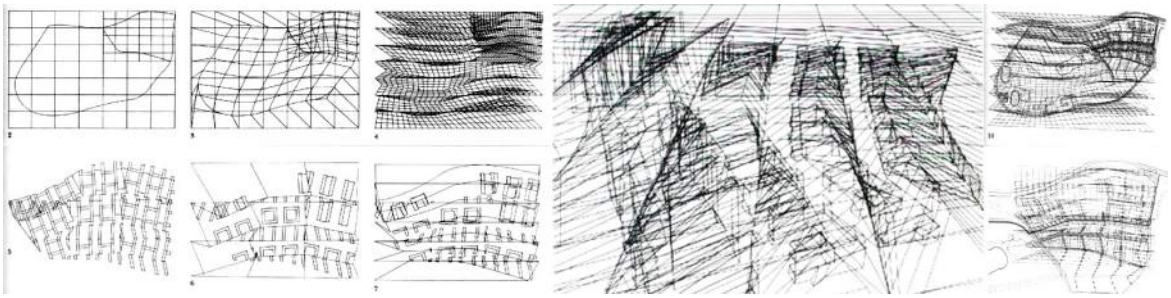

Fig. 4-17 Matrix: Rebstockpark Master Plan by Peter Eisenman
Source: Peter Eisenman. Eisenman Architects: Selected and Current Works (Master Architect Series, No 9). Book Nippan. 1996-01: 192-197

The early mat-buildings focused on the expression of specific form or patterns. In contemporary, mat-buildings focused on the generating and operating process in the formal strategies. Peter Eisenman interested in the generative and operational capacities in the matrix. He coded multiples information, including history, mathematics and other sciences, into the matrix, and the buildings, or built environment, acquired from the matrix, such as the Rebstock-Park Master Plan (1990-1991, Frankfurt, Germany).

In contemporary mat-buildings, the "gap space" produces tolerance and transformation as the main characteristics of matrix effect. The original gap space generated from the connecting parts among the units in the mat-building. As limited by the structure in the naissance stage of mat-building, gap spaces applied as the corridors or similar functions with narrow forms and stiff boundaries. With the evolution of human society, the space becomes effective, complex, flexible and variable in mat-building. The gap spaces trend to maximize the integration. Accessorial elements in gap spaces, such as corridors, platform, staircase, translate into the dominant spaces ruling the organizing structure of mat-buildings. They convert the traditional relationships of interior and exterior, the function levels, and eventually deconstruct the clear boundaries of form and the figure-ground relationship, which would promote the occasional events. K. W. Foster points out that it's a topographic effect, which express a brand-new form in space restricting and formal designing. The constant transformation deconstructs the figure-ground relationship, and constructs the radical stance closely combining the building and field as "the third status", which is different from the "GENIUS LOCI".[1]

The gap space is more penetrative in plane and section. In contemporary mat-buildings, the shallow sections are penetrated to strengthen the horizontality. Structure evolves into the combination and transformation of space and function to create the new section forms as interweaving, enwrapping, folding, crisscrossing and so on. From the interlaced folding courtyards (Berlin Free University, Berlin, 1963) to the multiple structure and imagination systems (Hotel and Convention Center, Agadir, 1990), or the 3D folding and enwrapping structure system (Springtecture B, Kamigoori, 1999), contemporary mat-buildings create more complex and indispensable gap spaces.

The gap space attends on the opportunities of promoting occasional events. In Sou Fujimoto's Children's Center (Date-shi, Hokkaido, Japan, 2006), the gap spaces among the units create the similar space condition in both interior and exterior, and occupy the field by the constant built environment or atmosphere, but not by the outlines of buildings.

With the intervention of the gap spaces, the classic modernism homogeneous spaces transform into the constant matrix, which contain the occasional events and their possible alternation. They are similar to the environment and collect diverse high-density spaces.

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[1] Wlof. Prix, quoted in Bernard Tschumi and Irene Cheng.eds..The State of Architecture at the Beginning of the Twenty-first Century (New York 2003): 18. Quoted from Trajectories> Metamorph> V.Venice. Fondazione la Biennale di Venezia, 2004:141

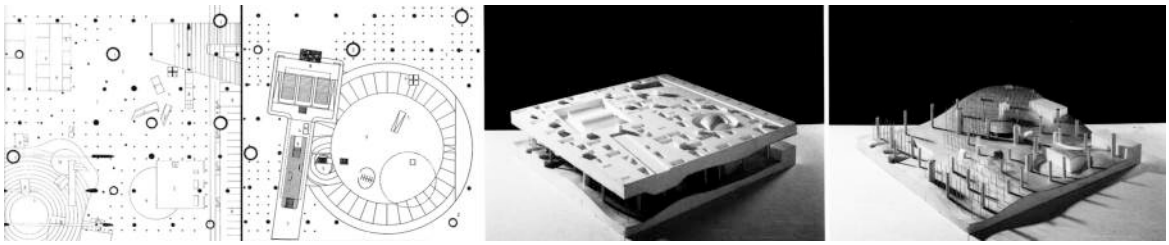

Fig. 4-20 Matrix: Hotel and Convention in Agadir, by Rem Koolhaas, 1990
Source: El Croquis 53+79: 105-115

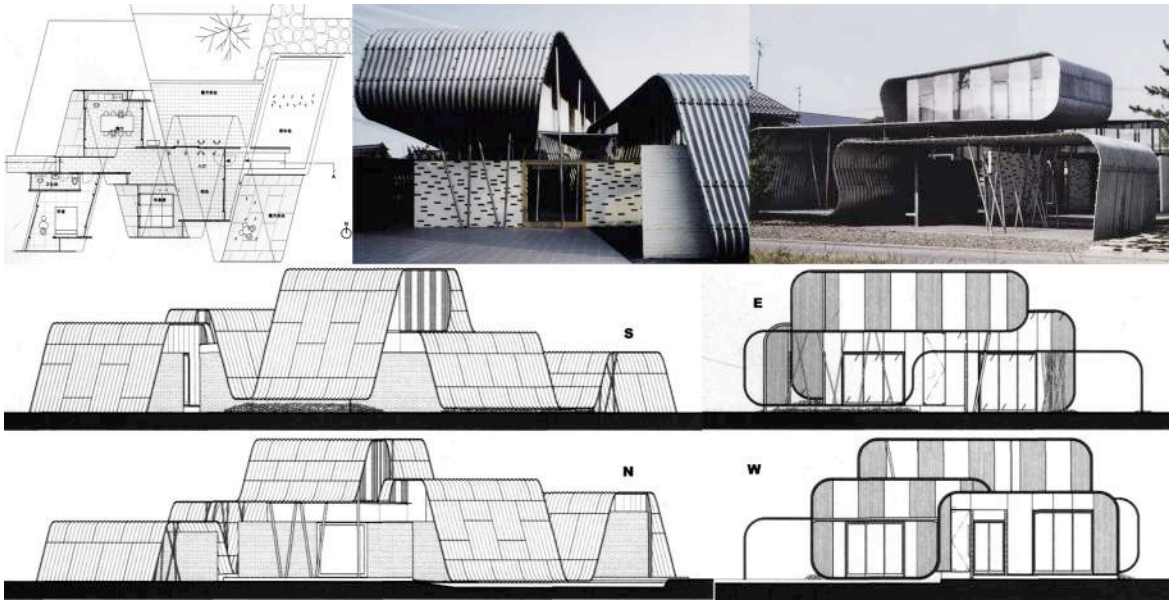

Fig. 4-19 Matrix: Springtecture B, by Kamigoori, 1999
Source: Urban Environment Design. 2011-07 (054): 88-95

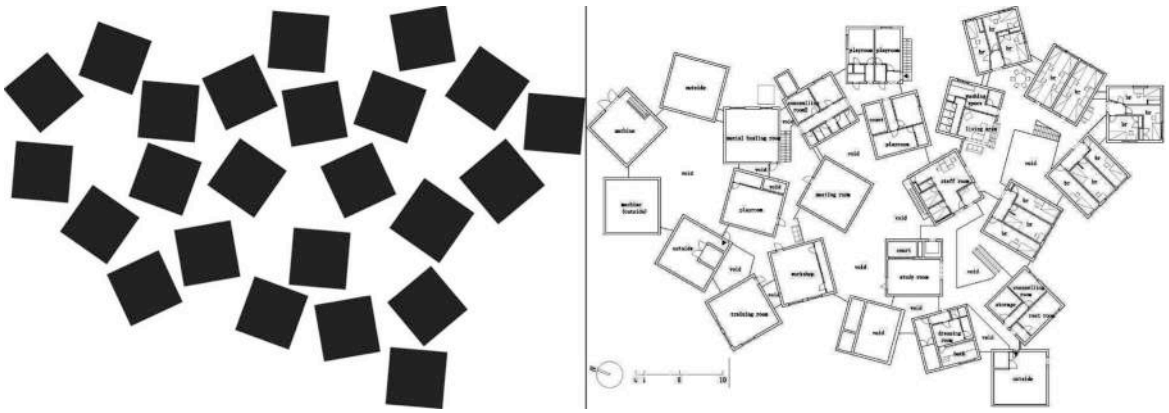

Fig. 4-18 Matrix: Children' Center for Psychiatric Rehabilitation, by Soufujimoto, 2006
Source: El Croquis 151: 45-50

4.2.4. Urban

Mat-buildings get a close connection with Urban. Because the emergence of mat-buildings based on the consideration of urban issues in modern, the mat-building exists as the urban segment, influences and is influenced by the urban evolution. In the renaissance stage of mat-building (1990s-), the urban as an essential effect and design strategy altering the urban morphology, containing the complex social activities and guiding the energy trends.

In the naissance stage of mat-building (1950s-1970s), when Team X and the radical architects believed the material form could improve the society condition, the mat-building was considered as the Utopia idea in modifying the early modernism, just as A&P Smithson mentioned in <Team 10 Primer>: "The aim of urbanism is comprehensibility, ie clarity of organization."[1] Team X attempted to criticize and guide the disordered, advertising and indifferent urban life influenced by early modernism with independent architecture knowledge. However, David Harvey pointed out "This does not mean that practices are determined by built form (no matter how hard the planners may try) for they have the awkward habit of escaping their moorings in any fixed schema of representation."[2] Finally, the early mat-building, as the material assistant method, over depended and fetishized on the material forms, which blocked the combination of architectural space and urban environment, and formed the negative isolation and dogmas, deviating from the original ideas of mat-buildings.

At the end of the 20th century, architects and planners had got a clear cognition of their duties and capabilities, realizing that the urban culture composes with both diverse orders, provided by architects and planners, and urban life, developing in long time history. Hence, it is well realized that the practical local intervention and improvement would be more effective than the Utopian overall extension and control. Kenneth Frampton's "the catalytic city" and Stan Allen's practice support the view.

Frampton conservatively put forward the idea of "the catalytic city", including the low-rise and high-density dwelling district and Mega-form two kinds of mat-buildings. In the 20th UIA (Union international des Architectes), Frampton lectured the report <Seven Points for the Millennium: an untimely manifest>. He believes the low-rise and high-density dwelling districts could solve the "crisis of land settlement in the age of megalopolis".

The "low-rise and high density housing", which is the classic dwelling status, such as Casba, are the effective dwelling form. [3] The low-rise and high-density housing contains both private vehicles and public transportation, which could realize the traffic stress and control the extending boundary. In some degree, the low-rise and high-density housing strengthen the density of urban fabric and

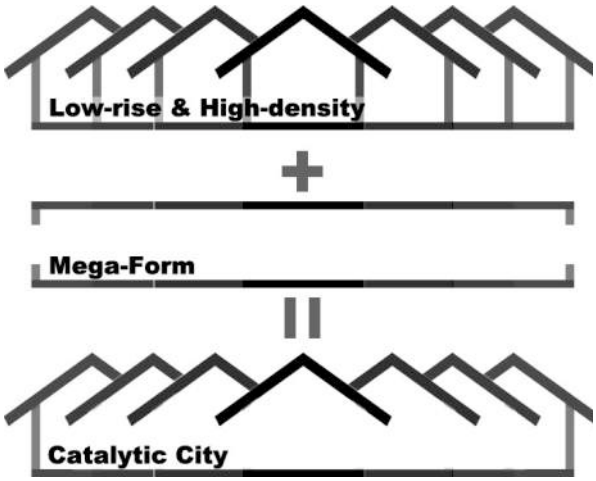

Fig. 4-21 Urban: Catalytic City, by Frampton
Source: Author

[1] Alison and Peter Smithson. Team 10 Primer. Edited by Charles Jencks and Karl Kropf. THEORIES AND MANIFESTOES OF CONTEMPORARY ARCHITECTURE. ACADEMY EDITIONS. 1997: 218

[2] David Harvey. The Condition of Postmodernity: An Enquiry into the Origins of Cultural Change. BLACKWELL. 1992: 204

[3] Kenneth Frampton. Seven Points for the Millennium: an untimely manifesto. Architecture Review. 1999/11: 76-80

the connection among diverse districts; and shapes the urban in both function and form in urban landscape. In contemporary, the "density experiment" focuses on the related research, especially the plan and program.[1]

The Megaform, which is different from the "megastructure" combines the ideas of "small-scale intervention" and "landscape form", and promotes the development of the infrastructure in the city. "A Megaform may be defined as being: (i) a large form extending horizontally rather than vertically, (ii) a complex form which does not necessarily express its structural and mechanical elements, and (iii) as a device that is capable of inflecting the existing urban context because of its strong topographical character."[2]

Stan Allen, Bernard Tschumi, Rem Koolhaas and FOA all stress the importance on the connection between the mat-building and urban activities. Stan Allen figured the mat-building gets great contribution to the infrastructure. The original urban experience, the scale extending process, would be replaced by the mat's new mode, the alternative motive scale and speed. Hence, the designing of mat-building should focus on the surface and atmosphere, and care about the traces and experience of evolution in plane, such as the Santa Caterina Market. The architect, Enric Miralles, remains the original field, and adds the new roof on the original façade. The original functions and organization are well conserved, and, in the mean while, the building increases the new space and activities or functions. The light roof accommodates and unifies the complex contents.

The urban strategy focuses on the organization of divers energies and activities, through the communication to inspire the occasional events, and constructs the complex and multiple landscapes, and finally influence on the urban in divers levels.

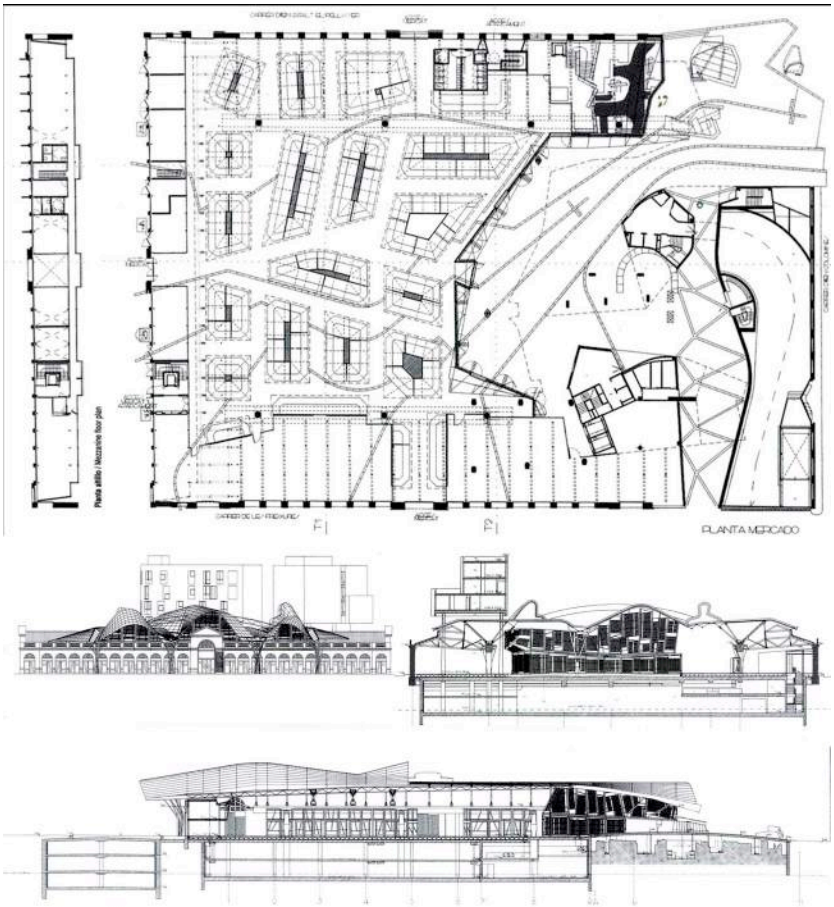

Fig. 4-22 Urban: Santa Caterina Market by Enric Miralles, 1997-2005 /Source: El Croquis 144: 132-134

[1] WANG Qun. Density Experiment. Time + Architecture. 2000 (2): 36-41

[2] Kenneth Frampton. Seven Points for the Millennium: an untimely manifesto. Architecture Review. 1999/11: 79

4.3. Pedigree

The phenomenon of 'mat building' appeared in 1950s, and has experienced two evolution periods: 1950s~1970s and 1990s~present. The first initiators and promoters of the concept of 'mat building' were the Team X and the groups under their influences. Le Corbusier contributed his genius in some great works, which enlightened the architects of young generation to explore the new field of architecture, such as Team X and also New Brutalism (UK) and Structuralism (Dutch). In the late 1970, when Team X finished its historic mission, the interest of architecture research transferred. And the mat building gradually disappeared from the public sight. Until 20 years later when the 'field' theory pulled the interest of architectural research back to the mat building again with new evolution, the architectural phenomenon started the second growing stage.

Team X was the main advocators to the mat building phenomenon. Early in 1962, the meeting in Royaumont put forward the two modes of urban infra-structure/ building group concepts: "*1. An extension of the infra-structure idea into the building group, so that a system with growth potential is put forward and the ultimate form is not fully anticipated (the STEM idea in its ideal sense); 2.The 'group form' idea, in which all the components are directed towards the final pre-conceived form (as Maki's Skinjuku project)*"[1]. And further explained in the <Team 10 Primer>. The 'core family members' of Team X were the main force of the theory study and design practice of mat building, although with diverse views and methods.

4.3.1. Alison & Peter Smithson

Alison and Peter Smithson made great dedication to the mat building in both theory research and design practice. They are the earliest presenters of the thought and notion of mat building, but also the loyal practitioners and promoters of the conception.

In the theory field, Alison and Peter Smithson put forward the original thought and finally defined the concept of mat building. Early in the 1962, they proposed the thought of mat building in the *<Team 10 Primer>: In the context of a large city with high buildings, in order to keep ease of movement, we propose a multi-level city with residential 'streets-in-the-air'. These are linked together in a multi-level continuous complex, connected where necessary to work places and to those ground elements that are necessary at each level of association. Our hierarchy of associations is woven into a modulated continuum*

Fig. 4-24 A&P. S.: Hunstanton Modern School
Source: Marco Vidotto. *Alison + Peter Smithson.* Ed. Gustavo Gili. 1997: 25

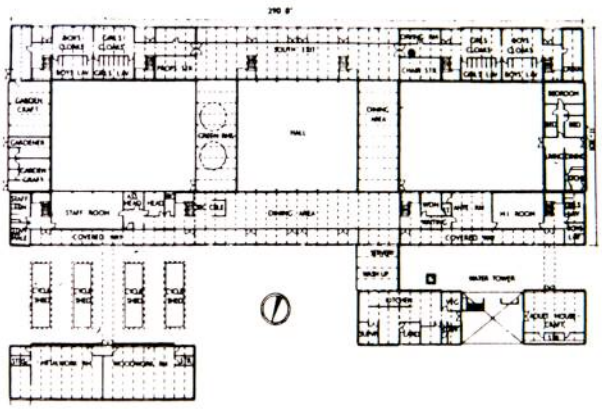

Fig. 4-23 A&P.S.: Hunstanton Modern School Plan
Source: Marco Vidotto. *Alison + Peter Smithson.* Ed. Gustavo Gili. 1997: 25

[1] RISSELADA, Max; HEUVEL, Dirk van den (ed.). *TEAM10: 1953-81 – In Search of a Utopia of the Present*. Rotterdam: NAi Publishers. 2005.99

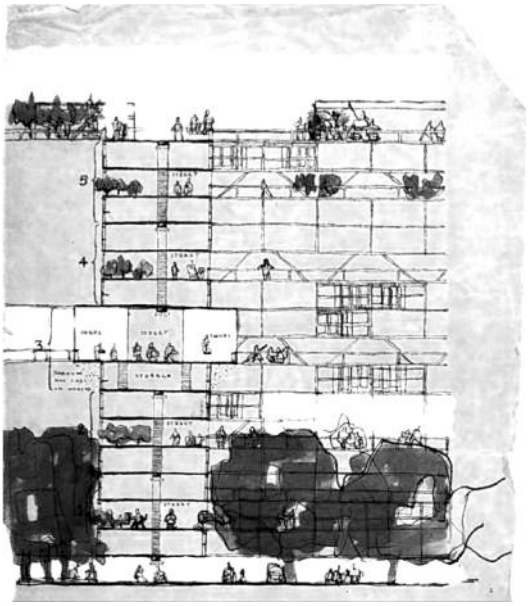

Fig. 4-25 A&P.S.: Golden Lane
Source: LAURA. M.D. ALISON E PETER SMITHSON: UMA ARQUITETURA DA REALIDADE. 2009:85

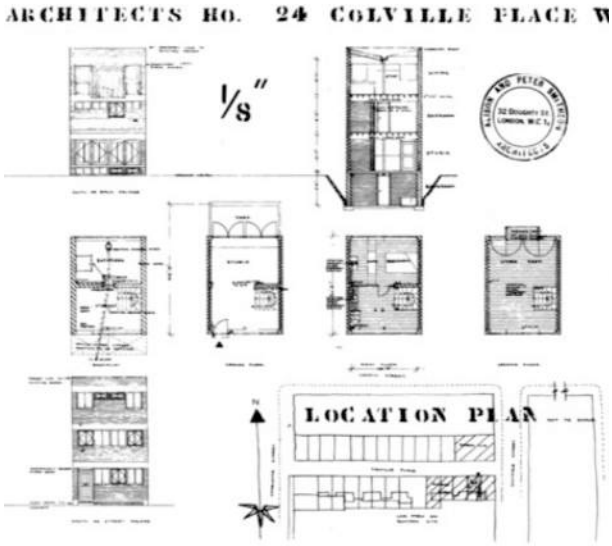

Fig. 4-26 A&P.S.: House in Soho
Source: LAURA. M.D. ALISON E PETER SMITHSON: UMA ARQUITETURA DA REALIDADE. 2009:85

representing the true complexity of human association.[1] And 12 years later, Alison Smithson firstly clearly defined the concept of mat building in the article: <*How to Recognise and Read Mat-Building: Mainstream Architecture as It Has Developed towards the Mat-Building*> *(1974): Mat-building can be said to epitomize the anonymous collective; where the functions come to enrich the fabric, and the individual gains new freedoms of action through a new and shuffled order, based on interconnection, close-knit patterns of association, and possibilities for growth, diminution, and change.*[2] 20 years later, Timothy Hyde pointed out some ambiguous in Alison's definition.

In design, A&P Smithson introduced the notion of mat building into their architectural projects, and promoted it to public. During their designing, they tried diverse styles and notions; while, most of their works are considered as mat buildings. During the 'Team X period' (1953-1979), their works were under the aphorism that "the building's first duty is to fabric of which it forms part". And their "intention was to shift architecture

Fig. 4-27 A&P.S.: Doha Hospital Compitition
Source: Marco Vidotto. *Alison + Peter Smithson.* Ed. Gustavo Gili. 1997: 41

[1] Alison and Peter Smithson. Team 10 Primer. edited by Charles Jencks and Karl Kropf, *THEORIES AND MANIFESTOES OF CONTEMPORARY ARCHITECTURE.* Great Britain: ACADEMY EDITIONS. 1997:219

[2] Alison Smithson. *How to Recognise and Read Mat-Building---- Mainstream Architecture as It Has Developed Towards the Mat-Building*. edited by Hashim Sarkis, eds. *CASE: Le Corbusier's Venice Hospital and the mat Building Revival*. Harvard University. 2001. 90

towards particularity; its forms to arise from attention to persons and place." During the ILAUD period (1978-), their works emerged the "Conglomerate Ordering". And the "building's action on the shaping of the territory and the spatial shaping of the territory itself should be at the center of our (their) work."[1]

In the first period, the works focused on the fabric and interrelations. The repeating and changeable units or fabric and inter-related connections of the functions were introduced into the design. Doha Competition (1953): " Immediately prior to fabricating our CIAM Grille, a bung-everything-together first essay in Arab aesthetic, assuming mutual protection for shelter from climate not invalidated by mechanical services…besides being economical, fail safe. a.s.o."[2] Hunstanton Modern School (1950~1954): "Economics of dense plan… interchangeability of same units, inter-related use of rooms"[3]. In the Golden Lane Housing competition (1952, London), they also introduced the community experience into the building forming the "street" and communication spaces in the building, such as the Golden Lane Housing Competition (1953, London). Further, during the period, the concept also introduced into the city planning. In the Berlin Hauptstadt Competition, Alison and Peter Smithson arranged "Existing roads on rectangular parts; pedestrians walked directly point to point, play between the two circulation nets." [4] In the Arab urban form study, Alison and Peter expressed the full conception of mat building in the related projects. Based on the well consideration of the Arab architectural space, the projects, such as the Kuwait Ministries, introduced the relationship between structure and fabric, the interconnection of the functions and space, the organization in urban system, the community experience, and the possibility for growing and alternation.

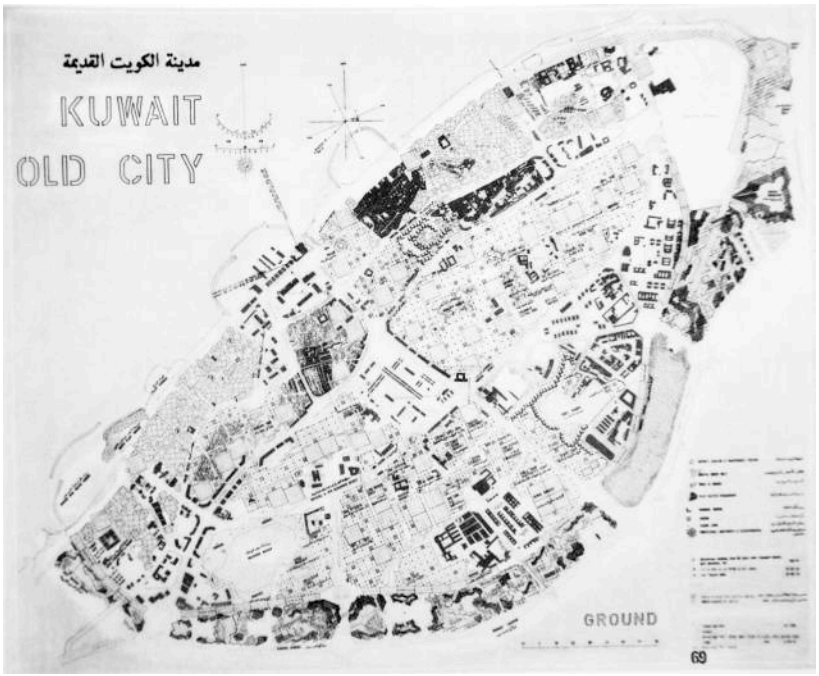

Fig. 4-28 A&P.S.: Ground Plan of KWAIT OLD CITY

[1] Marco Vidotto. *Alison + Peter Smithson*. Ed. Gustavo Gili. 1997: 8

[2] Alison Smithson. *How to Recognise and Read Mat-Building.* edited by Hashim Sarkis, eds. *CASE: Le Corbusier's Venice Hospital and the mat Building Revival*. Harvard University. 2001. 101

[3] Alison Smithson. *How to Recognise and Read Mat-Building.* edited by Hashim Sarkis, eds. *CASE: Le Corbusier's Venice Hospital and the mat Building Revival*. Harvard University. 2001. 100

[4] Alison Smithson. *How to Recognise and Read Mat-Building---- Mainstream Architecture as It Has Developed Towards the Mat-Building*. edited by Hashim Sarkis, eds. *CASE: Le Corbusier's Venice Hospital and the mat Building Revival*. Harvard University. 2001. 99

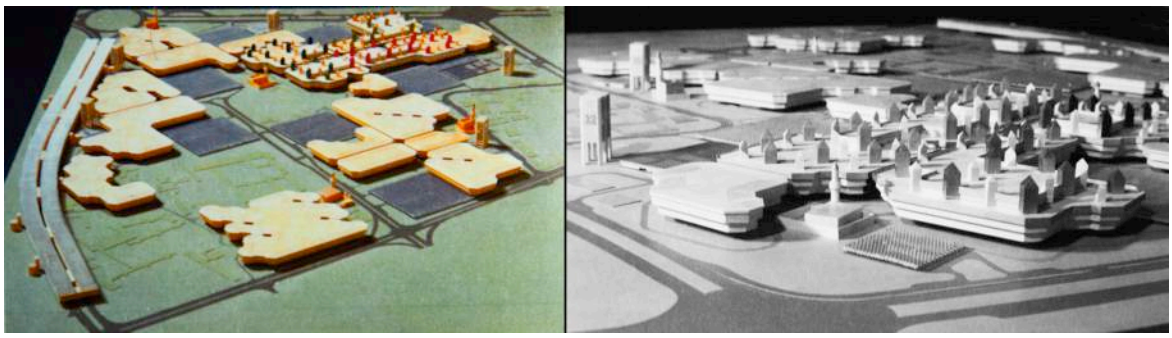

Fig. 4-31 A&P.S.: Model of KUWAIT CITY

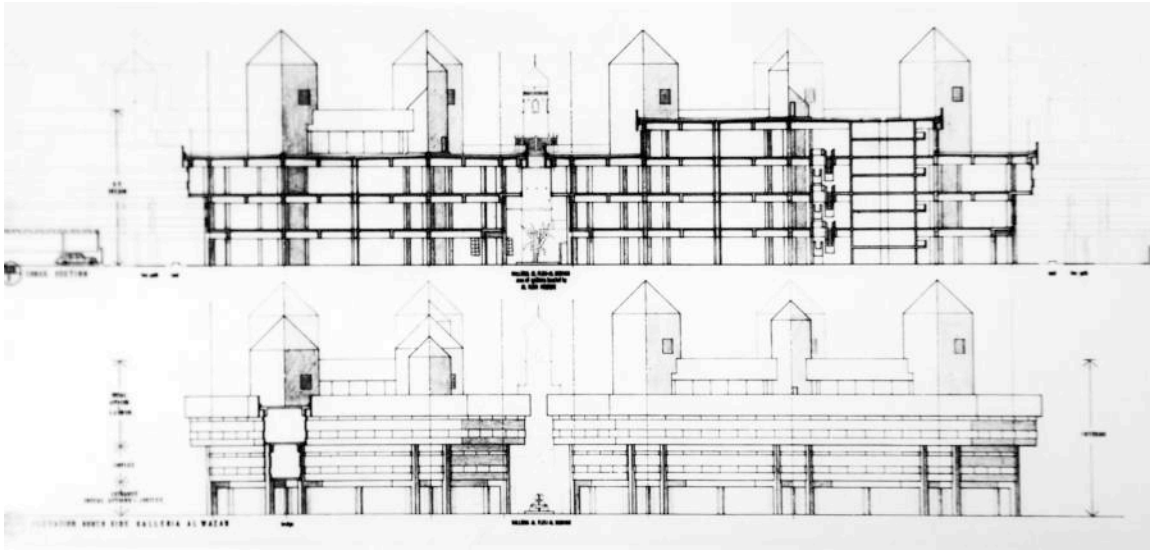

Fig. 4-30 A&P.S.: Elevation and a section of the demonstration building

Fig. 4-29 A&P.S.: Site Plan of KUWAIT CITY

4.3.2. Aldo van Eyck

Different from Alison and Peter's contribution in theory research and designing practice, Aldo van Eyck devoted his life in extending and researching the thought of mat building in the teaching field, as a great tutor.