The experience of contacting with Le Corbusier and avant-garde artists during the 1930s and 1940s shaped Aldo van Eyck's thought in the phenomenological experience of new urban environments. In 1940s, Aldo van Eyck Aligned with Giedion and Le Corbusier in supporting the concept of "synthesis of arts", to "create a new environmental synthesis reflective of new social realities based on the relations between things"[1]. In the CIAM 9 (Aix-en-Provence, 1953), Aldo van Eyck and Alison and Peter Smithson presented their housing work of "habitat" against the functional city urbanism of the Athens Charter, arguing that CIAM (should) discard its "Western rationalistic bias" and attempt to understand how these cultures used forms (which) survived through millennia.[2] Then the Team X was established.

During 1955-1960, Eyck designed the Orphanage, or Children's Home (Amsterdam, Netherlands), which combines the traditional designing elements, including the classic, the modern and the vernacular tradition of spontaneous building. Alison Smithson commended the project that "recognizable for the mat it undoubtedly was –its import as harbinger of change—for the internal language was very dense, and the skin extremely impenetrable in all senses of the word. So soon after the Brynmawr Factory, its factory overtones are heavy on the eyes."[3]

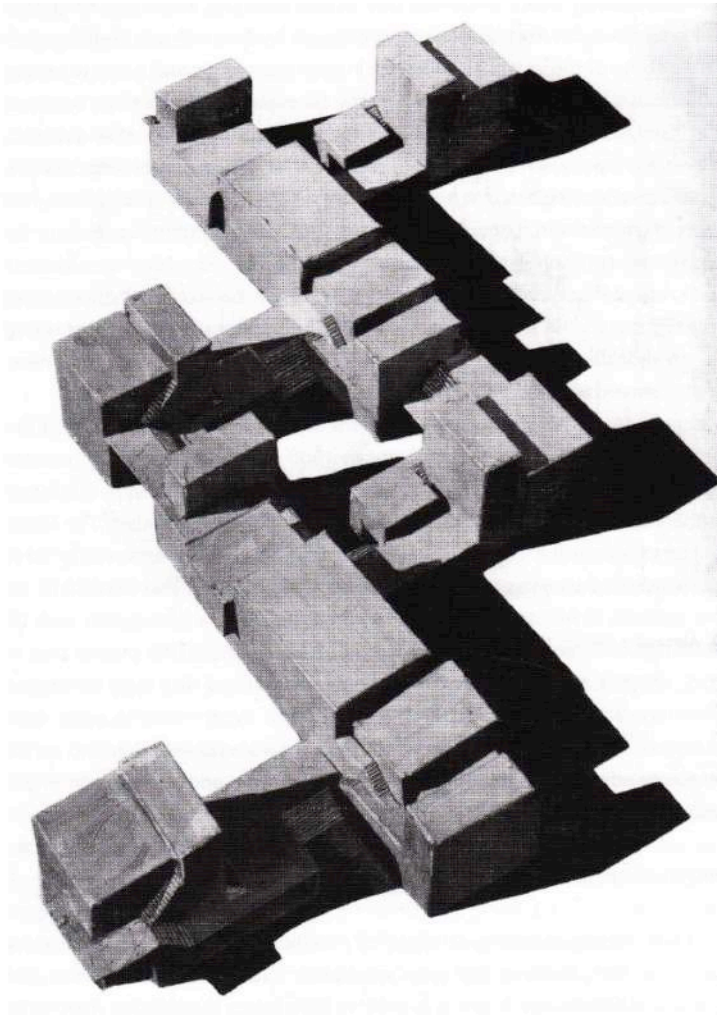

Fig. 4-32 Piet Blom. "The Cities Will Be Inhabited Like Villages" 1958
Source: Published in Forum, vol.14, no.15

[1] Eric Mumford. *The Emergence of Mat or Field Buildings*. edited by Hashim Sarkis, eds. *CASE: Le Corbusier's Venice Hospital and the mat Building Revival*. Harvard University. 2001. 50

[2] Eric Mumford. *The Emergence of Mat or Field Buildings*. edited by Hashim Sarkis, eds. *CASE: Le Corbusier's Venice Hospital and the mat Building Revival*. Harvard University. 2001. 52

[3] 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. 97

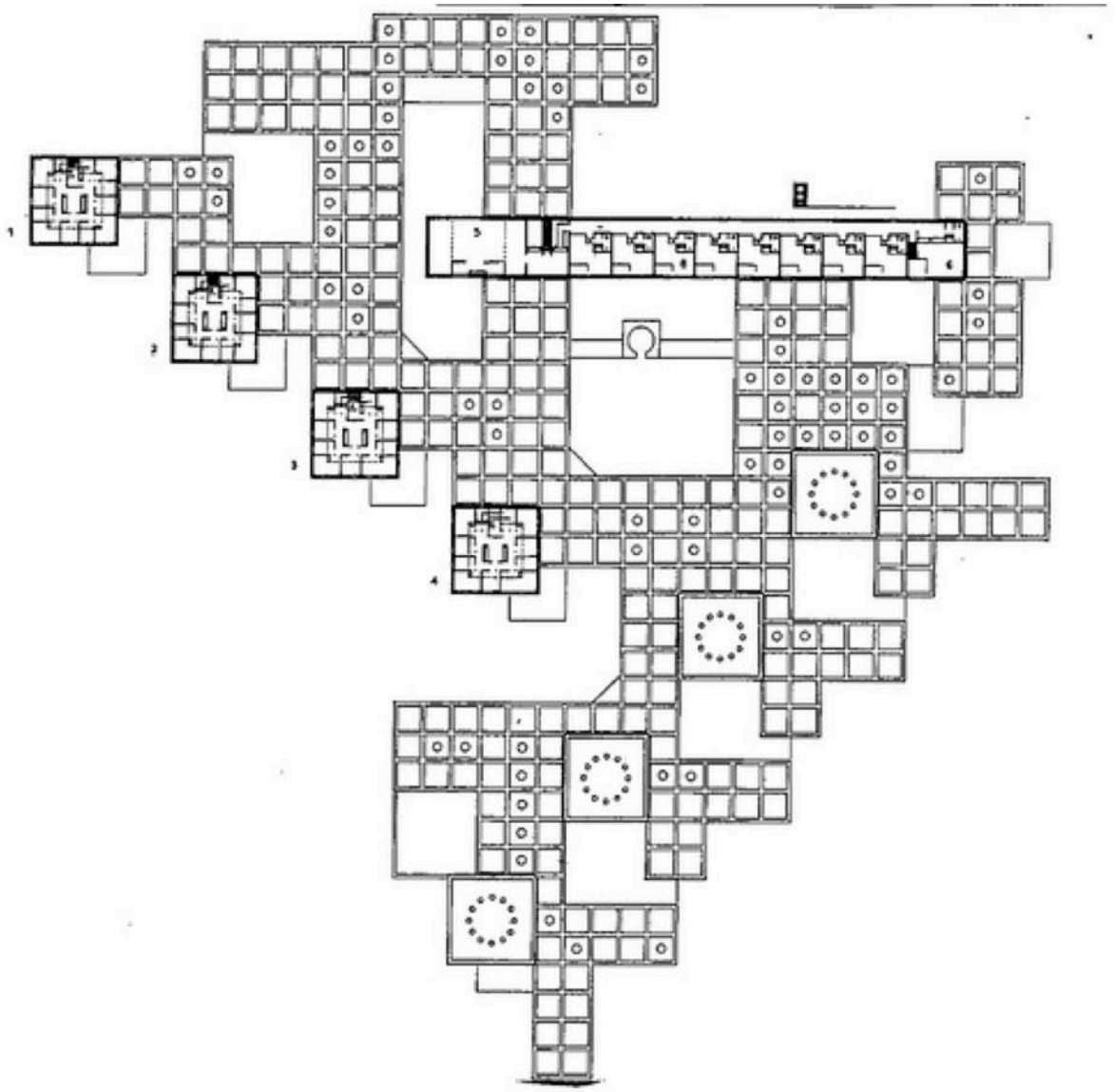

Fig. 4-33 Amsterdam Municipal Orphanage 1955-60
Source: J. Rykwert, V. Lightelijn. *Aldo van Eyck, Works.* Birkäuser Verlag; 1999: 88-109

In the last CIAM conference (1959), Aldo van Eyck presented the student project titled "The Cities Will Be Inhabited Like Villages" by his student, Piet Blom, to illustrate the new configurative direction. The project was to illustrate the archetypal image behind it, "vers une casbah organisée"(toward an organized casbah), which derived from the Moroccan work of ATBAT-Afrique. Although the attitudes of Aldo van Eyck and the Smithsons, the "organized casbah" and the "street decks, clustering, and local culture", bifurcated on the configurative approach, Aldo van Eyck supported Piet Blom to expend his idea and create more projects, such as "Noah's Ark"(1962) and "A Village of Children" (1963). Aldo van Eyck's another student, Hermann Hertzberger, designed the Central Beheer Office Building (Apeldoorn, The Netherlands, 1968-72) was recognized "in retrospect the use of a highly determined system to promote contingency demonstrates fluency in (mainstream) mat building"[1].

[1] Timothy Hyde. *How to Construct an Architectural Genealogy Mat-Building…Mat-Buildings…Matted*. edited by Hashim Sarkis, eds. *CASE: Le Corbusier's Venice Hospital and the mat Building Revival*. Harvard University. 2001. 109

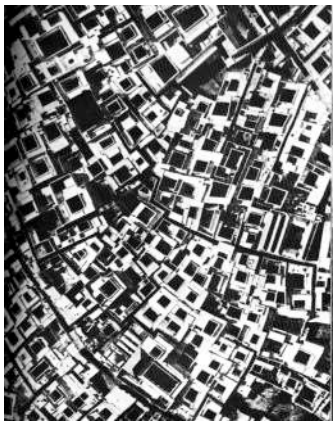

Fig. 4-37 Casbah of Marrakech in Morocco
Sourse: Bernard Rudofsky. Architecture Without Archtects: A Short Intoduction to Non-Pedigreed Architecture. 1987

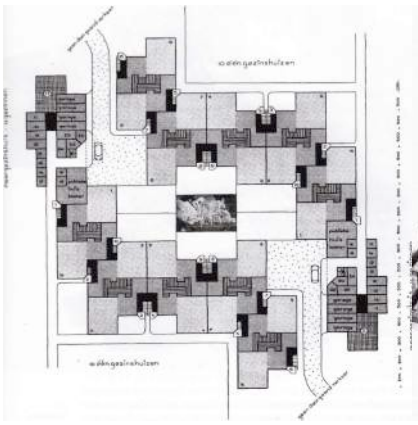

Fig. 4-38Piet Blom. "Practical Planning Exercise" Slotermeer Housing Student Project, 1959
Source: Published in Forum, vol.14, no.15

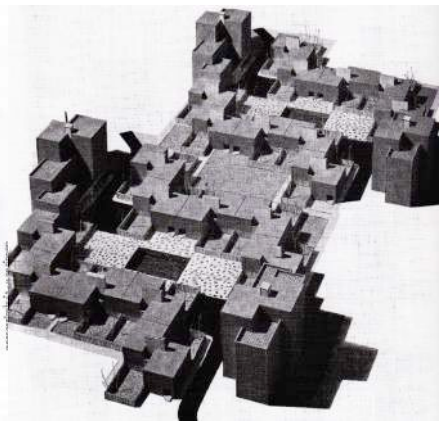

Fig. 4-39 Piet Blom. "Practical Planning Exercise" Slotermeer Housing Student Project, 1959
Source: Published in Forum, vol.14, no.15

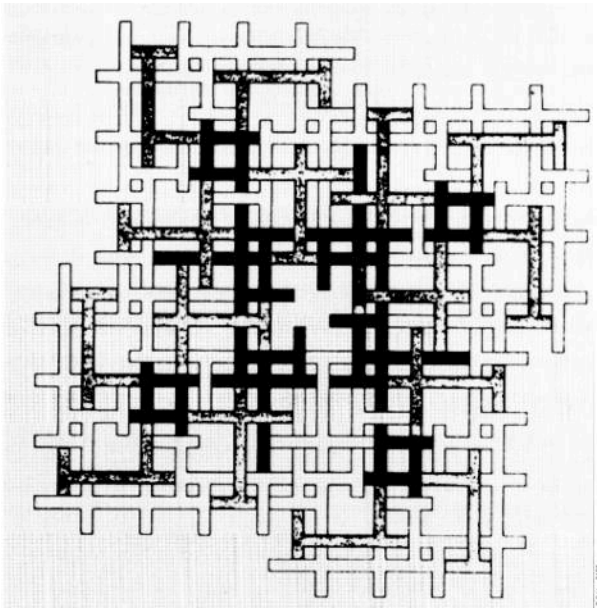

Fig. 4-35 Piet Blom, "Noah's Ark" Project
Source: *CASE: Le Corbusier's Venice Hospital and the mat Building Revival*. Harvard University. 2001. 59

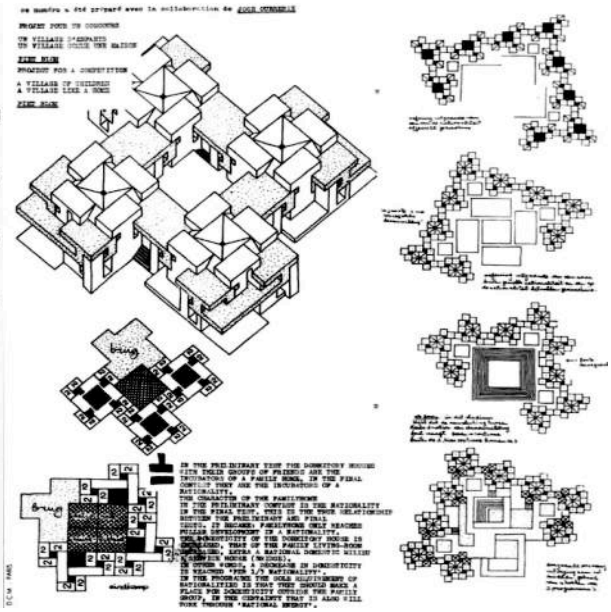

Fig. 4-34 Piet Blom, "A Village of Children" 1963
Source: Published in *Le Carré Bleu2 (1963*) with Jullian de la Fuente's*"notes on Royaumont."*

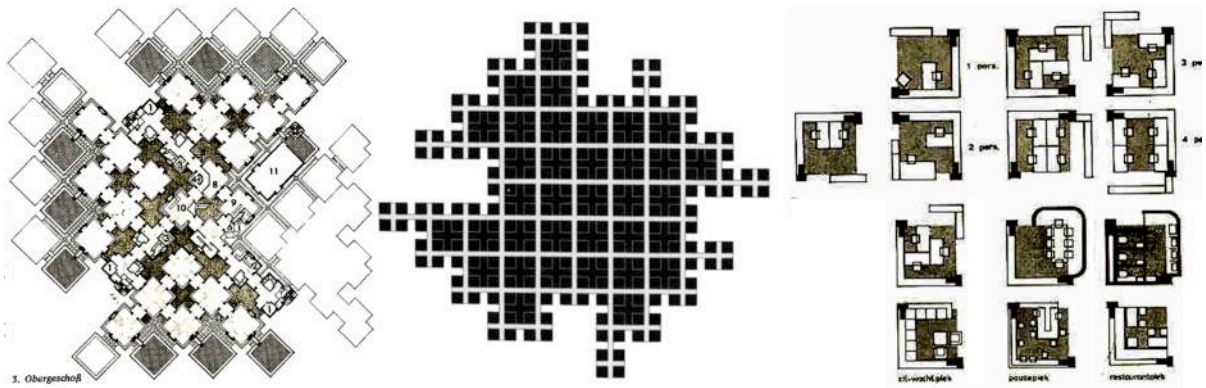

Fig. 4-36 Hermann Hertzberger, Central Beheer Office Building (Apeldoorn, The Netherlands, 1968-72)
Source: *CASE: Le Corbusier's Venice Hospital and the mat Building Revival*. Harvard University. 2001. 109

4.3.3. Candilis, Josic and Woods (CJW)

George Candilis, Alexis Josic and Shadrach Woods were the great and devoted practicers of the mat building concept since 1955 when the partnership was established. Their great contribution in the field of mat building lays in the classic works and designing notions, which improve the community environment and spatial experience in both the levels of architecture and urban design, in short "the entire life-world of the dwelling". CJW's architectural designing and thought are considered as the model or milestone in the evolution of mat building, guiding and enlightening the other architects.

Early in the 1950s, Candilis and Woods started their architectural design practice in the North Africa. The designing practice in ATBAT helped them to establish the cognition of dwelling community. Different from the main thought in Athens Charter or early Le Corbusier which gained the greatly sustentation from CIAM, Candilis and Woods advocated the "habitat" instead of "dwelling", which means the entire life-world of the dweller rather than primarily the housing unit. "These debates were part of the generational change that eventually led the loose coalition of former CIAM youth members know as Team 10 to end CIAM in 1959."[1] The projects enlightened the architects engendering new thoughts. Le Corbusier in his late years realized the limitation and inaccuracy in his early thought, and produced the design of Venice Hospital. Aldo van Eyck got the elicitation from the projects, and developed the thought of "une casbah organisée" (an organized casbah) with his student Piet Blom. The notion of the dwelling projects

On the base of the dwelling complex in the North Africa, Candilis, Josic and Woods summarized and developed the existing designing experience, and derived the new thought in urban design, named "stem" and "web". And the ideas were implemented in the projects of Berlin Free University and ones in the early 1960s. The articulation of space Candilis-Josic-Woods attained the preference from the Smithsons, Le Corbusier and other architects and theorists. Jürgen Joedicke commented the projects as "the human endeavor to create spaces for particular human activities" and "generate a new method of formal expression that loosely linked the various program elements in ways that allowed for continuous flexibility and change".

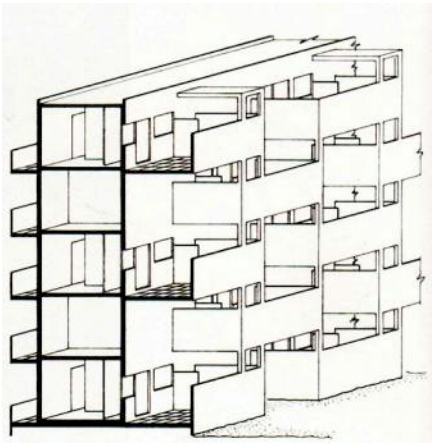

Fig. 4-40 Atbat Maroc Housing by Candilis, Woods. 1953
Source: J. Joedicke. *Candilis Josic Woods: Una década de arquitectura y urbanismo*. Barcelona: EDITORIAL GUSTAVO GILI, S. A. 1968:76

Fig. 4-41 Atbat Maroc Housing by Candilis, Woods. 1953
Source: RISSELADA, Max; HEUVEL, Dirk van den (ed.). *TEAM10: 1953-81 – In Search of a Utopia of the Present*. Rotterdam: NAi Publishers. 2005:29

[1] Eric Mumford. *The Emergence of Mat or Field Buildings*. edited by Hashim Sarkis, eds. *CASE: Le Corbusier's Venice Hospital and the mat Building Revival*. Harvard University. 2001. 50

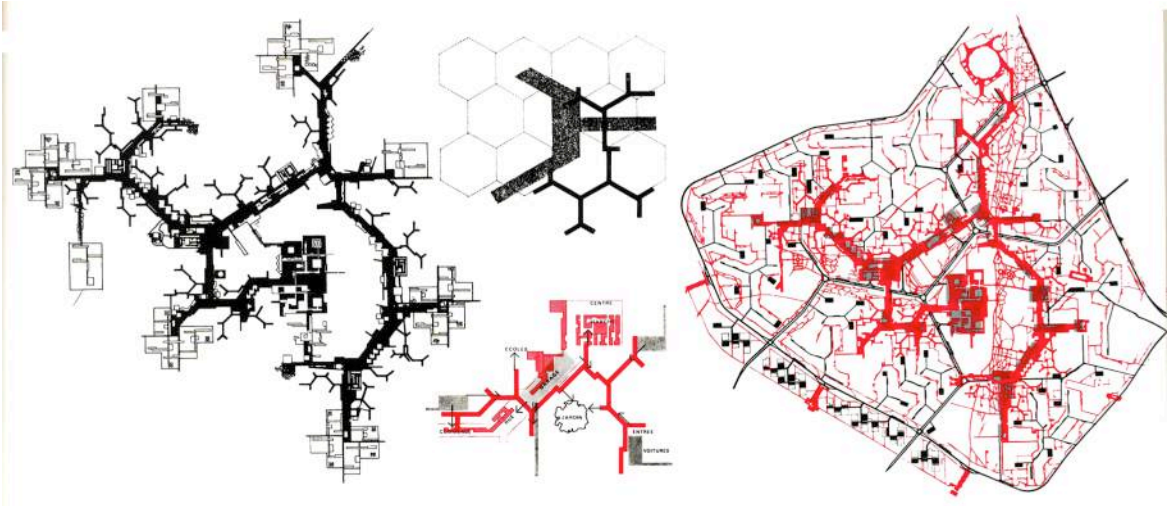

Fig. 4-42 Toulouse Competition: CJW. 1961
Source: J. Joedicke. *Candilis Josic Woods: Una década de arquitectura y urbanismo*. Barcelona: EDITORIAL GUSTAVO GILI, S. A. 1968:185-186

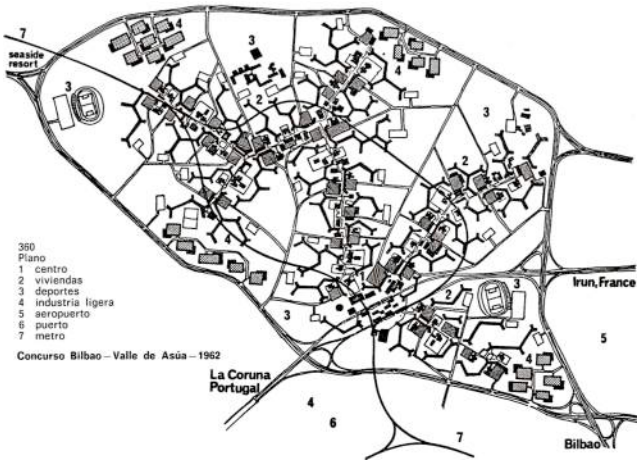

Fig. 4-46 Concurso Bilbao: CJW. 1961-1962
Source: J. Joedicke. *Candilis Josic Woods: Una década de arquitectura y urbanismo*. Barcelona: EDITORIAL GUSTAVO GILI, S. A. 1968:194

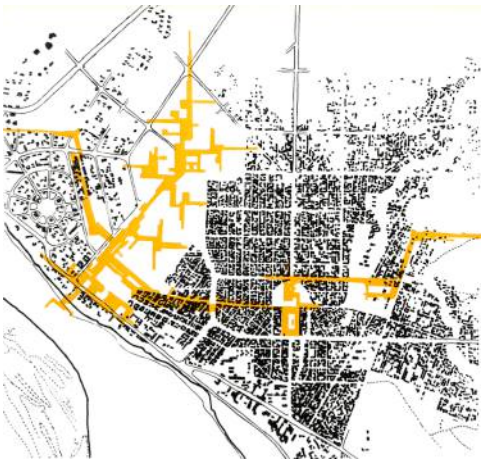

Fig. 4-45 Fort Lamy: CJW. 1964-1965
Source: J. Joedicke. *Candilis Josic Woods: Una década de arquitectura y urbanismo*. Barcelona: EDITORIAL GUSTAVO GILI, S. A. 1968:193

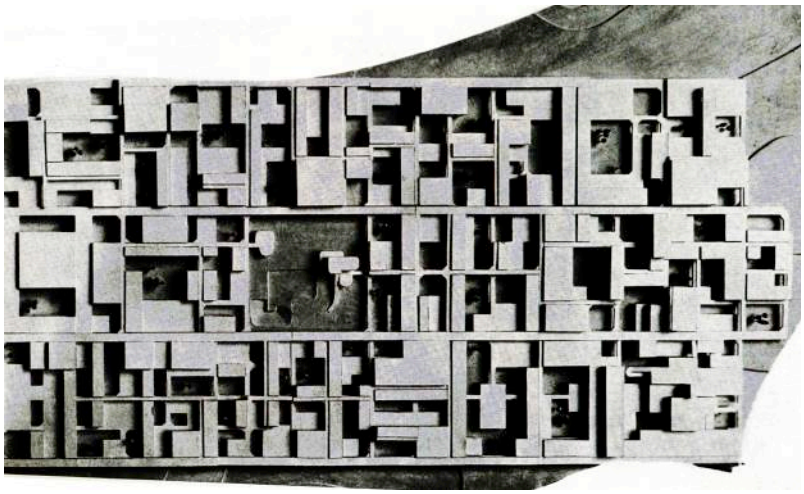

Fig. 4-44 Berlin Free University First Studies: CJW+Schiedhelm. 1963
Source: J. Joedicke. *Candilis Josic Woods: Una década de arquitectura y urbanismo*. Barcelona: EDITORIAL GUSTAVO GILI, S. A. 1968:194

Fig. 4-43 Bochum University Competition: JCW. 1963
Source: J. Joedicke. *Candilis Josic Woods: Una década de arquitectura y urbanismo*. Barcelona: EDITORIAL GUSTAVO GILI, S. A. 1968:195

4.3.4. Le Corbusier

Le Corbusier has a special place in the evolution of mat building. He, considered as "the ultimate symbol of the CIAM", moved in what might be called a "proto-Team 10" direction in the 1940s, a direction anticipated in his earlier career and one that became evident with the Venice Hospital Project.[1]

[1] Eric Mumford. *The Emergence of Mat or Field Buildings*. edited by Hashim Sarkis, eds. *CASE: Le Corbusier's Venice Hospital and the mat Building Revival*. Harvard University. 2001. 50

Chapter 5. RENEW DESIGN

博观而约取，厚积而薄发。

Refined selection bases on broad erudition, cautious action comes from profound accumulation.

——苏轼《稼说送张琥》[1]

5.1. General Introduction

In Chinese traditional wisdom, the action mode is the core topic concerned. And our forebear advised that cautious actions should base on the broad accumulation and profound consideration. The renewal design of traditional buildings is the same. Each decision of renew design should be made on the profound cognition of the renew object (traditional building complex), the renew strategy (strategies of mat building) and the supervisory mechanism (application and renew notion). The three contents play the specific and irreplaceable roles in the final renewal design process. Any deficiency in objects cognition or design strategy would lead destroys or even demolishment to the traditional buildings. John Ruskin expressed his misgivings in *Lamp of Memory* of the *Seven Lamp*: *`It means the most total destruction which a building can suffer: a destruction out of which no remnants can be gathered: a destruction accompanied with false description of the thing destroyed… Do not let us talk then of restoration. The thing is a Lie from beginning to end. `*

In the part, the main content is the renew design process. The introduction follows the logic order, divided into three stages: preparation, renew design and evaluation. In the preparation stage, the introduction focuses on the cognition preparation and comparison analysis, which ensure the feasibility of the renew design. In the renew design process, the statement introduces the concrete measures in the renew design process, arranging according to the scale order, from the urban planning level to architectural design level and structure detail level. The concrete measures in this stage combine both the mat building strategy and the cognition thought, which provide the strategies and direction for the renew design. And the final evaluation is the inspection and amelioration stage for the renew design, summing the experience of renew design and establishing the reference for the related renew design. In the same time, a simulation renew case would be present for further analyzing the renew design process, and exam the renew design strategy in practice.

5.2. Relevant Cases

During the last 6 year researching in the field, I realized that I may be not an senior expert on mat building or renew design, while, I'm the first scholar getting the idea of introducing modernism design strategies, the designing strategies of mat building, to renew design the existing oriental building complexes in normal condition, and dedicate in proving and practicing the idea. So, there're no perfect cases precisely matching the concept.

According to the topic of the research, the main content of the research includes three main aspects: strategies of mat building, traditional building complex and renew design. Thereinto, the concept of traditional building complex, in function, is composed mainly by dwelling houses; while, in form, the traditional building complex is the building complex, which means that the building complex is as the collection of complex functions and organization strategies. Several cases are selected in "mat" dwelling community, "mat" building complex and traditional building renew three aspects to partially prove the feasibility of the concept, and finally provide the comprehensive theories and experiences support for the renew design process in the research.

[1] The author, SU Shi (1037~1101AD), sent some counsel to his friend, ZHANG Hu.

5.2.1. Mat Dwelling Community

Key words: Mat Strategy & Dwelling Community

Since the emergence of the mat building, the pioneers of the idea focused their attention on solving the urban problems with architectural measures, and constructing new dwelling communities was an urgent task at the time. The pioneers tried to introduce some new ideas or strategies and, in the same time, maintain some traditional spatial characters in their designing process. So a serious of "mat" dwelling communities emerged.

While in the research, the renew design objects are mainly dwelling buildings with high density. The "mat" dwelling communities as reference provide the applicable strategies in managing the similar condition in traditional dwelling communities.

Case 1: CJW: Dwelling Projects

CJW is the abbreviation of Gorge Candilis, Alexis Josic and Shadrach Woods. Gorge Candilis, a Greek architect, met Shadrach Woods, an American architect, in the Paris office of Le Corbusier in 1948, and then they established the ATBAT Africa (Atelier des Bâtisseurs). In 1956, Alexis Josic, a Yugoslavian architect, joined the group and created the firm Candilis-Josic-Woods. Their designs introduce the urban element to provide the diversity and flexibility for the clients. Their dwelling projects in North Africa and public building complexes in European greatly enlightened the architects at the time, such as Aldo van Eyck, A&P Smithson, and even Le Corbusier especially in his last few years, and their thought of architectural design combined with that of other architects and formed the style of mat buildings.

Muslin buildings include a courtyard lying in the center and a series of rooms with diverse functions surrounding. The courtyards ensure the light and ventilation condition, and provide a platform with multifunction, which is one of the essential characters of traditional Muslin buildings.

The series of ATBAT Africa dwelling projects aimed to meet the growing population in the Moroccan cities. The architects endeavored to maintain traditional spatial characters and essential functions of Muslim residence while reducing the cost and enriching the types of apartments in order to adapt to the diversity of local families. The accommodations applied the Le Corbusier's "Modular" and strengthened the application of staircase. The traditional dwelling yard is transformed into the vertical low-level arrangement: the balcony replaces the yard ensuring the physical demands and multi-functional platform; the living and bed rooms set around the balcony following the traditional living pattern; the crossing arrangement in elevations ensures the equally physical acquisition and the communication spaces. The diversity of flat types was also well considered in the design. Low-level, modular plan and repeating arrangement greatly reduced the cost of the new constructed buildings and the made the designing experience wildly spreading in the territory.

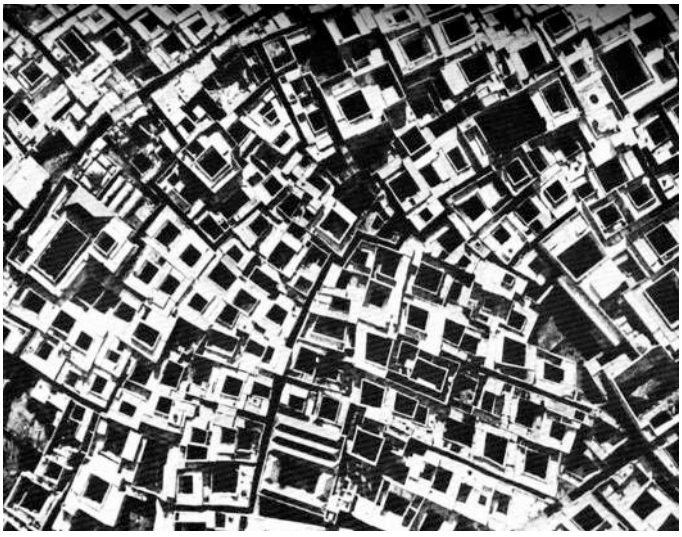

Fig. 5-1 Traditional Casbah----Jacqueline Tyrwhitt's presentation at CIAM IX and X

Source: TEAM10: 1953-81. NAi Publishers. 26

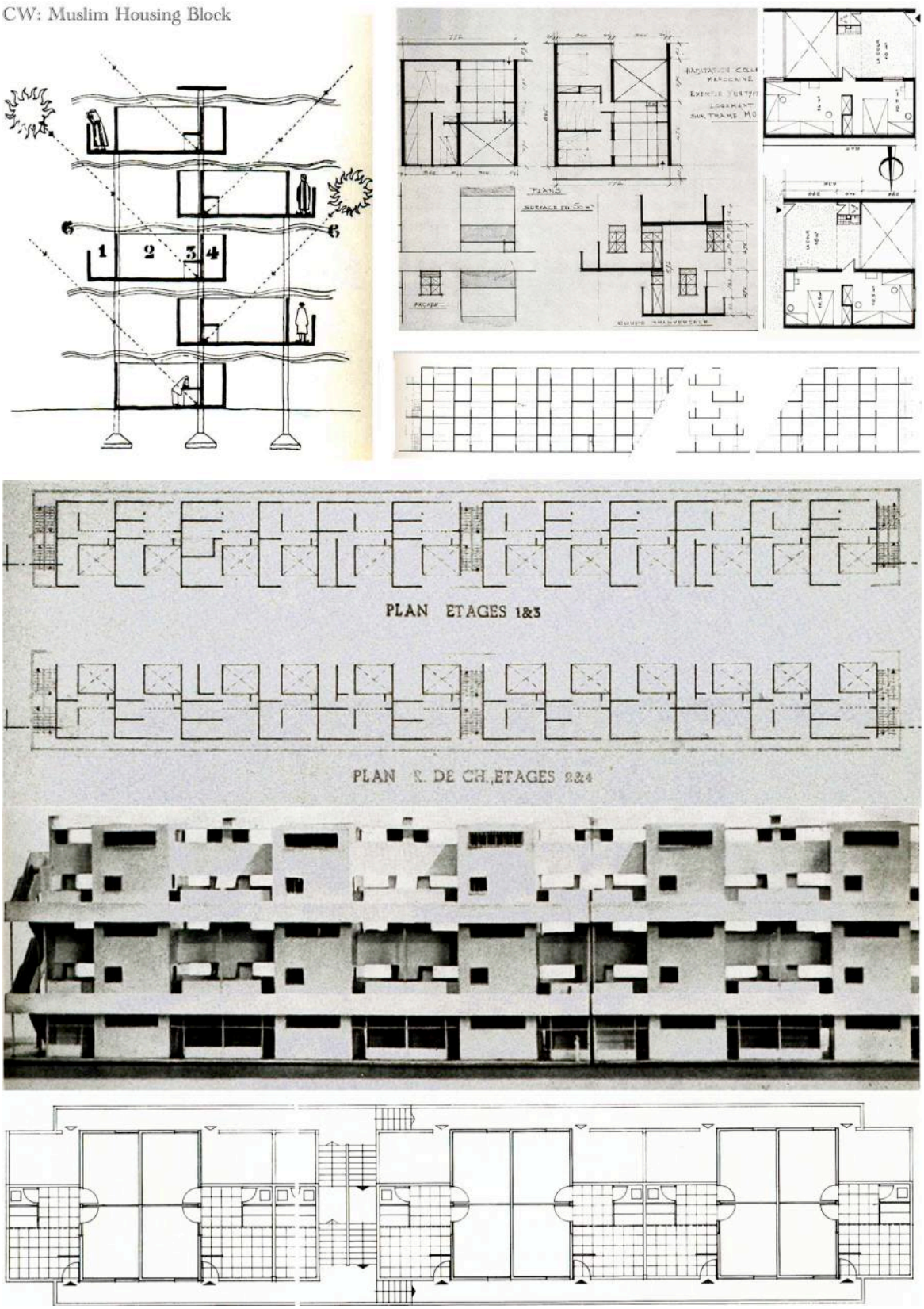

Fig. 5-2 CJ: Muslim Housing Block
Source: J. Joedicke. *Candilis Josic Woods: Una década de arquitectura y urbanismo.* Barcelona: EDITORIAL GUSTAVO GILI, S. A. 1968

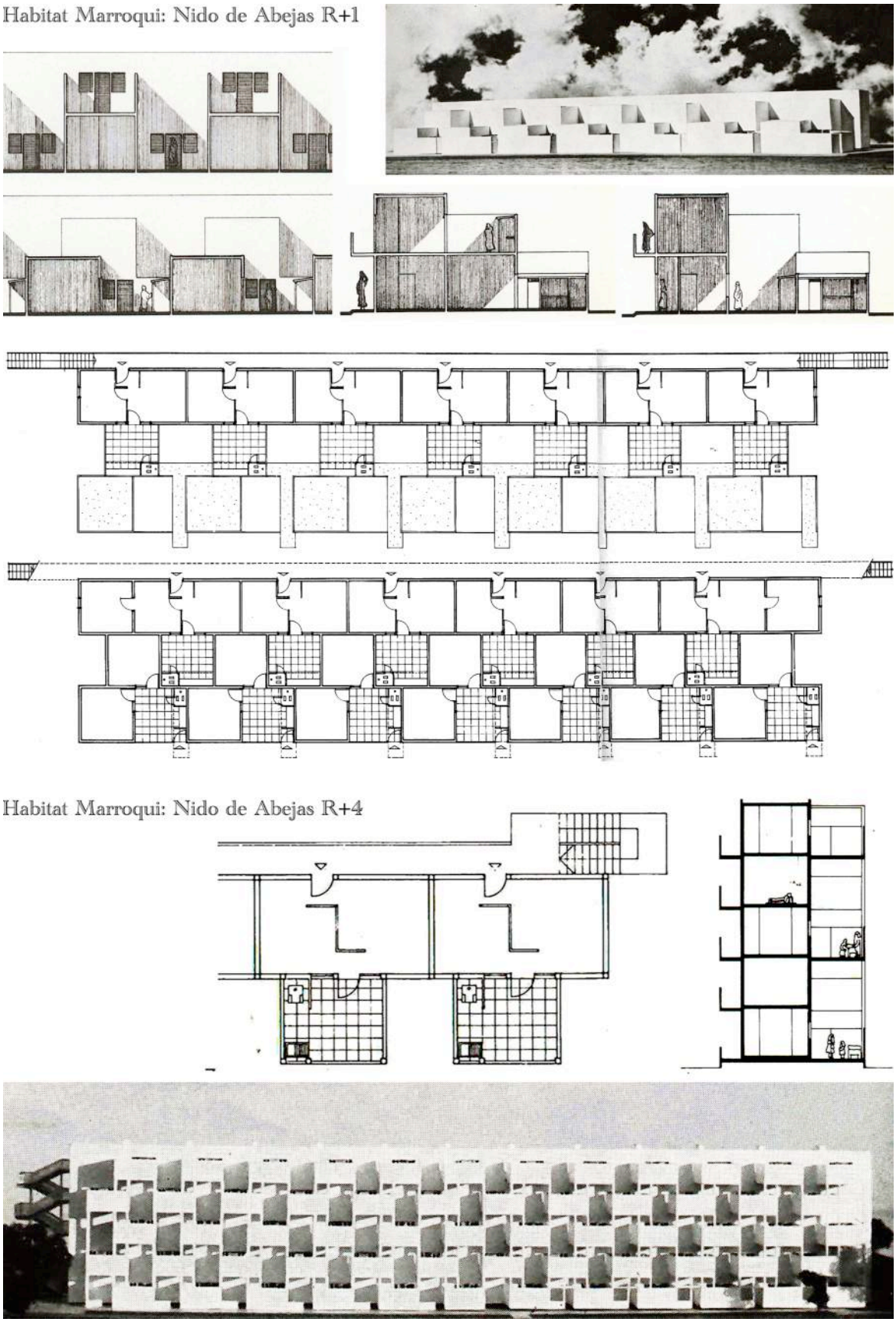

Fig. 5-3 CJW: Habitat Marroqui
Source: J. Joedicke. *Candilis Josic Woods: Una década de arquitectura y urbanismo.* Barcelona: EDITORIAL GUSTAVO GILI, S. A. 1968

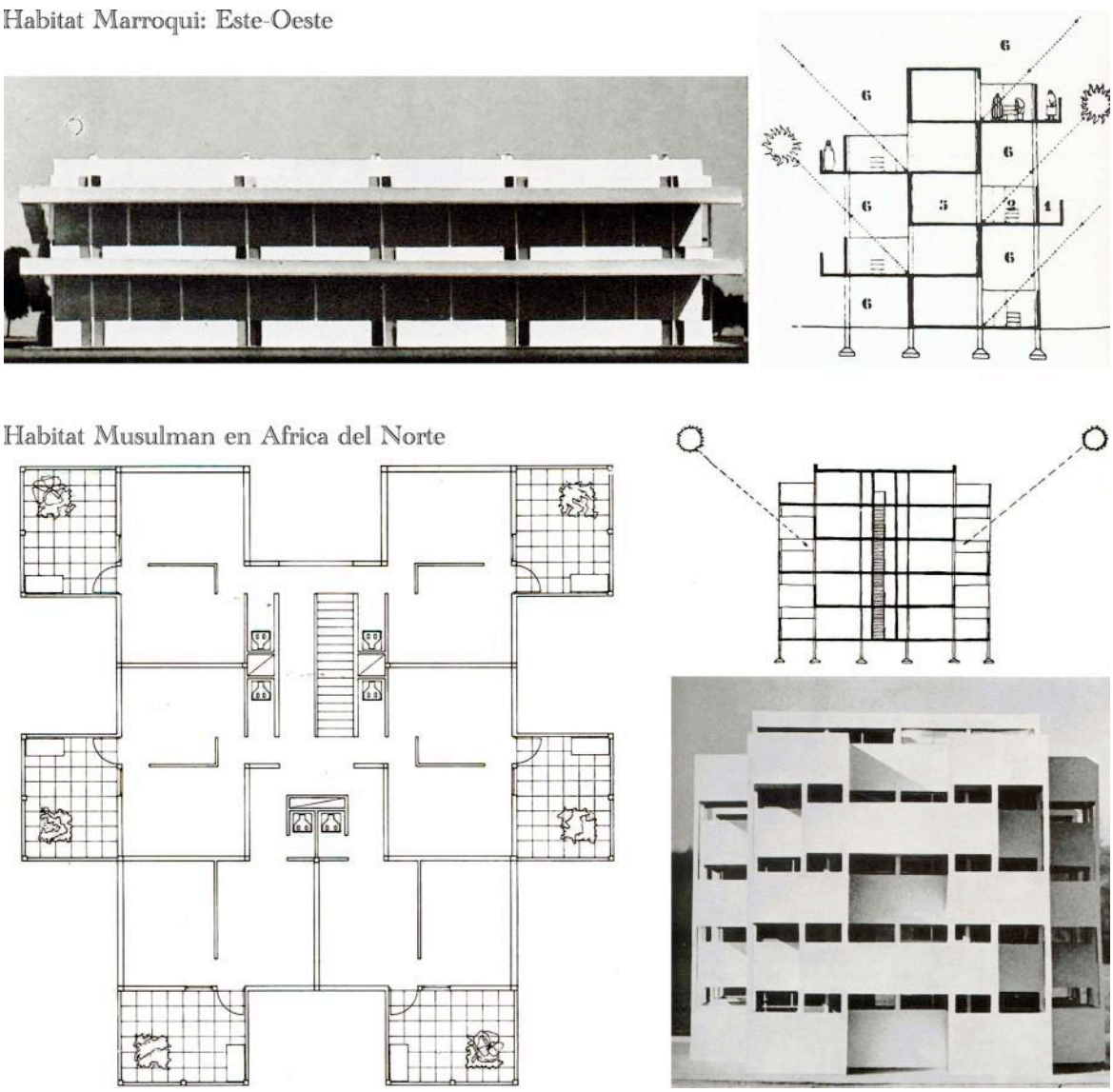

Fig. 5-4 CJW: Habitat Marroqui
Source: J. Joedicke. *Candilis Josic Woods: Una década de arquitectura y urbanismo.* Barcelona: EDITORIAL GUSTAVO GILI, S. A. 1968

Case 2: Aldo van Eyck & Piet Blom: City, Village, House

Different from CJW, Aldo van Eyck, a professor of Delft University of Technology, and, his student, Piet Blom proposed a diverse answer in reconstructing the traditional dwelling community. Their ideas were proposed in two articles: *The City will Inhabited like Villages* and *A Village is like a Home*.

The City will Inhabited like Villages describes the scheme for a new residential quarter for about 800 inhabitants on the outskirts of Amsterdam. Based on a building block, a *bouwsteen*, with 24 dwellings of different sizes, layouts, and types of access, the project was in stark contrast to the slab blocks of uniformly stacked flats that dominated contemporary residential developments. These living modules were conceived so that they could be grouped into clusters and rows, forming series of courtyards and interstitial spaces, and eventually adding up to an entire neighborhood or quarter. Blom described his 'Cities like Villages' scheme as 'a plan that forces people to live together'. It was born out of the desire to ‘create a communal dwelling in which the dividing walls could be torn down so that men would be more complete in number and association. Forcibly, the fact is that there

is no dualism between individual and collective existence. It means striving towards giving life a greater chance to express itself fully.

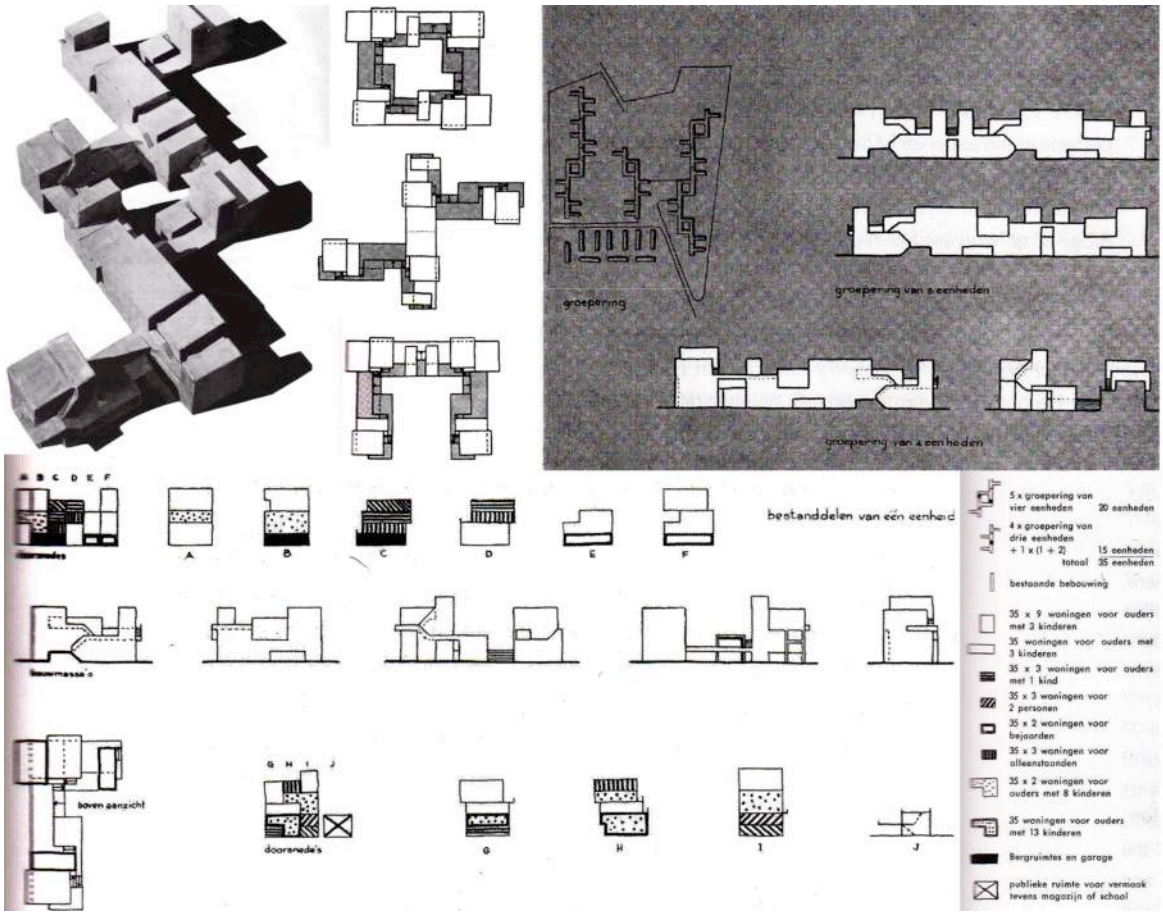

Fig. 5-5 The City will Inhibited like a Villages
Source:

In a similar spirit, in 1962 Blom chose to call his winning entry to the Prix de Rome - a scheme for a children's village - 'A Village like a House', stating that 'the village hall must be more like an open square than a building, and, inversely, the village square must be less a square than a building'. His plans were based on an understanding that urban living and urban space are inherently complex and ambiguous, and his project title echoed directly Aldo van Eyck's phrase that 'a house must be like a small city, a city like a large house'. There is a suggestion here that urban space should be conceived in terms of domestic space, or even that the urban should be thought of as externalized domesticity and the domestic as internalized urbanity. Blom’s aim was to break away from dualistic concepts of public and private and the simplistic correlation of inside with the domestic and outside with the urban realm. In Blom’s projects, this was to be achieved primarily through intricate layouts, in which each flat, house and courtyard was involved in a range of different spatial and social orders. In such a way, it was hoped, inhabitants would identify with their environment.

Different from CJW’s reconstructing the traditional building patterns, Aldo van Eyck and Piet Blom focused their attention on the diversity and communication. In their plans, Piet Blom introduced the diversity composing unit and community space into the design of building complex.

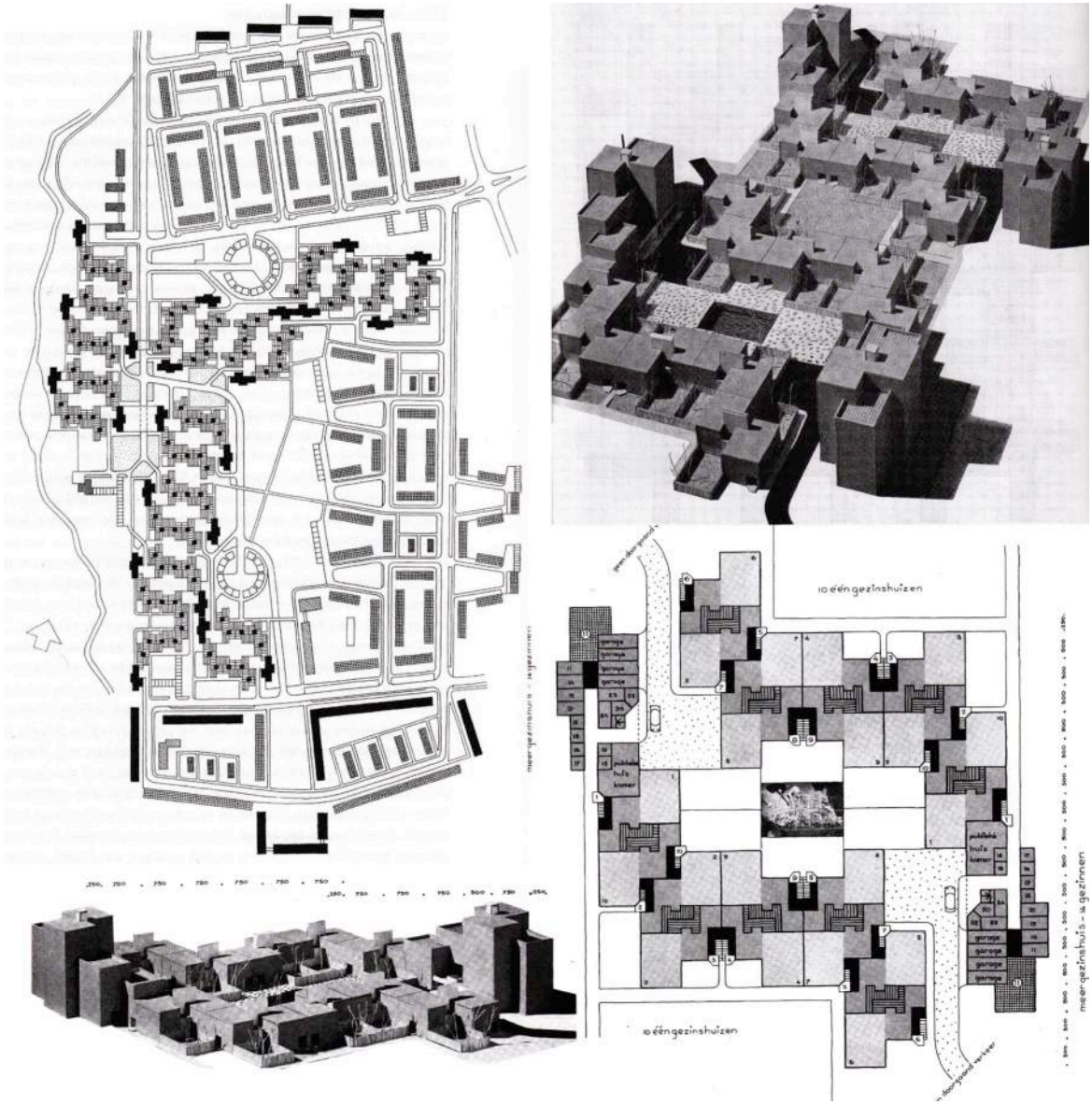

Fig. 5-6 A Village is like a Home
Source:

Case 3: Giancarlo de Carlo: Villaggio Matteotti Housing Estate, Terni

Giancarlo de Carlo, an Italian architect, participated in CIAM, and was a member of the Team 10. His design and planning works were strongly influenced by the thought of libertarian socialism. In the design process, he got a well consideration about the given context, including the human, physical, cultural, and historical events.

In the project of *Villaggio Matteotti Housing Estate*, a sociologist and the potential residents involved in the design process. De Carlo determined some clear principles: the separation of pedestrians from vehicle traffic, an outdoor space for every dwelling, communal zones and amenities, a 'né frammentaria né a blocco' building typology (for instance low-rise, high-density), varied dwelling types, and flexible dwelling layouts. The residents also demanded the direct entrance, parking facilities and modifying the individual floor plan. The first phase of construction consisted four elongated blocks of three residential stories, plus a fifth block of two stories. The plan consists an orthogonal pattern of linear, parallel strips of houses and streets, as appropriate to the flatness of the site. The estate is laid out in accordance with De Carlo's idea of structuring it as an organized

composition on a large scale that facilitates individual expression on a smaller scale. The parts and the whole are united by a ‘mediating organizational system’, a three-dimensional network of circulation and amenities. The elevated pedestrian street runs on top of the garage, parallel to the road with which it communicates by vertical access points. A supplementary system of elevated paths links this main system of Pedestrian Street transversely, and consists partly of a system of bridges that connect each block to the one facing it across the road. The considerable variety of housing types is typical of the project. There are fifteen different apartment types, each of which may be laid out internally in three different ways. The apartments are grouped together in continually changing arrangement; individual apartments may project or recede, and the resulting pattern differs per floor. Monotony is also avoided through the system of private and semi private terraces and balconies, which together form ‘a mass of greenery’.

In my view, the Giancarlo de Carlo’s dwelling design combines the ideas of CJW and Piet Blom. De Carlo reconstructed the traditional dwelling communities with modern construction way, remained the original space and community characters, and introduced the diversity and flexibility in the organizing strategies. In the design, De Carlo got a clear operational strategy, a traditional community form and the social organization, which means that De Carlo simulated a micro-society with an operational strategy in the form of architecture. Although not a strictly defined “mat building”, the project possesses the multi-merits of “mat”.

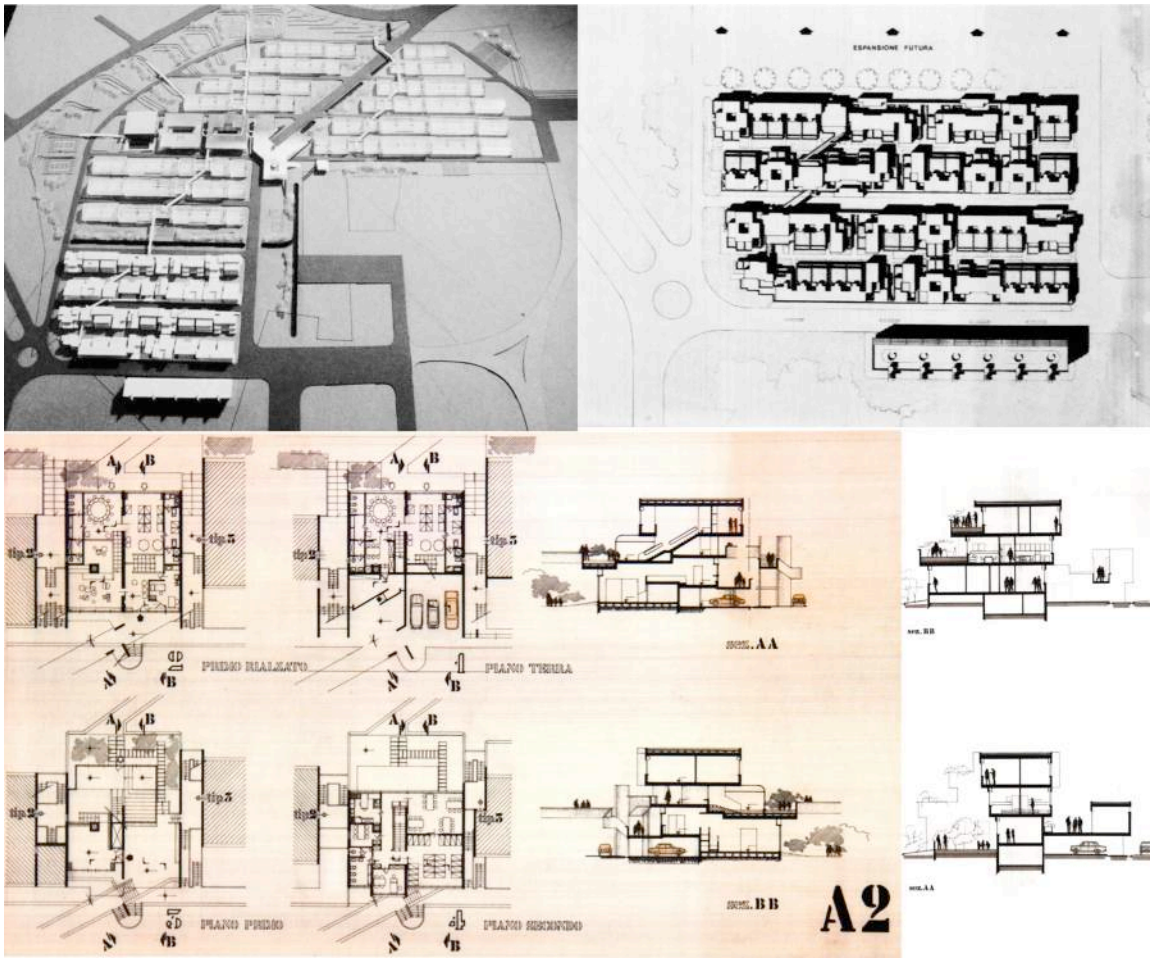

Fig. 5-7 Plans and Sections
Source: TEAM10: 1953-81. NAi Publishers.

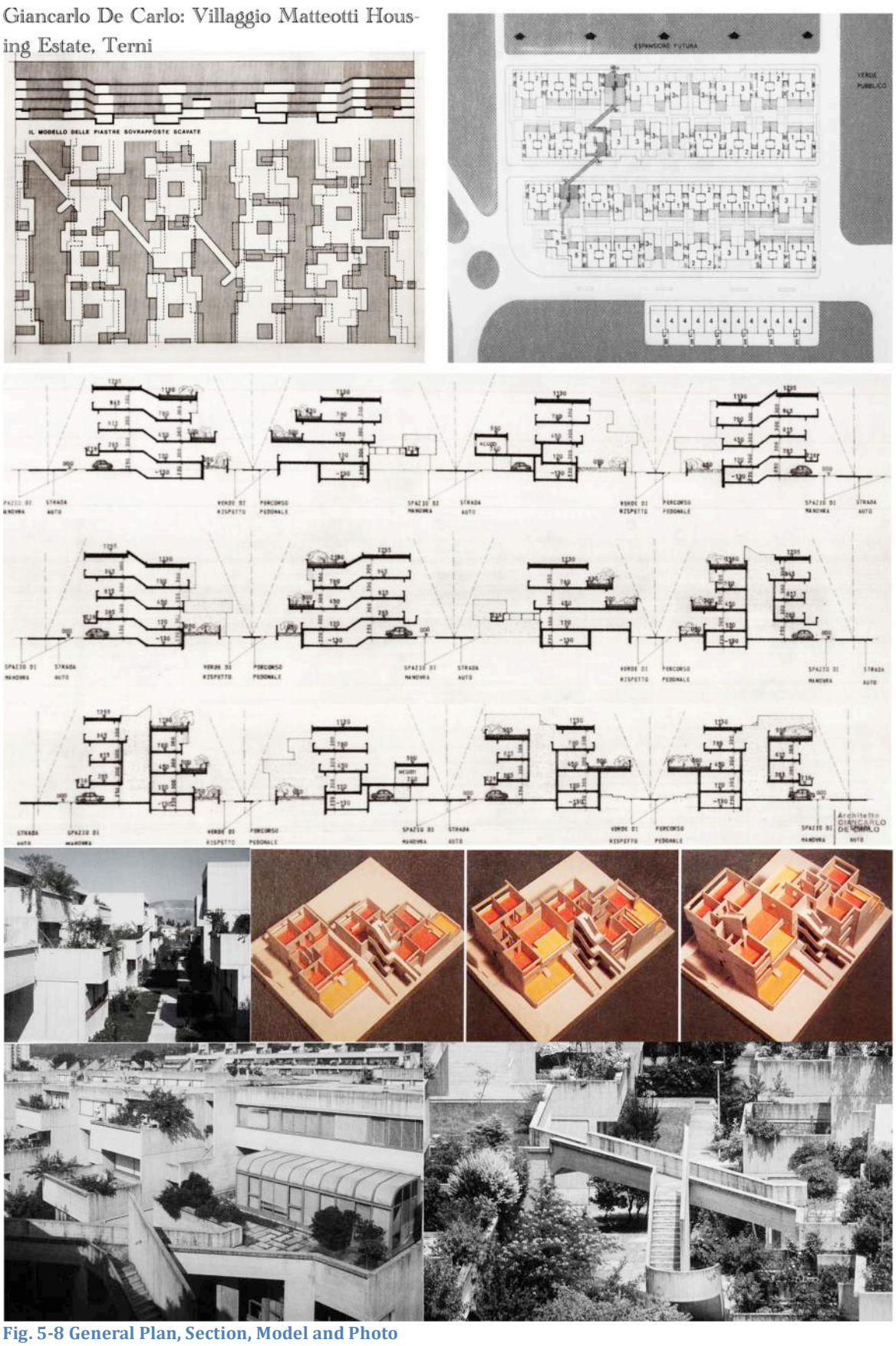

Fig. 5-8 General Plan, Section, Model and Photo
Source: TEAM10: 1953-81. NAi Publishers. 26

5.2.2. Public Building Complex

The development of the modern industry and society promotes the progress in constructing technology and materials, and also leads to the aggregation in architectural design. Responding to the aggregation trend, most buildings chose to extend in vertical direction, which leads to the emergence of skyscrapers. The mat buildings chose a different solution, extension in horizontal level. The emergence of the building complexes with huge horizontal scales objectively accommodates the complex functional combination in public buildings.

In the research, the giant "mat" public buildings well express the design strategies of mat building, such as operational strategy, matrix phenomenon, functional texture, etc. These design experiences would be useful to the potential renew designs.

Case 1: CJW: Free University of Berlin + Frankfurt Römerberg

Berlin Free University: The competition for the Free University of Berlin (Germany, 1963) makes it clears that the web concept is a critique not only of the separation of urban functions but also of the application of high-rise typology for certain programs. In a number of sketches, Woods illustrates that forcing a university into a skyscraper results in 'planes of isolation', which abolish contact between separate disciplines. Woods suggests using a low-rise alternative: 'in a ground scraper organization greater possibilities of communication and exchange are present.'

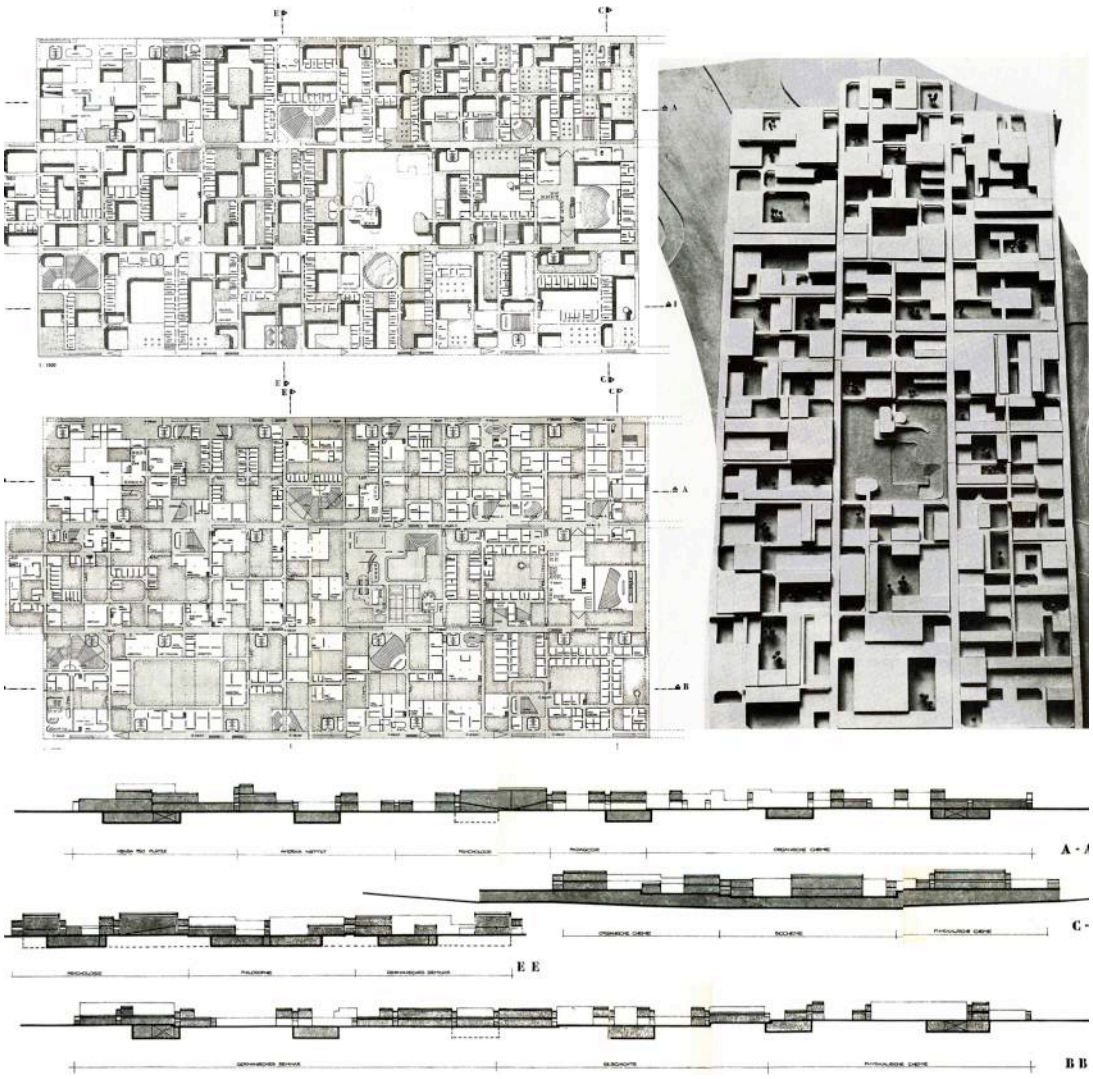

Fig. 5-9 Plan, Model, Section

Source: J. Joedicke. Candilis Josic Woods: Una década de arquitectura y urbanismo. Barcelona: EDITORIAL GUSTAVO GILI, S. A. 1968

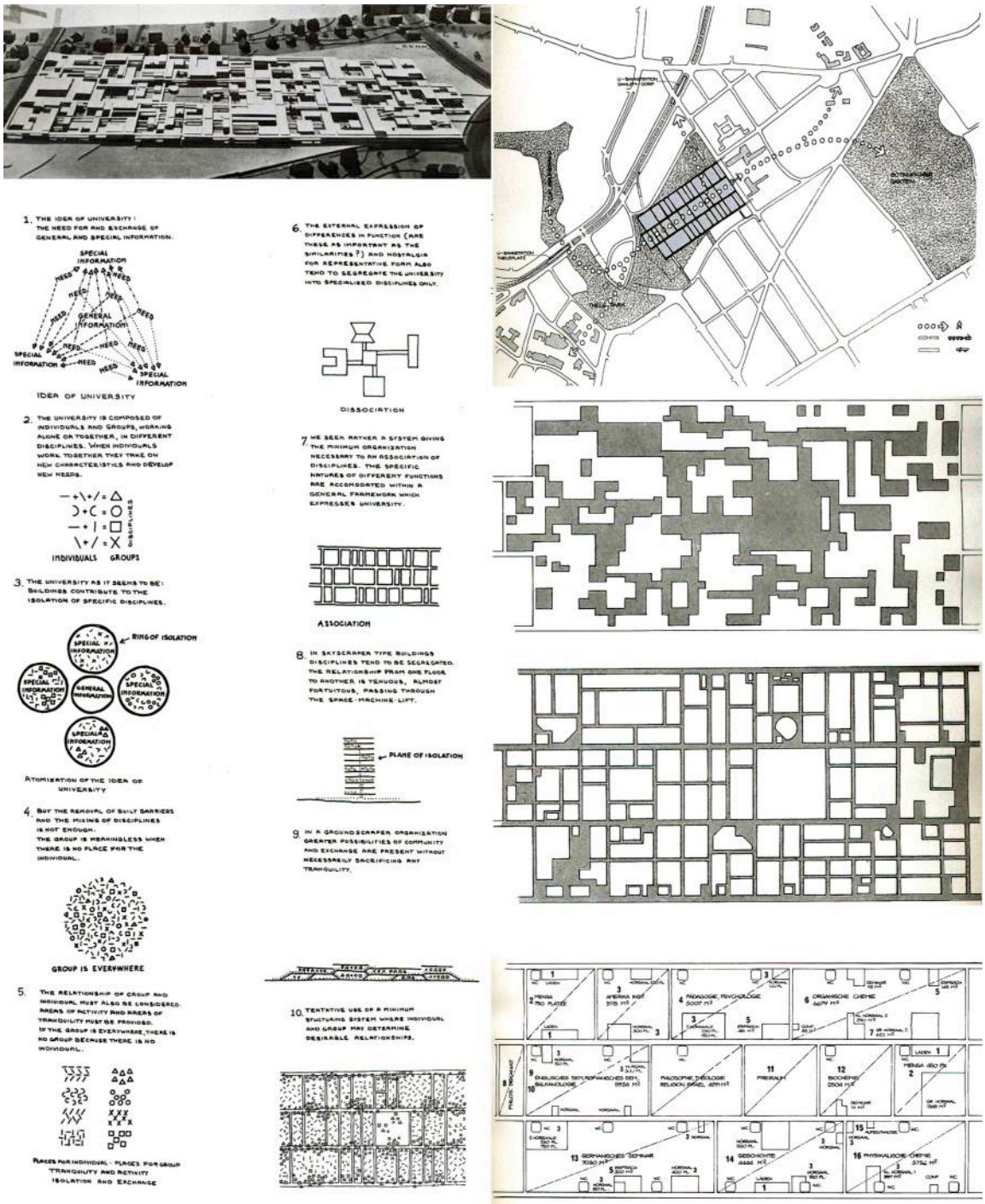

Fig. 5-10 Analysis
Source: J. Joedicke. Candilis Josic Woods: Una década de arquitectura y urbanismo. Barcelona: EDITORIAL GUSTAVO GILI, S. A. 1968

Frankfurt Römerberg: '….the site is occupied in such a way that the various activities of the public and private domains are housed in what amounts to a continuous buildings.' The competition design for Frankfurt Römerberg was the first to make the potential of the web concept patent. CJW attempted to design 'a system must be devised that will leave the citizens free to create an environment which will offer the maximum facilities and which evolve rapidly in accordance with needs.' First, a number of large, buildable platforms (three floors) are supported by regular grid of columns at 9m intervals in adjusting the urban fabric. A 36*36m grid of pedestrian routes is superimposed on the platforms, and a

network of utility services is placed under the pedestrian axes, as in traditional streets, allowing buildings alongside the street to connect to these services. Finally, the pattern of openings in the platforms was perforated in many places to reduce the buildable surface area, but also created opportunities to design buildings that extend over multiple stories. The interpretation of the web as a minimal structure within which the city can develop autonomously recalls Oskar Hansen's proposal to approach architecture as 'Open Form'.

Fig. 5-11 Plan and Section

Source: J. Joedicke. Candilis Josic Woods: Una década de arquitectura y urbanismo. Barcelona: EDITORIAL GUSTAVO GILI, S. A. 1968

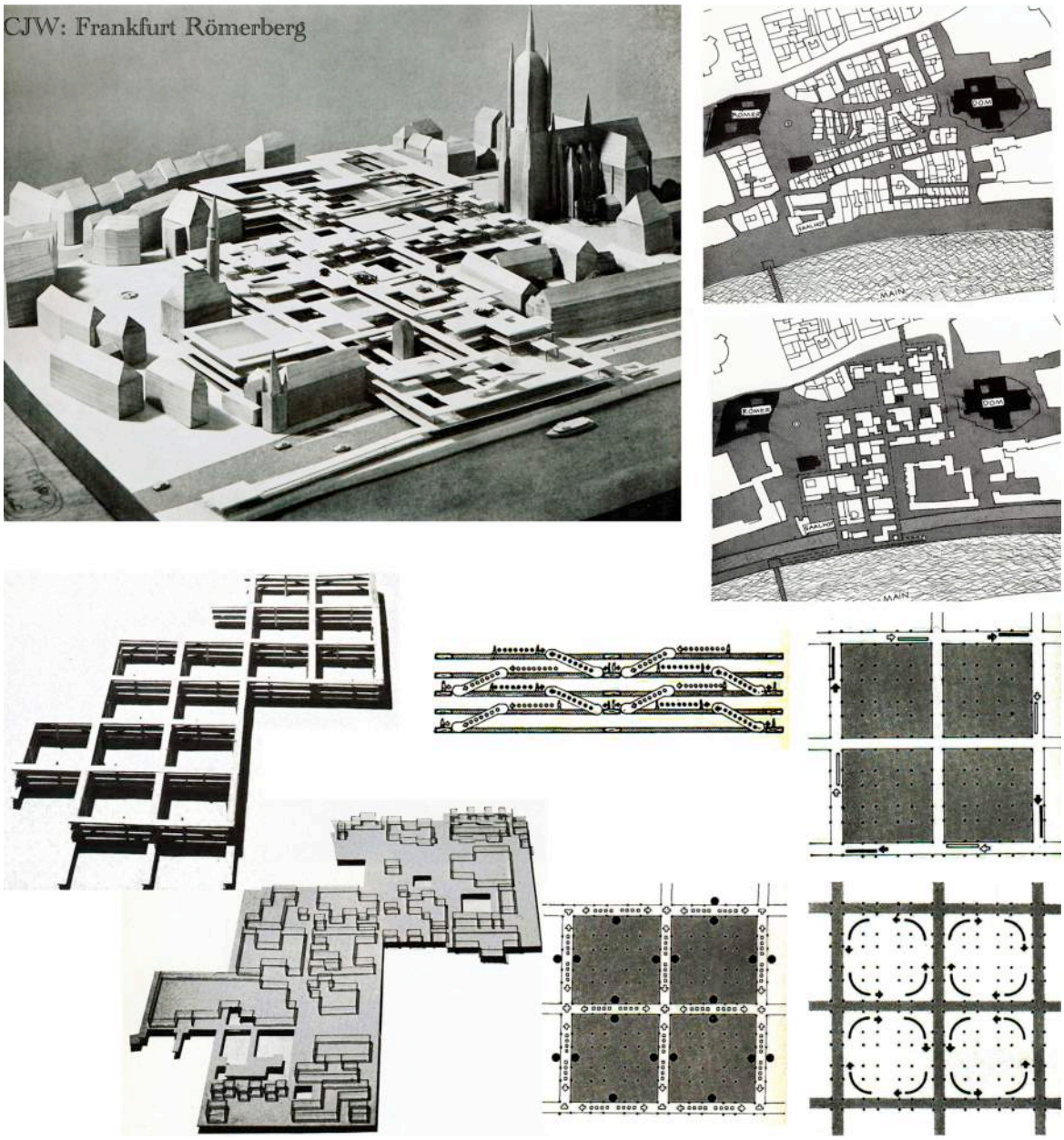

Fig. 5-12 Model & Analysis
Source: J. Joedicke. Candilis Josic Woods: Una década de arquitectura y urbanismo. Barcelona: EDITORIAL GUSTAVO GILI, S. A. 1968

Case 2: A&PS: Kuwait City Competition

A&PS: Alison Smithson and Peter Smithson, English architects, established the architectural partnership, and are associated with the New Brutalism. Since 1960s, they started "mat" style architectural design. In 1974, Alison published the article How to recognize and read Mat-Building, in which first defined the concept of mat-building and cleared up its evolution process.

"…Kuwait must have a quality all her own… something the world recognize as Arab tradition… We are proposing a city with a low profile to contact with the water, a city easy to move around on foot in the shade in every direction without vehicle, a city with its best features restored and put to use" "For the urban fabric of Kuwait we have worked towards a new sort of interchangeable cell-structure, the size of the cell unit and its organization being equally suitable for several functions. This interchangeability is analogous to that of the

simple Arab town in which cells could change from house to workshop, to bakery, or to souk…as mat-building" "The mat-building grid is twenty meters square, and is adhered to in all area as a governing constant to carry all the whims and variations as site boundaries and interstitial interventions" The "mat-building" is supported on pilots. The study for the mat-building was developed in greater depth, to a considerable degree of organizational, technological and structural detailing, in the subsequent project for the government offices, presented in 1970.[1] The elevators send people to all levels.

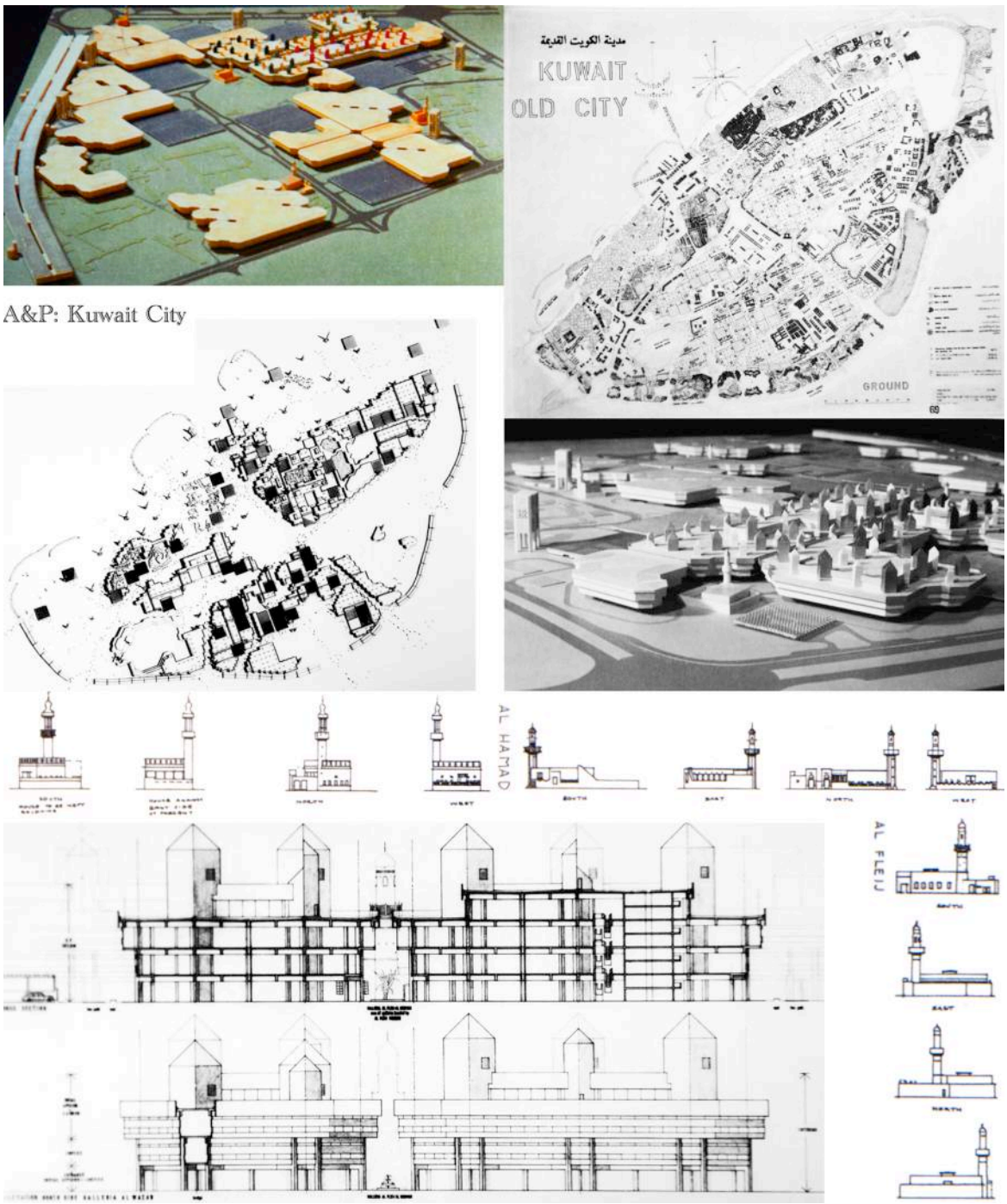

Fig. 5-13 General Plan, Model, Section and Detail of Kuwait City Competition
Source: Marco Vidotto. Alison&Peter Smithson. Ed. Gustavo Gili, 1997:138-143

[1] Marco Vidotto. Alison&Peter Smithson. Ed. Gustavo Gili, 1997: 138-142

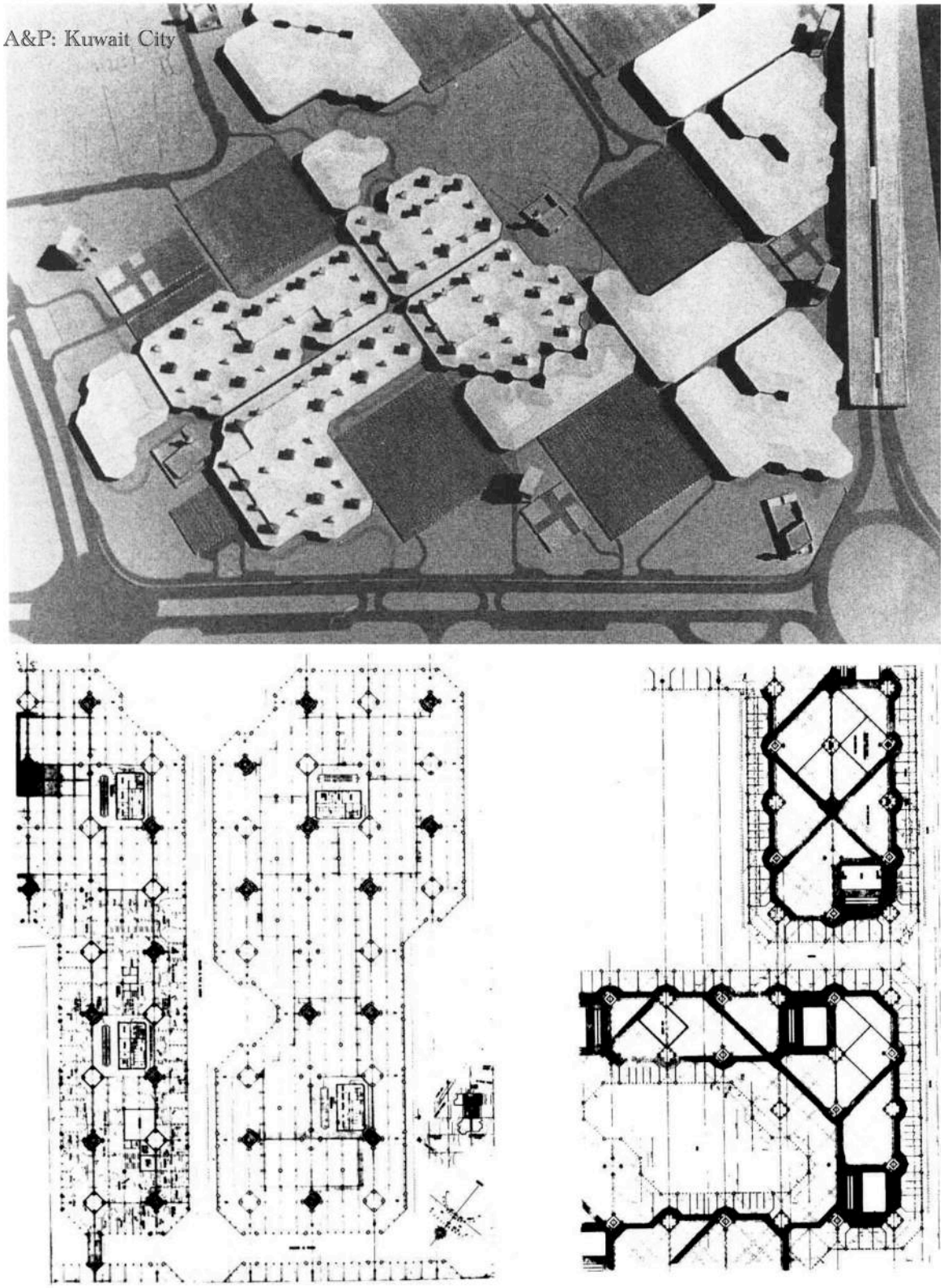

Fig. 5-14 Plan of Kuwait City Competition
Source: Marco Vidotto. Alison&Peter Smithson. Ed. Gustavo Gili, 1997:138-143

Case 3: Le Corbusier: Venice Hospital, Venice

Enlightened by CJW's projects in North Africa, Le Corbusier introduced the concept of Habitat into the design of Venice Hospital.

1 Environment: the design is in the height of 13.66 meters, which corresponds to the average height of buildings in the city. The patios were arranged the hospital to introduce the segments of city into the building.

2 View: the main functional floor of the hospital was raised up the second level and left the first level empty, which remains the sight and access of the public from city to the beach.

3 Unit: the hospital consists with the essential units: the elevator and the patio are the core, surrounding with corridors and functional spaces. The units repeat in the order of Fibonacci sequence.

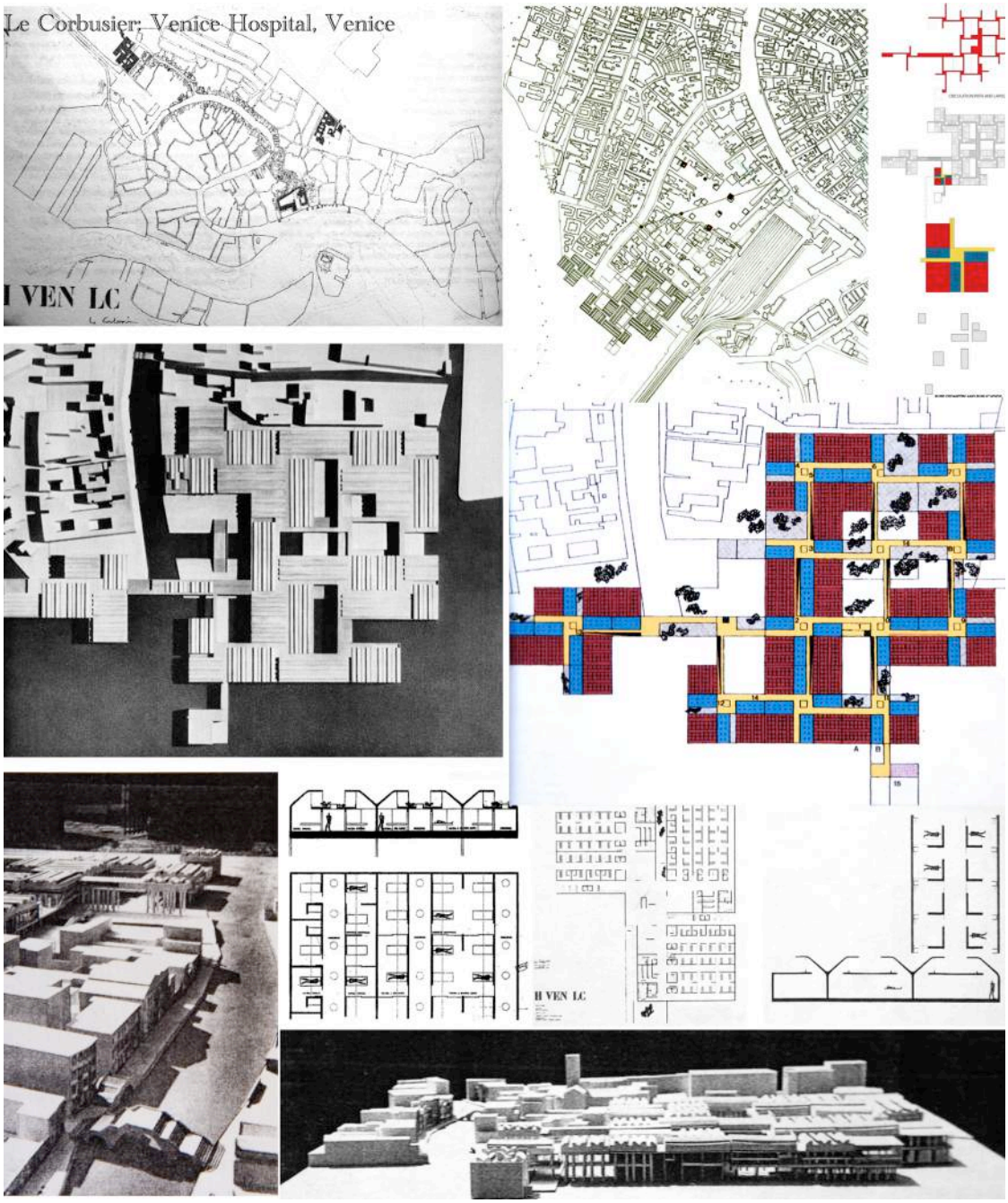

Fig. 5-15 General Plan, Model, Plan, Detail

Source: Hashim Sarkis, eds. *CASE: Le Corbusier's Venice Hospital and the mat Building Revival*. Harvard University. 2001.

4 City: the patio and public activities are introduced into the building, which means the urban activities are introduced into building. So the building becomes a segment of the city.

Case 4: Urbanus: Dafen Art Museum

Urbanus is an Avant-garde courier architectural studio in China established in 1999, leading by LIU Xiaodu, MENG Yang and WANG Hui. Their works include "HUA" Art Museum, Tangshan Museum, Wanke Experience Center and Dafen Art Museum. [1]

Dafen Art Museum sets in the Dafen Village, Shenzhen, which is famous for its art industry allover China. The Dafen Village was as other normal villages around composed with crowed low buildings and dense road system; with the fast development in the recent years, the low buildings are replaced by high-rise buildings, while the dense road system remains. The special pattern of the buildings and the street system forms the specific texture of the village. With the sustainable development of the village, the texture of the village transforms. The art studios and citizens' activities alone the streets generate the energy in the village.

The Site of Dafen Art Museum locates in the center of the village, and several community roads gather here. The architects well considered the original characters of the village, especially the relationship between the existing village texture and the village energy. The final design carries out in two aspects: road system and building pattern.

First, the roads organize the design. As mentioned the site was the converging point of several community roads, the architects arranged two main paths crossing the museum. The two paths connect the original exterior roads and organize the interior visiting lines. The existing activities of local villagers would not be blocked by the new-constructed museum. And the original road system in the communities is introduced into the museum to organize the exhibition rooms.

Second, the building pattern extends the texture of the village. From the images, we know that the light roof or the interior exhibition rooms simulate the texture of the village around. The construction of the museum do not destroy the existing texture of the village, inverse, the museum transforms itself into part of the texture. The museum is part of the village.

According to the late two points, the design of the museum perfectly introduces the community activities into the building through the paths and building pattern, which simulate the texture and organization of the village and make the museum as part of it. The measures extend the activities in the village and promote the energy of the village.[2]

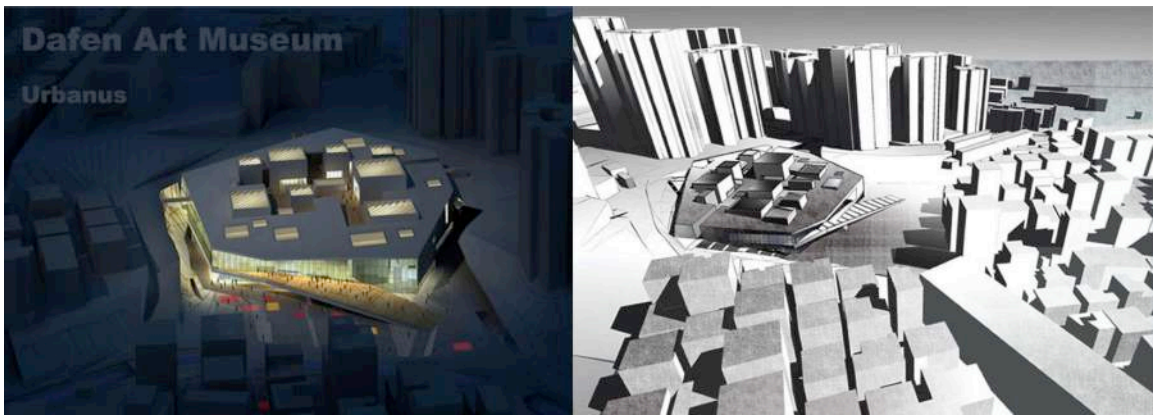

Fig. 5-16 Model of Dafen Art Museum
Source: A Museum in the "Village Amidst the City": Dafen Art Museum, Shenzen. Time+Architecture. 2007/5: 100-107

[1] http://www.urbanus.com.cn/profile.php

[2] A Museum in the "Village Amidst the City": Dafen Art Museum, Shenzen. Time+Architecture. 2007/5: 100-107

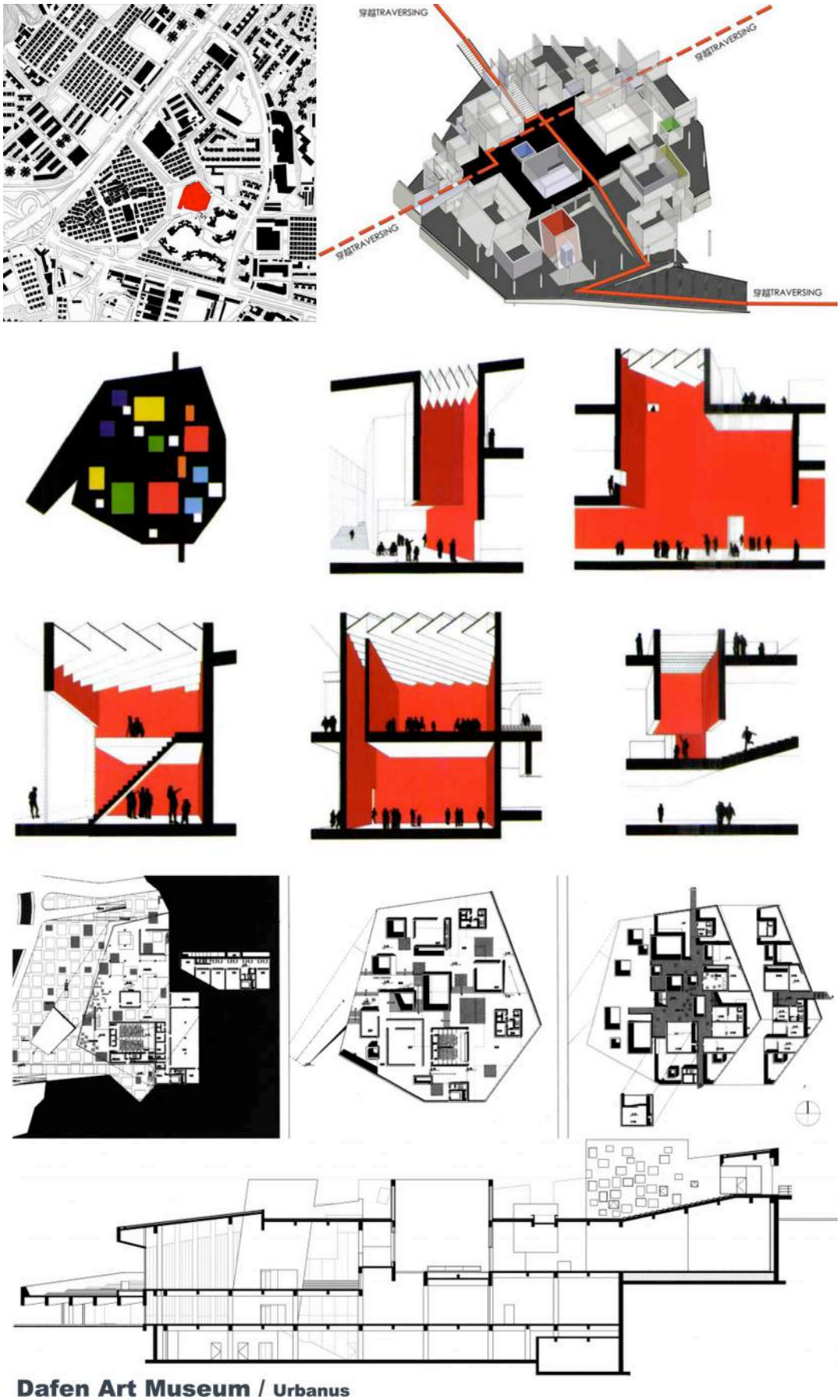

Fig. 5-17 Plan, Section and Analysis of Dafen Art Museum

Source: A Museum in the "Village Amidst the City": Dafen Art Museum, Shenzen. Time+Architecture. 2007/5: 100-107

While, comparing with the mat dwellings, mat public buildings, with less limitation in space division and function distribution, acquires more authority in arranging the contents. So they could completely introduce the notion and operational strategies of mat buildings in the design process with less impediment or limitation in function or space, and enjoy the merits of the strategies, such as tolerance and flexibility of space and function.

In this part, several cases with the architects' diverse notion express the application of the mat strategies in public building design.

The Berlin Free University is the milestone in mat buildings, because it started a brand new designing method in architectural design, which enlightened the architects to self-reflect their intrinsic comprehension on architecture, such as Le Corbusier. In this project, CJW applied the measures of urban design in the design process, which applies the road systems to increase the flexibility and tolerance to the space and function, and introduce the distribution of the public open spaces and the private functional spaces to construct the fabric of the urban and the communicational spaces. With the similar design measures, the design for the Frankfurt Römerberg competition re-constructed the traditional community, including the road system and the street-stores, with the mat strategies.

Alison and Peter tried to create a traditional urban experience in a modern building. The architects simulated the experience of the traditional tent communities and embed the "street", "public spaces". They applied the traditional signals and space experience designing a modern building complex with mat strategies in arrangement.

In the project of Venice Hospital, Le Corbusier and his assistant attempted to mend the traditional urban fabric in the specific site. In one hand, the architects applied the visual signals of the built environment into the project to make it invisible in the traditional communities. In the other hand, they introduced the new function, space and organizing strategies. And, finally, make the two parts perfectly match and benefit each other. The modular is applied in the design.

The project of Dafen Art Museum is similar to the Venice Hospital. It mends the urban fabric, introduces the urban activities, and applies the specific organizing strategies in arrangement.

5.2.3. Renewed Traditional Building

Since when the values and importance of the traditional buildings are well accepted all over the world, the proper conservation and application to them became a significant task for the architecture scholars. The ideal condition for the "old" buildings or constructs is in suitable application with well respect and conservation. In other words, the renew design makes the "old" buildings live again.

The cases selected in this part are with great wisdom in the renew design. The cases would provide precious experiences in renewing the old existence.

Case 1: Giancarlo De Carlo: il Magistero University Building, Urbino

De Carlo put his innovative ideas about the combination of modern and old architecture into the transformation from a monastery complex into a university faculty building. His plan intended to preserve the unique character of the landscape, the medieval urban fabric and the historic buildings, while at the same time making room for the much-needed modernization of the city. The plan tried to retain historic forms, which were 'adoptable… to the new organizational patterns planned to meet the city's contemporary functions'. De Carlo was seeking for the equilibrium, a dialectical consistency… in which new forms have the capacity to withstand contrast and overcome it the same time.' The plan for Il Magistero included lecture theatres for up to 1500students, study rooms, staff rooms, a

library and a reading room, as well as such amenities as a cinema and café. De Carlo succeeded in fitting this substantial program in the old monastery complex. The major interventions are hidden behind the original brickwork façades, a depth of 16m for a six-stories building.

In this project, a new relationship established between the new structures and the existing ruins. In exterior, the experience of the building maintains the formal characters of the ruins, including the shape, the walls and even the historical marks. The building perfectly hides in the texture of the historical town, and does not disturb the general planning of the town. In interior, the architect organized diverse functions within the new structures, such as classroom, meeting places, offices, bars and so on. The original ruins are applied with the suitable and proper method, and newly appended functions and structures, as university, make the whole building living again.

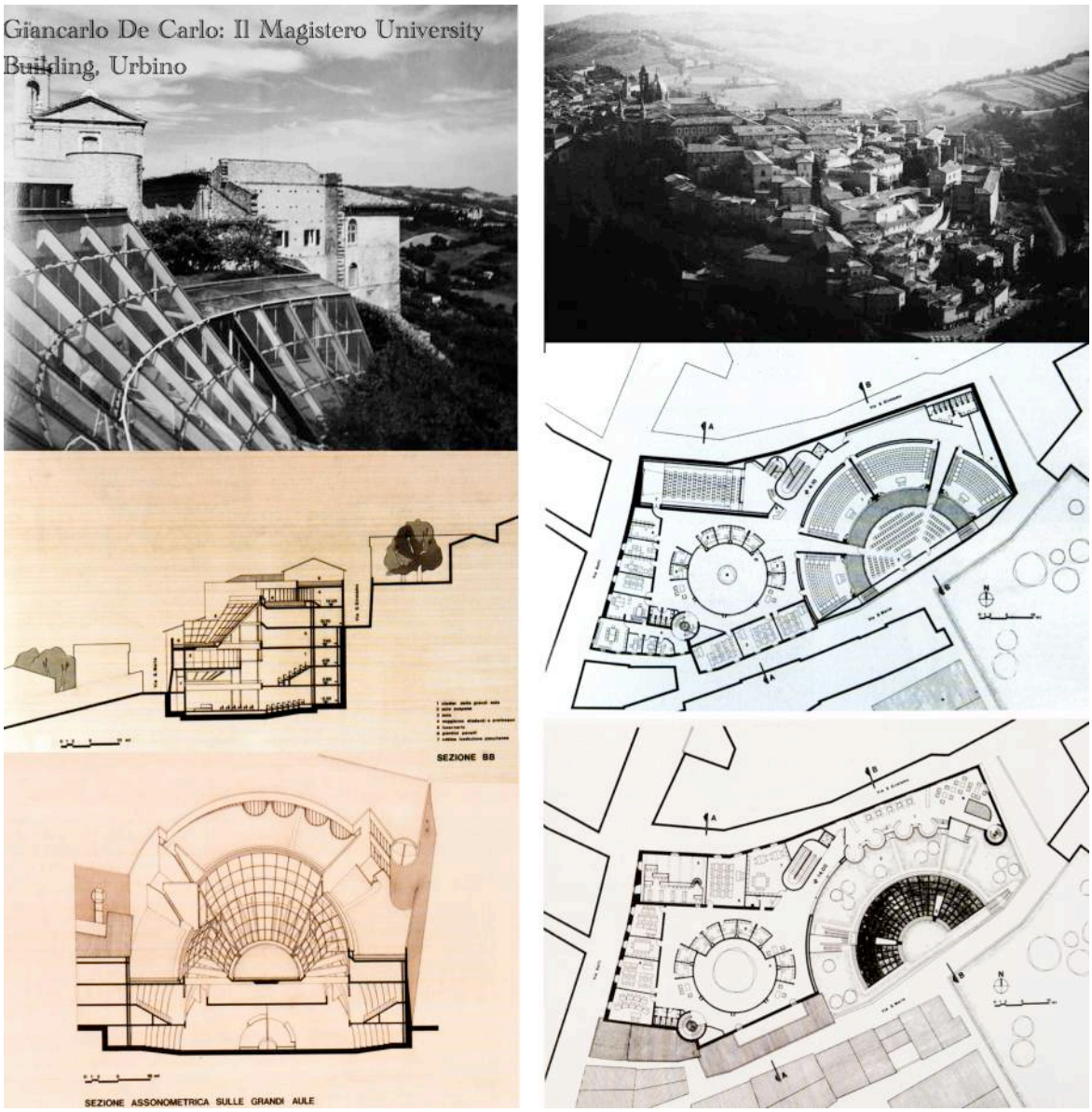

Fig. 5-18 Plan, Section and Photo of Magistero University
Source: TEAM10: 1953-81. NAi Publishers. 236-239

5.3. Preparation Stage

The content of the preparation stage focuses on the two essential problems about the relationship between the renew strategies and renew object in the "renew" design. First, whether there are any the similarities between the mat building strategies and traditional building complex in form? Second, whether there is any predominance in the organization strategies of mat building comparing to the existing arrangement in the traditional building complex? In other words, the two problems reply to the technical possibility and application values of the renew design. And the analysis would ensure the existing value and meaning of the renew design, and assist establishing the proper direction for the renew design process. The following diagram abstracts the essential characters of the traditional building complex and the mat building, traditional building complex in left and mat building in right. The diagram includes the two essential components and their relationships of the two of building styles. The squares denote the basic units. The crossing bars denote the organizing strategies. And their relative positions express the component structure of the buildings.

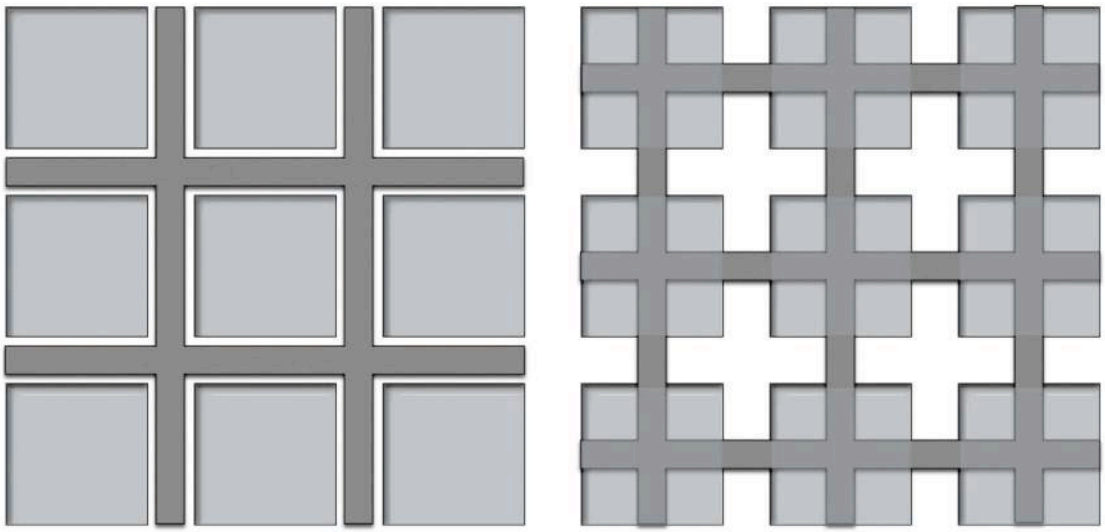

Fig. 5-19 Abstract Diagram of Traditional Building Complex (left) and Mat Building (right)
Source: Author

5.3.1. Feasibility

The similarities between renew object, the traditional buildings complex, and renew strategies, the strategies of mat building, provide the foundation of renew design. The existence of the similar characters ensure the most effective renew process. The existing building complexes experience less modification and maintain the original formal characters, while the strategies of mat buildings are well and effectively applied in the process.

In the ancient world, the buildings, in one community or tribe, formed one or several building complexes as to defend the attacks of climate, beasts and even enemies. So, in this stage, buildings closely gathered sharing the walls, and the room was the essential function unit. The building complexes were in high density and extended in horizontal level. For example, in Santorini, one of the islands of Greece, there is an antique city, Ancient Thera (Greek: Αρχαία Θήρα), located on the ridge of the Messavouno Mountain (360m high), and inhibited from 9th century BC until 726 AD. The city expands on a flat about 100*100 meter on top of the mountain. And the residential areas are gathered around the central agora,

Basilike and other public buildings. The construction materials are mainly local limestone in the mountain. The dwelling buildings are grouped in high horizontal density.

Fig. 5-20 Plan of Ancient Thera, Santorini, Greece
Source: Author

Fig. 5-21 Photo of Ancient Thera, Santorini, Greece
Source: Author

Fig. 5-22 Airscape of Mosque-Cathedral of Córdoba
Source: http://flickr.com/photo/88113683@N00/4452354140 using Flickr upload bot

Fig. 5-25 Interior of Mosque-Cathedral of Córdoba
Source: http://ar.wikipedia.org/wiki/%D9%85%D9%84%D9%81:Mezquita_-_Catedral_Cordoba027.JPG

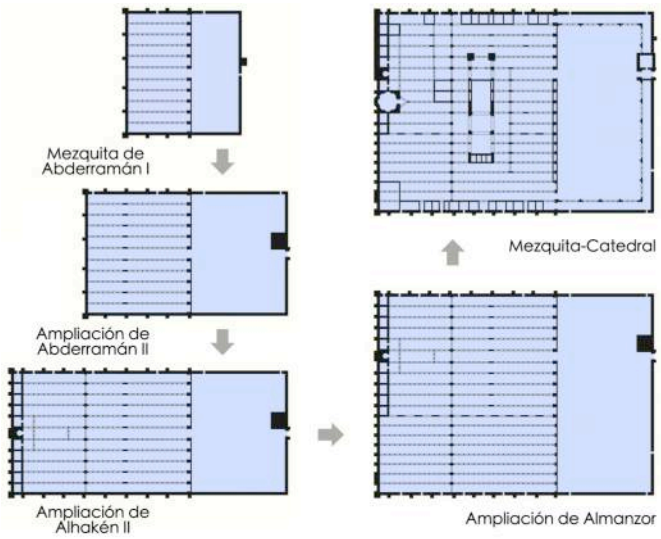

Fig. 5-23 Evolution Process of Cathedral of Córdoba
Source: Author transformed from http://en.wikipedia.org/wiki/File:Evoluci%C3%B3n_de_la_construcci%C3%B3n_de_la_Mezquita_de_C%C3%B3rdoba.gif

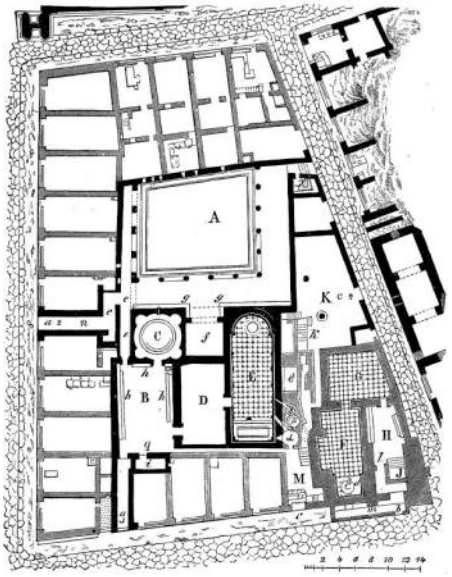

Fig. 5-24 Plan of old bath at Pompeii
Source: http://en.wikipedia.org/wiki/Thermae#mediaviewer/File:Plan_of_the_Old_Baths_at_Pompeii_by_Overbeck.jpg

With the development of the constructing technique and the building material, the buildings in the middle ages could contain the diverse functions and even buildings under one integrated structure. These special examples express the similarities with the mat buildings, such as horizontal extension, flexible units and organizing rules. Mosque-Cathedral of Córdoba, Spain, is a legend building. It experienced a series of alternation of dynasties and religions in history and finally forms the present condition. In the building, a Cathedral is arranged in the middle of a mosque. The two kinds of building with the separate religious and historic background are well combined with each other. And, at least in plan level, the building expresses some characters of the "mat building", such as the matrix effect and the tolerant arrangement strategy. In ancient Italy, Greece, Turkey, the public bathing was a popular entertainment and sociality fashion. In ancient Roma, bathing, as an essential part of the culture and society at the time, possessed more than one public bathing place in each city. The *thermae* and *balnea*, the public bathing places, originated from Greek θερμός (thermos) and βαλανεῖον (balaneion). Thermaes were a kind of building complex centralized with caldarium (hot bath), tepidarium (warm bath) and frigidarium (cold bath)) and multi-function gathering around.

However, the "old" buildings do not posses the operational strategies in organizing the whole building, which are the essential character and the predominance of the mat buildings.

In this research, the normal traditional buildings are the emphases on consideration. The normal traditional buildings share the common formal characters, which promote the renew design strategies with broad application possibility. Generally, the normal traditional buildings, excluding the elites with special value, are the ones broadly existing in the historic towns and territories with high horizontal built density, following the uniform arranging rules, forming the specific urban fabric, and sharing the common styles in appearance and plan arrangements. The diagram abstracts the essential characters of the traditional building complex and the mat building, mainly strategy and unit. And the comparison of two aspects would leads to the original motivation of the renew design. The following content would carry out in general planning and composing unit, two aspects.

Strategy (Planning): the comparison carries out between the traditional communities, or blocks, and the mat buildings. The both two styles of buildings acquire their clear strategies in organizing the component, and organize their components with some specific arrangement. Although the concrete texture or pattern diverse, the strategies operate in a similar ways, which lead the texture or pattern in similar. Both the traditional building complex and the mat building are "pieces of the urban fabric".

The initiating of mat building, TEAM X, was inclined to introduce the community life in architecture, constructing the giant and constant structure as infrastructures with filling spaces. Then the field theory established.

Both in the naissance stage and renaissance stage, the city is the essential platform of mat building to express its designing notions. As mentioned in the chapter of mat building, the appearance of the

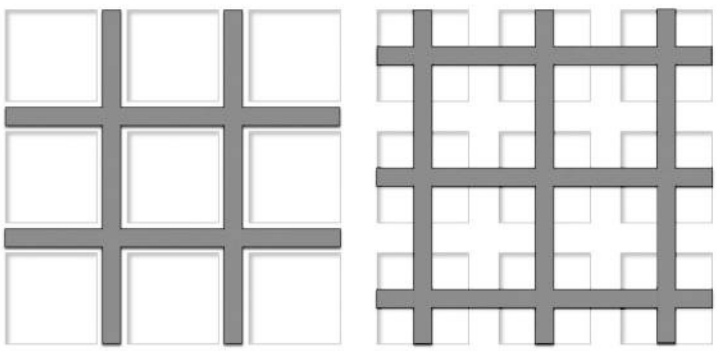

Fig. 5-26 Organizing Strategies of Traditional Building Complex (left) and Mat Building (right)
Source: Author

mat building is the react to the urban problems, and its development is considered as the adaption and modulation to the evolution of urban problems. In the naissance stage, the strategy of mat building focuses on the improvement of society with physical form.

While, in the renaissance stage of mat building, from 1990s to present, the designing strategy of mat building expresses their conception of city with different measures. The new designing strategies creatively design the open space in changing the existing urban form, embody the abundant spaces in enriching the community life, and guide the energy flow in the city with the landscape mode. And the alternation indicates a developing trend in contemporary.

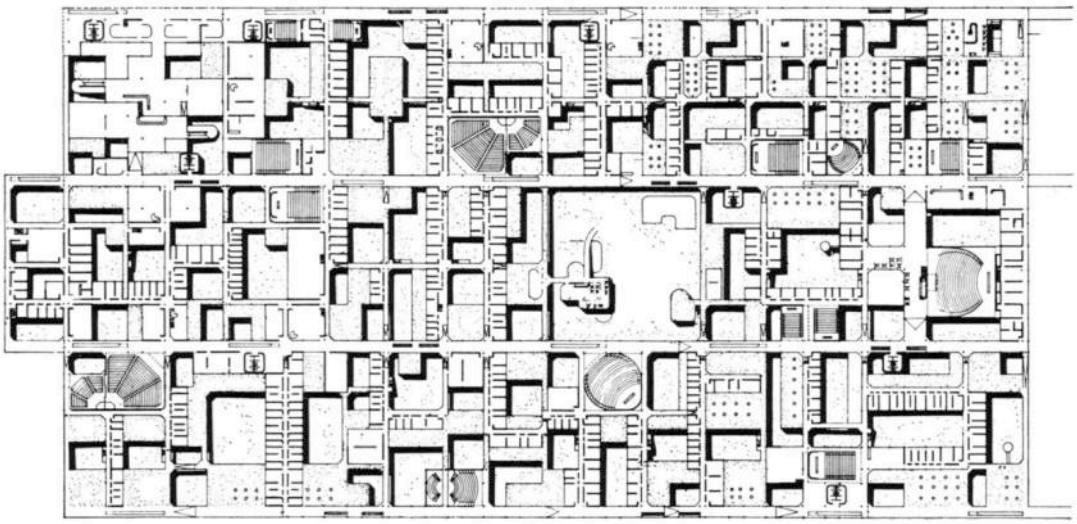

Fig. 5-27Berlin Free University
Source: J. Joedicke. Candilis Josic Woods: Una década de arquitectura y urbanismo. Barcelona: EDITORIAL GUSTAVO GILI, S. A. 1968

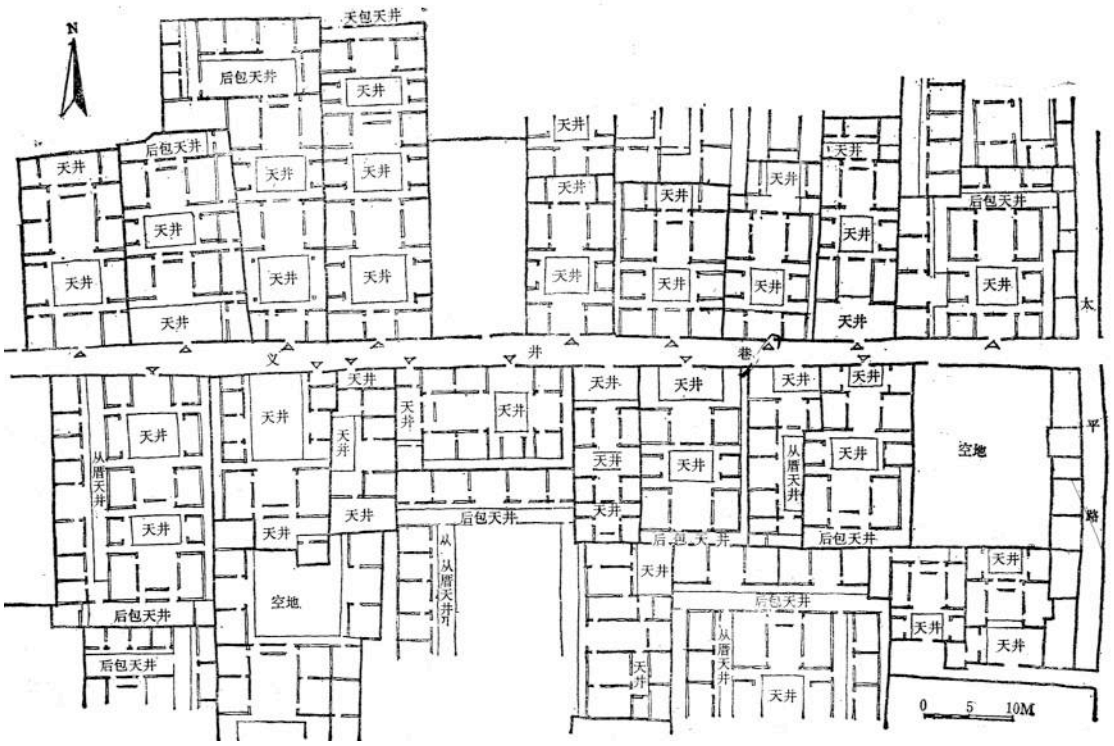

Fig. 5-28 Yijing Street, Chaozhou City about 1410 AD

Fig. 5-29 Comparison in Road system, Open Space and Functional Space between Free University (Berlin, by CJW) and Chinese Traditional Building Complex (Chaozhou city, China)

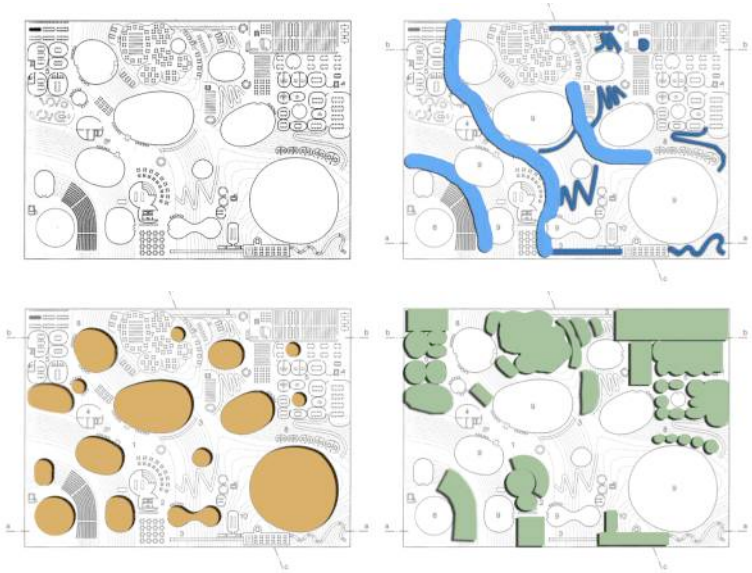

Fig. 5-30 Rolex Learning Center: Road System, Open Space, Functional Space

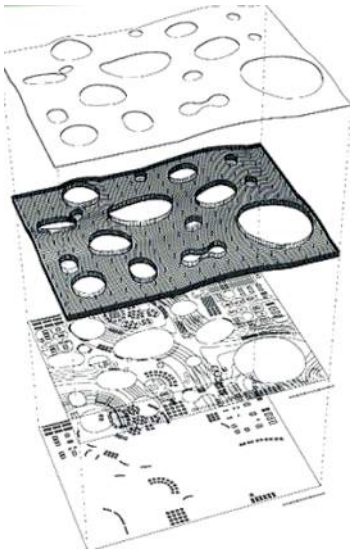

Fig. 5-31 Analysis of Rolex Learning Center

Unit (Texture): Besides the organizing strategies, unit is also the elemental component of the both styles of buildings. As in the introduction of the traditional building complex and the mat building, the units, which are restricted by the structure and function, follows the arrangement rules of the organization strategies and establishes the final form with similar natures.

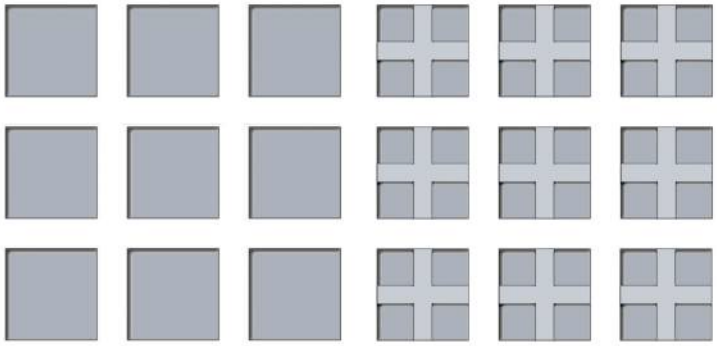

Fig. 5-32 Units of Traditional Building Complex (left) and Mat Building (right)
Source: Author

Texture: the texture is the common features of the buildings in territory, which shape the special features of the territory. Generally, from the specific texture, we could identify the location, because they get a close connection with the local culture, history, etc.

Fig. 5-33 Urban Textrue (Beijing/ Qingdao/Shanghai)
Source: XU Jianing. Jiuyingzhi (徐家宁《旧影志》)

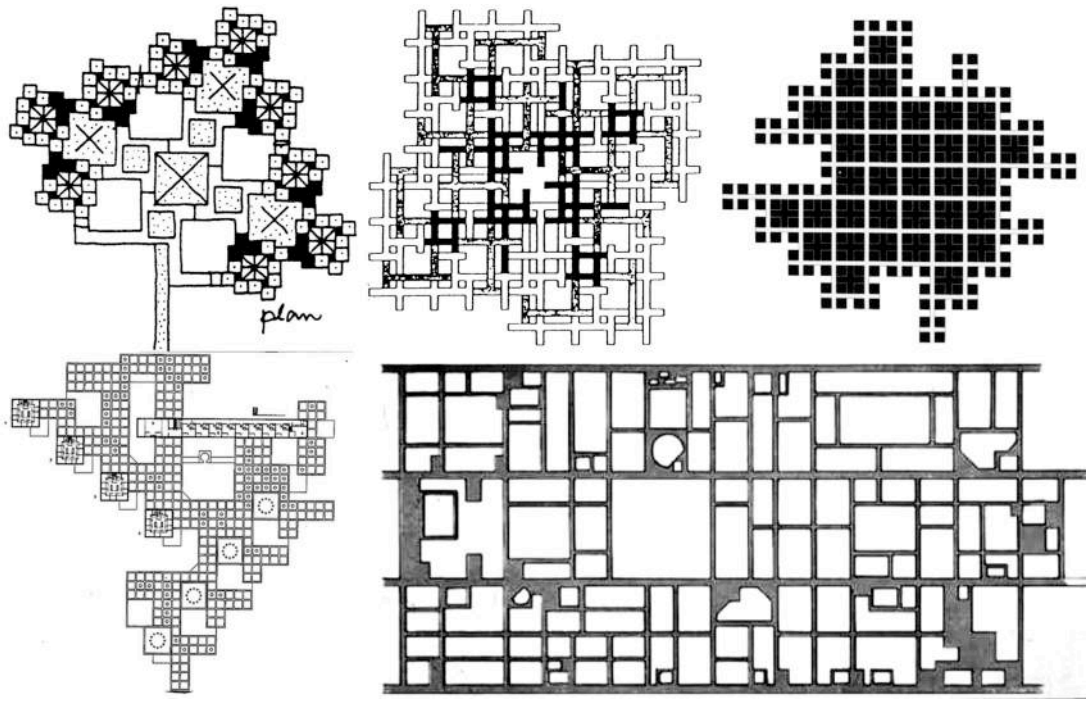

Fig. 5-34 Texture of Mat Buildings

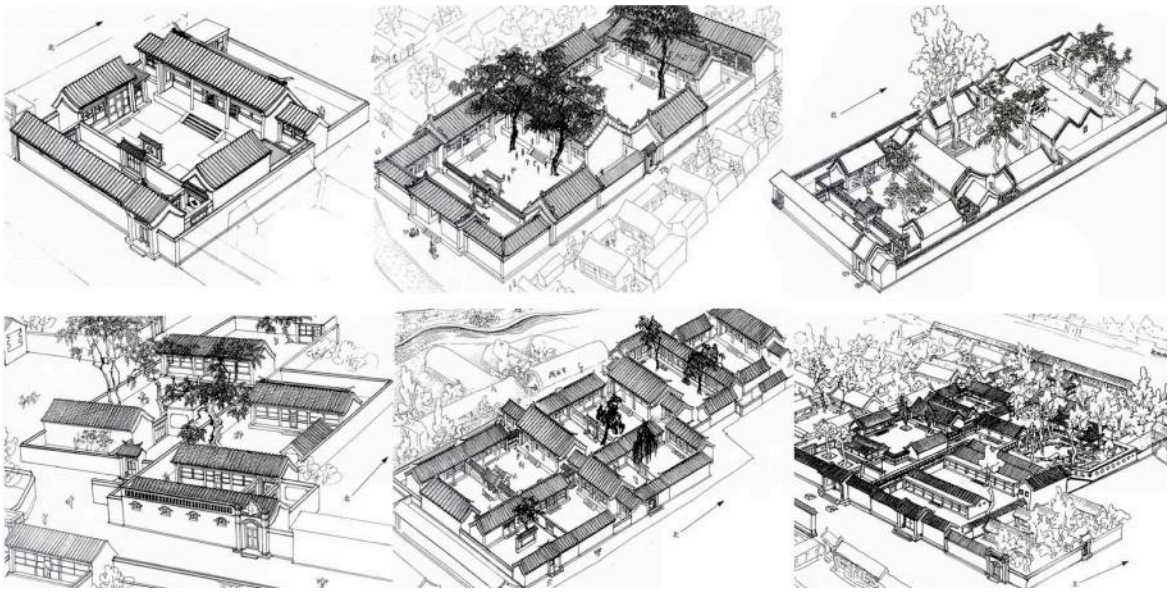

Fig. 5-35 Combination of Courtyard Dwellings

Source: ZHENG Xixheng. Traditional Dwelling Houses in Beijing. Xueyuan Press. 2009 (郑希成.京城民居宅院. 学苑出版社. 2009)

The texture is the collective arrangement of the essential units. So the formal and functional characters of the units shape the characters of the texture. Comparing the traditional building complex and the mat building, we could find they are both the function units sharing the similar sizes. In traditional building complex, the unit is the courtyard, composed by the yard and building, which is the essential and integrated function group for a family. While in mat building, the unit could be a single room (Children's House, by Aldo van Eyck), a functional unit (Central Beheer Office Building, by Hertzberger), and even the blank area among the road system (Berlin Free University, by CJW).

Horizontal Extension: the main idea of mat building is to solve the urban problem with architectural methods in horizontal. Early as the start of the TEAM X, the architects group claims the horizontal architectural measure in design, limited in 1-2 floors. Limited by the materials, constructing technology, economy and other aspects, the most traditional building complexes were constructed in low levels. And also the traditional buildings closely gathered together.

Module: from the instruction before, tradition buildings in China strictly follow the rule of the module, which provide the essential construction modes or reference at the time. The number and the status of the owner decide the scale of the material, the structure and also the buildings. The whole city is under the control of the module. The mat building tried to explore the basic structure under the daily life, the connection between the human behavior and space, a module in behavior level.

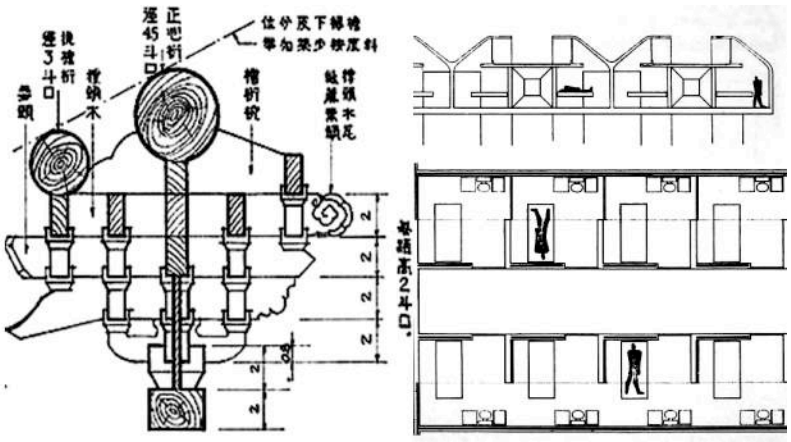

Fig. 5-36 the Modulars

Above all, the similarity in component elements, organizing system and profound meaning leads to the similarity in the