The Renew Design of
Traditional Building Complexes

with

Mat's Strategies

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ABSTRACT

The research applies the occidental contemporary notion and modernism designing methods or strategies in renew designing the oriental tradition-building complex. The research involves three aspects of background information: renew design, traditional buildings and mat-building. Renew design, as the guideline, including multiple views and space mode, establishes the cognition, and operational principles of renew design. The traditional building complex, as the object, meaning the normal building complex containing the historic and cultural information, not including the historic and cultural elites and heritages protected by laws, introduces the formal characters, from general planning to the unit and structure, and the diverse values attaching on, which provide the formal reference and operation foundation for the renew design. The mat-building, an architectural phenomenon originated in 1950s, as the method of renew design, supplies the selected operation strategies, matching the formal characters and improving the weakness of traditional building complex.

The renew design process carries out in three parts. Preparation, the first part, expounds and proofs the feasibility, superiority and concerning points in renew design, through synthetically comparing the formal characters, values and principles in background information. Renew design process, the second part, following the order of scope, progressively introduces the designing strategies of mat-building into the traditional building complex: integration considers the site as an entirety and prepares for the renew operations; strategies introduce the strategies of mat-building into the site and reorganize the spaces; units transform the original units in traditional building complex to match the characters of that in mat-building; finally, according to the diverse information, improve the arrangement in details. Evaluation, the third part, judges of the outcome of renew design with the standards of renew notions and the values conservation of traditional building complex.

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Chapter 1.   FOREWORD

1.1. Research Origin

In 2007, I participated in one Chinese national architectural research on traditional building conservation. The research team were composed by the professors and master students in architectural schools of Nanjing University (NJU) and Southeast University (SEU), and started in the eastern part of China, mainly in Zhejiang and Jiangsu two provinces. The main content of the research included three steps: investigate the status quo of the traditional buildings forming the essential database, analyze the advantage and disadvantage, and put forward the feasible conservation and application projects.

During the research, I got an intimate contact with the historical communities and towns, which constructed my comprehension of the traditional buildings. The critical condition of Chinese traditional buildings shocked me. Although possessing huge quantity and large area of lands, the traditional buildings remain in the status of poor physical condition and inefficient application, which results in the replacement by the blooming of new buildings. However, there are still diverse precious values and abundant historical information attaching on the traditional buildings. The replacement would lead the permanent and irrevocable destruction to the traditional buildings. So, the proper methods are urgently needed to transform the traditional building with moderate conservation and application measures. In other words, the transformation could not only make traditional buildings survive, but also thrive. Then, I started my seeking for the transforming method.

While in my comprehension, buildings are a kind of special containers, and the containing objects evolve with the development of construction technologies and design theories. Generally, the containing objects could sum up to three aspects. Before the industrial revolution, when buildings and architectural designs were greatly restrained by the demands of structures, buildings were the containers of functions, such as the 'Thermae' (the public baths) in Pompei and Roma. After the industrial revolution, new materials, such as steel, glass and modern concrete, and technology were wildly applied in the construction, which means that the architectural design gained its independence apart from the control of structures, and meanwhile the modernism violently impacted the architectural design promoting the space as the essentiality for both the definition and appreciation of architecture, such as Villa Savoye and the Bauhaus.[1] In the period, buildings are the containers of spaces. In recent decades, architectural designs practically get rid of the physical limitation and are inclined to the connection among the diverse activities under the influence of post-modernism. Buildings are the containers of the activities and connection. The concept expresses in the project of Yokohama International Passenger Terminal.

From the statement above, we could know that, through the evolution, the buildings or architectural designs decrease the limitation from both the original structure and the over-restriction, and increase the connection among diverse activities and organizing system in entirety. In other words, comparing with the buildings hundreds years ago, the contemporary buildings are much more simple in physical form, but more complex in organizing systems. Although evolving through the time, function, space and activity, as the containing objects of buildings, enrich the architectural design in the same time, but not completely take the places of the others. In contemporary, architects still consider much about the arrangement of all three aspects while designing.

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[1] Bruno Zevi. Architecture As Space: How to Look at Architecture. Horizon Press. 1957

The evolution of containing objects materializes in the designing process. A simplified design would illustrate the concept. When dealing with a project, we usually consider the functional demands as the essential to carry out the design. Then, the homogeneous functions would be assembled, and the corresponding spaces would be shaped for them. Finally, similar functions and spaces would be abstracted into activities, arranged in specific zones. The whole building is a platform for diverse zones. This process indicates that the buildings or architectural designs in diverse periods, such as function, space or activity, share the common designing essentials for improvement. The functional founded arrangement could be shaped with new spaces. The space shaping arrangement could be transformed with activities systems. The functional founded arrangement could also be reorganized by the activity system or strategy. The traditional building or architectural design could be transformed with advanced design methods or strategies, which found on the space or activity strategies. It provides the possibility of transformation in designing level.

The advancement of the constructional technology and human society resulted in the appearance of the buildings with larger scale and more complex systems to meet the growing complexity and diversity of human society. In some condition, the scale of 'old' buildings could only compare to that of a single room in contemporary buildings. The contemporary building complexes are approximately in the same scale as the old community. So, if we consider the traditional buildings as one united building or building complex, the scale of a single building alters, but the essential, as the container for function, space and activity, does not change.

Then, we go further. The 'old' buildings possess the limitation in physical structure as mentioned above. In premise of the structural stability, the modern constructing technologies and material could replace the 'old' ones, and the over-restricted structures could be directly removed. The measures above could release the new space and integrate all the spaces into a unified space. And the unified spaces provide the possibility to introduce the 'new' designing strategies and systems to transform or renew the existing space arrangement and hold the possible changes. The renewed spaces would be suitable for the modern functions and activities. In other words, the transform introduces the 'new' vigor into the 'old' building. It provides the possibility of transformation in structural level.

Besides the design and structure, conservation is another important aspect restricting the transformation. It's one of the essential motivations of transforming: maintaining the historical information and the diverse values attaching on traditional buildings.

Comparing with other designing strategies I know, the designing strategy of Mat-building seems to be a perfect candidate for the renew design. The designing strategy of Mat-building includes the overall systems organizing the whole building, the flexible and tolerant matrix containing the anonymous collection and possible changes, and the repeated and similar units and textures enriching the function, space and activity. The characters mentioned above primarily meet the demands of transformation.

Then, I started my research of the renew design of traditional building complex with the designing strategies of Mat-building for further proving and consummating.

1.2. Meaning

In China, the urbanization process forces the traditional buildings, which are considered as the identity of a city, into an unprecedented and urgent predicament: the globalized indistinctive buildings replace the traditional buildings in the modern city with an astonishing speed. The replacement removes the diverse values and historic information attaching on the traditional buildings, and, even worse, the replacement carries through with

a raising speed. The replacement causes the permanent and irreversible harm for both the cities and the citizens. So, a proper renew design strategy, which properly endows the traditional buildings with contemporary application, and meanwhile continue the information and values attaching on them, are of great significant for the traditional building conservation, the contemporary architectural designing and the architecture designing tendency in future.

The renewal designing research directly influences the existing condition of traditional buildings in contemporary cities. In China, the traditional building is a kind of buildings with broad distribution, large quantity and vast land occupation. However, the states of traditional buildings are in low functional application and poor physical condition, which lead to the replacement by the more profitable buildings. The replacement causes the disappearing of values and information attaching on traditional buildings. The research radically changes the existing condition of traditional buildings, improving the application condition, which extends the life span of traditional buildings. In other words, the best conservation is to make buildings function well. The surviving buildings maintain the value and information, and continue them for the future generations. The renew process would be recorded as the composing part of existing process, which would enrich the information and values.

The renewal designing research would enrich the notion of modern architectural design. With the impact of modernism and globalization, modern architectural design is inclined to the standardization and deindividuation design. The research respects the local styles and historical information, enriches the notion of architectural design and enlightens diversified values in definition and evaluation. And finally enrich the composition of buildings in cities.

The renewal designing research starts an experiment on guiding and regulating the development of future architectural design. In the research, an open, broad and flexible designing strategy is applied in the renew design. In the research, the traditional buildings acquire the ability accommodating the demands and alternation in contemporary society, and extend the existing of the information and values attaching on the buildings. The research also introduces the European architectural designing notion into the renewal design of Chinese traditional buildings. And the research breaks the fixed thought in arranging the design in vertical way, applying the horizontal arrangement. The design strategy strides over the territorial distance, the historical span and the fixed thought to get the ideal designing outcome.

In all, the research starts with the dilemma of traditional buildings in contemporary Chinese cities, applies the proper design strategy to rescue the traditional buildings, and, in the meantime, enriches the modern architectural designing method and guides the development of architectural design in future.

1.3. Literature: to Outline the Stage of the Art

1.3.1. Historic architectural conservation

The Finnish architect and urban planner Jukka Jokilehto, the expert on conservation of world heritage and also the committee member of ICCROM and ICOMOS, finished his work *a history of architectural conservation*[1]. In the work, the author hackles and reviews the history of architectural conservation with a macro historic view in chronicle order. While, the work includes the protection of monuments from the middle age to the

[1]Jukka Jokilehto. A History of Architectural Conservation. Butterworth-Heinemann. Linacre House. Jordan Hill. Oxford. London, 1999

renaissance, the archeological discoveries and restorations of the age of enlightenment in 18c, the *restorationfury* and restoration movements all over the Europe in 19c, and modern aspects of heritage and conservation. In the work, the abundant materials are well arranged, and the arguments are fully supported, which makes it an indispensable theory work in architectural conservation.

Jukka Jokilehto's another work, *Authenticity in restoration principles and practices[1]*, is Jukka Jokilehto's another article. It bases on the theme of Nara Conference held in Nara in November 1994, discussing the value and authenticity of cultural property. The article focuses on the authenticity of historic buildings, explaining the context, expression and forming rules of the concept, which establishes the stable theoretical foundation for the conservation, renew and reutilization of historic buildings.

Germany architectural theorist, Hanno-Walter Kruft, in his famous work: *A History of Architectural Theory from Vitruvius to the present[2]* collects and discusses the main architectural theories in each period since 33~14AD, when Vitruvius as the first all-rounder architect finished *De Architectura*, till the present lasting about 2000 years. The great work covers nearly the evolution of all the architectural theories in history, and also includes the significant restoration and protection theories in architectural conservation history. Especially, the theories and assertion of key figures in historic building restoration and protection in 19th century, such as George Gilbert Scott from England and Eugene-Viollet-Duc from France, which is the crucial theory reference for the comprehension of the evolution of architectural conservation.

1.3.2. Values of Historical Building

At the turn of 20 century, Austrian art historian Alois Riegl was famous for the contribution in the value of historical buildings. He assorted the value on historical buildings, clarified the evolution of the values, and also particularized the reasons and forms of advocated values in diverse periods. *The Modern Cult of Monuments: Its Character and its Origin[3]*, published in beginning of 20c, sorted monuments into deliberate monuments and unintentional monuments, and also sorted the value of monuments into Commemorative Values and Present-Day Values. The author studied the background and evolution of diverse values. Still today, the points in the article are still the essential comprehensive views in essence of historical buildings and sustainable existing values.

Dr. B. M. Feilden, who was the president of International Council on Monuments and Sites UK (ICOMOS－UK), in his thesis: *Conservation of Historic Building[4]* indicates that the European detects the multi-values in historic buildings. And the author proposes to assort the values into three aspects: emotion value, culture value and use value. The author explains all the aspects of values in the article. And the assorting measure has become well popular in the fields of historic city and building.

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[1] Jokilehto J. *Authenticity: a general framework for the concept*. Larsen, K. E. (ed.), Nara conference on authenticity, Proceedings, Nara, Japan, 1-6 November 1994 UNESCO, Agency for Cultural Affairs of Japan, ICCROM and ICOMOS, Trondheim 1995, 32;

[2] W. H. Kruft. A *History of Architectural Theory from Vitruvius to the Present*, London: Zwemmer (R. Taylor transl.), 1994;

[3] Alois Riegl. *The Modern Cult of Monuments: its Character and Its Origin*. Oppositions Reader, 1998: 621-651;

[4] B. M. Feilden, *Conservation of Historic Buildings*, Routledge, 2003.

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1.3.3. Historic Building and City

Jane Jacobs, Canadian journalist, author and activist, is famous for her influence on urban studies. Her influential work *The Death and life of Great American Cities* [1] (1961) "is a critique of 1950s urban planning policy, which it holds responsible for the decline of many city neighborhoods in the United States".[2] Different from other opinions in the same time, the book states why and how to maintain the organic vibrancy in urban America. The diversity, "including a good proportion of old ones"[3], makes the neighborhood live and vibrant. The historic building is the indispensable part in maintaining the diversity and energy in the city, and should mix with other condition buildings.

Italian architect and architectural theorist Aldo Rossi in *The Architecture of the City*[4] indicates that the research on city should base on the architecture. "*By architecture of city we mean two different things: first, the city seen as a gigantic man-made object, a work of engineering and architecture that is large and complex and growing over time; second, certain more limited but still crucial aspects of the city, namely urban artifacts which like the city itself are characterized by their own history and thus by their won form.*"[5] And the city is also "*the work of our hands, our artificial homeland". "The city is in its history. Hence, the relationship between Place and man and the work of art---- which is the ultimate, decisive fact shaping and directing urban evolution according to an aesthetic finality---- affords us a complex mode of studying the city*". Finally, "*… not all things in the city survive."* The work realizes that a city, as an artificial constructers collection, follows the continuity of artificial rules. However, the rules are not immutable, they are transformable. The theory produces the crucial theory foundation for conservation, renew and reuse the existing historic buildings, especially in handling the relationship of old and new spaces.

The American architectural theorist M. Christine Boyer in *The City of Collective memory: Its Historical Imagery and Architecture Entertainments*[6] states, in view of the relationship between historic building and citizens' memory, that the specific shapes of buildings help to shape the citizens' memory about cities, and hereby buildings posses special codes to recall citizens' memory about the city. M. Christine Boyer further indicates that the citizens' collective memory lies on the collection of historic building in diverse periods, which could bring the variety of city experience and happiness and comfort for experiencers, the citizens. The source of enjoyable experience comes from the historic buildings built in divers periods and in different condition. The existing historic buildings transform the attention of modern people and reflection on living condition in city.

French architect and city planner Alain Marinos expressed his view about the relationship of historic building and city evolution in the article *Memory in the Present*[7]. In the article, he points out the importance of the historic buildings heritages in composing the sustainable development of cities. And the sustainable development of cities should base on the balance of conservation and development.

Chinese scholar Song Zhang expresses his points that the conservation and reuse of historic building would benefit the city in its history restoration, identifiable characteristic and further development. In his research, *An Introduction to Integrated Conservation: A Way*

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[1] Jane Jacobs, *The Death and Life of Great American Cities*. Republished, Vintage Books, 1961.

[2] Peter Dreier. *Jane Jacobs' Radical Legacy*. Summer 2006. Retrieved 3 August 2012.

[3] Jane Jacobs, *The Death and Life of Great American Cities*. Republished, Vintage Books, 1961: 151

[4] Aldo Rossi. *The Architecture of the City.* MIT Press, 1984.

[5] Aldo Rossi. *The Architecture of the City.* MIT Press, 1984. 29

[6] M. Christine Boyer. *The City of Collective Memory: Its Historical Imagery and Architecture Entertainments*. MIT Press. Cambridge. Massachusetts. London. England, 2011.

[7] Alain Marinos. *Memory in the Present*. Technique & Architecture. 465: 50-53

for the Protection of Culture Heritage and Historic Environment[1], the author bases on the cases in China and western countries to demonstrate the contribution of conservation of historic city. The work is well organized and sufficiently proved, which provides the vast materials for the study in the conservation field, including theories, policies, designs and case studies.

1.3.4. Restoration Renovation and Reutilization

English scholar Kenneth Powell expressed his points in *Architecture Reborn: The Conversion and Reconstruction of Old Buildings*[2]. In the foreword, the author describes the relationship among heritage, architecture and urban in view of an evolution view. Whether a building was transformed or destructed for new ones, was decided by the factor of function and economy. Later, the conservation became another factor. The war, modern architecture and fixed functions caused the historic buildings seriously destroyed in the last century. The great loss aroused the reflection about the attitude on historic heritage, and conservation theory rose. Architects, governments and citizen sought for the proper way for conservation and reutilization. Diverse cultures and countries take different ways to conserve and reutilize historic heritages, and some of methods function effectively, such as the reducing tax polices in American, England and other countries and the notion of re-discovery of historic cities. The policies and theories greatly promoted the conservation of historic buildings and cities. The author is inclined to the flexible conservation measures, and the renovation should also be respect, which is the crucial component of architecture. He also points out that, in future, architecture would be comprehensive and various, and both the traditional heritage would be well mixed in and express separate values in future.

Yi Wang, a Chinese scholar in Tsinghua University, expressed his points about the evolution and condition of historic buildings in China in his article *Reuse of Old Buildings*[3]. Because of the glorious ancientry and the stagnant modern history, the low-level development actually promoted the renovation and reutilization of historic buildings. The occurrence of the industrial revolution subverted the status. The historic buildings were massively replaced for new buildings to meet the needs of the booming industry. It's the economic factor dominated the tragedy in the special period, and also the period brought the attention and change on the historic buildings. However, in practice, the architectural scholars separated in over protected and entirely replaced two extremes. The historic buildings in China seek for the proper way to survive in between.

Another scholar in Tongji University focused on the distinction of traditional building and historic heritage building. In 2003, Qing Chang, in his work *the Surviving Strategy of Historic Heritage Buildings*[4], pointed out the difference of the historic building and the historic heritage. The buildings usually experience innovation and transformation in using. The characteristic causes the relativity of authenticity in historic buildings. And the relativity results in two disparate methods in conservation. One, specimen conservation method, which means over protected, is used for elites in historic buildings; another, general

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[1] 张松. 历史城市保护学导论——文化遗产和历史环境保护的一种整体性方法. 上海科学技术出版社，2003

  (Zhang Song. *An Introduction to Integrated Conservation: A Way for the Protection of Culture Heritage and Historic Environment.* Shanghai Scientific and Technical Publishers, 2003)

[2] Kenneth Powell. *Architecture Reborn: The Conversion and Reconstruction of Old Buildings.* Laurence King. 1999.

[3] 王毅. 建筑的再利用. 世界建筑, 1998, 1: 22-24.

  (WANG Yi. *Reuse of Old Buildings.* World Architecture, 1998, 1: 22-24)

[4] 常青. 建筑遗产的生存策略：保护与利用设计实验. 同济大学出版社，2003.

  (CHANG Qing. *An Introduction to Integrated Conservation: A Way for the Protection of Culture Heritage and Historic   Environment.* Shanghai: TONGJI UNIVERNITY PRESS, 2003)

historic buildings or traditional buildings, which are considered as the prove of the variance of the time, should be proper innovated and renewed interior to meet the need of changing environment. The latter method could be widely extended to preserve the status of historic environment.

The scholar, Jianguo Wang, in Southeast University focused on the field of the conservational innovation of historic building. In his article *Conservation and Adaptive Reuse of Historical Industrial Buildings and Sites*[1], he defined the notion of *Conventional and Adaptive Reuse*, and further discussed the object, scope, method and relationships of the notion. With the further development of the theory of historic building conservation in China, in2006, Wang published another article *Protective Reuse of Chinese Industrial Historic Building Heritage in the Post-Industrial Age*[2]. In the article, he, again, focused on the industrial historic building, and made further study from multi-subjects, such as architecture, resource, economy, sociology, environment, landscape and etc. And, an emergent national study should be established to conserve the disappearing industrial historic buildings, which are threatened by the economic profits. The study should assort the heritage buildings into several stages according to their styles and values, which proved the foundation for further conservation, innovation and reutilization.

1.3.5. Mat Building

CASE: Le Corbusier's Venice Hospital and the Mat Building Revival[3] "…examines Le Corbusier's Venice Hospital in light of contemporary architecture's fascination with mat building…the book looks closely at a specific project from different sub disciplinary angles: urbanism, environmental systems, programming, formal analysis, and architectural history. It also investigates how this building simultaneously adopted and challenged the main principles of the emerging mat building typology in 1960s and the way it has been centrally resituated in the revival of mat building today. This introduction traces the charge of the book from the present backward, toward the Venice Hospital. It draws from the ideas of the contributing authors to outline the book's main themes and the terms it sets for examining the relationship between a highly articulated form like the Venice Hospital and contemporary architecture's pursuit of formlessness that Le Corbusier's unbuilt project came to embody."[4]

Team10: 1953-81; in search of a Utopia of the present[5]is a comprehensive history collection of the TEAM10. The content covers the chronological documentation, essays and voices of "inner circle", such as Alison & Peter Smithson, Aldo van Eyck, CJW (Candilis, Josic and Woods), etc., who are also the original propellents of the thought of mat building.

A Chinese scholar, Jieping Chen, made her contribution to the research of mat building. In the article *TEAM10, Le Corbusier and Mat Building*[6], she indicates that the

[1] 王建国，戎俊强. 关于产业类历史建筑和地段的保护性再利用. 时代建筑，2001，4：10-13（WANG Jianguo, JIANG Nan. *Conservation and Adaptive Reuse of Historical Industrial Buildings and Sites*. TIME+ARCHITECTURE, 2001, 4:10-13）

[2] 王建国，蒋楠. 后工业时代中国产业类历史建筑保护性再利用. 建筑学报，2006，8：8-11
(WANG Jianguo, JIANG Nan. *Protective Reuse of Chinese Industrial Historic Building Heritage in the Post-Industrial Age*. Architectural Journal, 2006, 8: 8-11)

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

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

[5] RISSELADA, Max; HEUVEL, Dirk van den (ed.). *TEAM10: 1953-81 – In Search of a Utopia of the Present*. Rotterdam: NAi Publishers. 2005.

[6] 陈洁萍. "十人小组"，柯布西耶和毯式建筑. 建筑师，2007，128：51-61

current research of "field" is in a close connection with the previous research of the "Mat Building". The both concepts share the characteristic of horizontal extension, embedding in environment or landscape, free configuration and regular texture. The thought of mat building started since the emergence of Team X, improving the dwelling condition in urban and introducing the community life experience in modern architecture. The mat building affected by CIAM, although it opposing to CIAM later, and the "inner circle" of TEAM10, the Brutalist architecture in England represented by Alison and Peter Smithson and the Structuralism in Holland represented by Aldo van Eyck. And also the Le Corbusier's idea of Venice Hospital, which was "in light of contemporary architecture's fascination with mat building."[1]Then, the article analysis the characteristic of the classic works in the period 1950s-70s. And in the same year, she published another article STUDY ON CONTEMPORARY MAT BUILDING[2]. In the article, she points that, after silence about 20 years, the contemporary architecture appears the tendency of horizontal extension with "stem" or "grid" organizing strategy, which is the renaissance of mat building in contemporary. The analysis on contemporary mat building goes in operational strategy, matrix effect and urban effect three aspects and realizes "…it (mat-building) emphasizes the effects more than meanings, pursues being a matrix to contain difference and inspire production as well as being an infrastructure to create an open field, to accommodate the changes of modern cities. Thus it becomes a mixture of architecture, landscape and urbanism, which can be read as a special writing of the place, the topography of the expanded field. "[3]

1.4. Research Object and Content

1.4.1. Research Object

The research focuses on the traditional building complex, which includes two basic concepts: traditional building and building complex. The both concepts express the states of buildings, since being built to present.

The traditional building means the buildings that were built in several decades ago with local traditional designing method, constructing technologies and materials, and suffers the impact from both natural and artificial force. The historical buildings or heritage buildings are the elites group with minimal quantity in the concept scope, which are not included in the concept of the research. According to the People's Republic of China Culture Relics Protection Law[4], there are strict limitations on the application of "immobile cultural relics". The reuse of the cultural relics must get the consent of the government, and also need to follow the rules of "keeping the immovable cultural relics in their original state", "are not damaged, rebuilt or dismantled and that no additional structures are built on the site", or any one "removing or dismantling irremovable cultural relics" would be

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(CHEN Jieping. *"TEAMX", Le Corbusier and Mat Building.* Architect, 2007, 128: 51-61)

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

[2] 陈洁萍. 当代毯式建筑研究. 世界建筑，2007，（08）：84-91.
   CHEN Jieping. *STUDY ON CONTEMPORARY MAT BUILDING.* World Architecture, 2007, (08): 84-91

[3]陈洁萍. 当代毯式建筑研究. 世界建筑，2007，（08）：84.
   CHEN Jieping. *STUDY ON CONTEMPORARY MAT BUILDING.* World Architecture, 2007, (08): 84

[4] 全国人民代表大会常务委员会. 中华人民共和国文物保护法. 2002.
The Standing Committee of the National People Congress. *The People's Republic of China Culture Relics Protection Law.* 2002.

"serious enough to constitute a crime" [1] and relevant punishment. Most of the traditional buildings involving with the renewal design process are the anonymous buildings with the general characters of historic buildings and the possibility for transformation.

The building complex means the existing condition of the buildings. The building complexes are always composed by anonymous buildings, which share with similar designing characters and arrange under the same planning roles forming the urban fabric. The building complex extends the functions of the single units and creates the new functions as a whole entity.

The two concepts would help us to set up the comprehensive understanding of the research object, both the formal information and diverse values.

And here explain some similar concepts, such as: historic monuments, which emphasize on their historic meanings of both building and structure, including the deliberate monuments and unintentional monuments; historic relic building, which are of great importance in history, culture, art and other aspects, being well preserved with a limited number; and cultural heritage buildings, which includes both the historic monuments and their physical and cultural environments. Historic building, which is the concept most close to the concept of traditional building, includes buildings possessing the historic value, while traditional building complex focus on the characteristic of traditional or local culture and architecture, which forms the built environment with local identity.

The United Nations educational, scientific and cultural organization and world heritage convention defined the cultural heritage in the Convention Concerning the Protection of the World Cultural and Natural Heritage:

> *"For the purposes of this Convention, the following shall be considered as "cultural heritage": **monuments:** architectural works, works of monumental sculpture and painting, elements or structures of an archaeological nature, inscriptions, cave dwellings and combinations of features, which are of outstanding universal value from the point of view of history, art or science; **groups of buildings:** groups of separate or connected buildings which, because of their architecture, their homogeneity or their place in the landscape, are of outstanding universal value from the point of view of history, art or science; **sites:** works of man or the combined works of nature and man, and areas including archaeological sites which are of outstanding universal value from the historical, aesthetic, ethnological or anthropological point of view."* [2]

The definition indicates the importance of the conservation of traditional built environment, in other word traditional building complex. So, in the process of renew and innovation, consulting the relevant articles of *Convention Concerning the Protection of the World Cultural and Natural Heritage*, *Nara Document on Authenticity* and other international documents would be propitious to the conservation and proper development of non-culturalrelic traditional building complexes.

1.4.2. Research Content

The research process is complicate and repetitious, while the demonstration process should be clear and direct. The conflict causes the confusion in my thought and readers' comprehension. So, in the paper, I try to express a one-way and all-sided research process.

The topic is *Renewal Design of Traditional Building Complexes with the Strategy of Mat Building*. The topic indicates that the core content of the thesis is the renew design

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[1] 全国人民代表大会常务委员会. 中华人民共和国文物保护法. 2002. 第一章第四条，第二章第二十三条，第七章第六十六条.
The Standing Committee of the National People Congress. *The People's Republic of China Culture Relics Protection Law*. 2002: Chapter 1 Article 4; Chapter 2 Article 23; Chapter 7 Article 66.
[2] UNESCO. Convention Concerning the protection of the World Cultural and Natural Heritage. Paris. 1972.

process, the renew design object is the traditional building complex, and the renew design strategy is the strategies of mat building. The thesis states about all the work I've done for the renew design process, including the literature research and exploratory research. The thesis includes two parts. The first part, including the first two chapters, introduces the essential background information and theoretic studies involved in the research, mainly about the traditional building complex (chapter 1) and the strategies of mat building (chapter 2). The second part (chapter 3) states the entire renew design process, including three stages: preparatory work; renew designing process; and outcome evaluation. All the background information mentioned in the renew design process detailedly states in the first two chapters.

Chapter 1, Foreword briefly introduces the background, meaning, and main content of the research.

Chapter 2 introduces the content of renew design. Renew design includes two essential parts: cognition and modes. The two parts attempt to explain from the angles of instructional notion and concrete operation the renew design. In the cognition part, the diverse angles of views are the foundation of the comprehensive cognition. The author studies in angles of time, space, energy and integration to acquire the profound understanding of the relationships between building and history, urban, energy and social cognition. And the understanding is the important support to the renew notion. In the spatial part, author discusses the harmonious co-existing spatial modes of additional space and existing space, founding on the concepts of authenticity and hermeneutics. The authenticity principle conserves the contemporary condition of the existing buildings, focusing on the material and form; while the hermeneutics principle prefer to the feeling and impression of the building existence, focusing on the meaning and spirit. In the renew design chapter, the cognition notions direct the spatial modes, and the both establish the foundation and guideline for the notion and method of further renew design. The core is the balance of the old and the new.

Chapter 3 introduces the content of traditional building. The introduction carries out in both material and consciousness levels. In material level, the research studies on the form of the traditional buildings, following the order of the scale, separately explaining the planning, designing and construction. Then, in consciousness level, the research studies on the diverse values, including the monument, history, ages and ecology, of the traditional buildings on the foundation, emergence, meaning and attachment. The studies on the form and values of traditional buildings correlate and prepare for the renew design. The comprehensive understanding of the object would lead to the wise decision and operation in the renew design process. The core is existence, which makes the material form and attaching values survive and extend.

Chapter 4 introduces the content of mat's building and strategies. The definitions from the Alison Smithson and author provide brief understanding of the mat-building. The definition from author stresses the designing characteristic and reduces the limitation of form to carve the clear impression of mat-building, in which explain the importance of organizing strategies in the characteristic and evolution of mat-building. Then, author selects several classical designing strategies of mat-building, which are proper for the renew design, including "mat", network, matrix and urban. The strategies operate in separate angles in elements organizing and space arrangement. Finally, the architects and their great works in mat-building further explain the evolution of mat-building. The core is the organizing strategies, which are still growing and improving. The studies on the strategies of mat-building could be helpful in setting the renew methods.

Chapter 5 introduces the renew process, which is the core of the whole research. Frist through studying the cases in dwelling community, public building and traditional building renew, author acquires the segmental reference in related area, which is far from the match.

The preparation stage starts in the feasibility, complement and motivation to establish the proper foundation and guideline for the research. Then, the official renew process starts. Integration, in angle of the whole, establishes the integrated design notion and centralizes the operation on the site, reducing the limit from the part and individual and preparing for the further operations. Strategies introduce into the site. The selected strategies: mat, matrix, network and urban separately operate in the site re-organizing the existing elements and expressing the benefits. In unit stage, the operation would further improve the mat strategies with flexible and tolerant operation to break the original fixed and closed space in traditional buildings. In detail stage, the operation works in the structure to final realize the renew outcome. The final evaluation part try to get an objective judgment on the renew design with the standards of renew notion, values conservation and renew attempt.

Above all, the core of the research is the renew-designing process, applying the modern designing strategies to improve and save the oriental traditional buildings.

Chapter 2. RENEW: Materials for a Keywords Lexicon

Following the introduction of the old, the traditional building complex, and the new, the strategies of Mat Building, the content in this part introduces the "renew" process. The renew design process means that, on the essential of the tradition, the design process through the substitution, transformation, addition and other measures introduce the new components. Hence, the relationship between the old and the new, which is the cognition of the evolution process in the view of time, space, energy and others, and the combination modes are the main contents in the comprehension of the renew design. The relationship gets a comprehensive understanding of the current states and the evolutional rule of the renew objects, and regulates the final targets of renewal designs. And the modes provide the assistance for the renew measures. The content in this part starts from the instructional notion and cooperative modes, and clarifies the targets and modes of the renew design.

2.1. Cognition

Affected by the development of modern philosophy, the new historical conception and cognition of cultural diversity engendered, which introduce new angles to observe and cognize the existing themes. The values were detailedly sorted and profoundly studied, which is a great progress. The cognition focuses on observing the renew object, the traditional building complex, in the dimensionalities of time, space, energy and others, with the evolutional view to acquire the evolution rules of renew objects and the relationships between the renew objects and their environment. The cognition would carry out around the views of time (history), space (urban), energy (entropy) and suitability.

2.1.1. Time

Most buildings in their lifetime, from built to ruin, suffer the impacts from both natural factors and artificial factors. The factors leave vestiges on the buildings from time to time, forming the so-called `time trace`. The time traces act on buildings in two ways: first, the natural forces affect the physical condition of buildings, including wind, rain, snow, etc.; second, the artificial factors transform and change leading to the alternation in the function, such as society, economy, politics and ideology. In the second condition, the original functions of buildings unfit the new demands in time, and finally are abandoned. Under the influence of `time traces`, the buildings would be in a distance from their original condition, both in physical and functional.

Zeitenabstand: when Gadamer referred the word `Zeitenabstand`, he meant the time distance. The time expresses itself as past, present and future, and it would cause the time distance. The temple causes the obstruction for `contemporary` people to understand the texts and articles in the `past`. While in the classic hermeneutics, if transform the strange, distant and separate stuffs in space-time into the familiar, contemporary and spanning stuffs in space-time, have to `overcome the estrangement in culture, language, and psychology caused by temple distance, and also the prejudice engendering in history`. And `overcome` means temporarily abnegating the culture, language, psychology and other conception formed in the contemporary world, which is an effective way accessing those in the past and get familiar with them. It's the cherishment for the conception in the past, and reverts or regresses to the past.

In the renew design, architects should also made their thoughts back into the past to acquire a better understanding of the traditional buildings. Only that way, could the architects access to the essence of the traditional buildings and conserve them.

Present: while different from the classic hermeneutics, the historicism claims that the human society is a part of time stream, or history. The stuffs with permanent value and principle are the product of the productivity of the real world. People have to keep themselves in the `zeitgeist` (spirit of the time) to reach the objective historic conception, but the individual conception. For the historicism, the real world is the paramount principle of the time background for the specific period. *All history is contemporary history[1]. (*Croce) The history is about something still alive, but dead. So in historicism view, the value or advantage of historic buildings, which would benefit or express the contemporary world, should be discovered and applied. The renewal design of traditional buildings is a kind of excavation of the `contemporary value`, both in notion and strategy.

While for the contemporary architects, we should not cease at familiar with the essence of traditional buildings. We should explore the contemporary meanings and values from the essence and translate them into the contemporary language to make them well known to the public.

Experience: Adam Yédid stated in one of his articles that for any buildings, new or old, which own the real and specific existing process, own their history.[2] The artificial factors to the buildings, such as society, economy, technology, culture, etc., have been altering since when the buildings were built. The buildings compromised themselves to adjust the altering environment. During the compromising process, the transforming traces in the buildings record the altering process, and provide the reference for cognizing the buildings, even the city, in future. The transforming traces acquire the traditional buildings with temporal values, respond them to the changing demands and values in artificial factors, and provide the possibility for further transformation. In other words, the temporal transformation and change are revisable and reversible. It's the 'real and specific existing process'.

While, the renew design or transformation of the buildings would be considered as the dialogue among the diverse periods in history, which expresses the special relationships and claims. And itself is recorded as a part of history, which provide a bridge from 'contemporary' to 'past'. It's a real history process.

2.1.2. Space

Buildings isn't isolated existing in the cities. They are affected by urban planning rules, and also reflect their impacts back to the cities. The relationship between building and urban manipulates the evolution process of the both. In this part, the discuss focuses on the relationship between historical buildings and cities, outlining the contribution and importance of historical buildings in the evolution of cities.

Balanced Development: in modern society, "rapid development" seems the constant theme of the cities allover the world. However, one of the outcomes of the "rapid development" is the persistent replacement of the existing buildings by the new built ones. The city development should be well controlled in its speed and direction. The excessive speed and blandness put the urban development in jeopardy. Alain Marinos, French national architect and urban planner, states in *Memory in the Present,* that the urban development should apply the long-range strategic perspective. He compared the urban development to a

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[1] Croce, *History: Its Theory and Practice*. New York: Russell & Russell. 1960:11-15
    Corce*, History as the Story of Liberty*. London: George Allen & Unwin, 1941:19-22

[2] Adam Yédid. Know and Create. Technique and Architecture, 475:86-92

running vehicle. The development is the power system, and the conservation is the braking system. The whole vehicle could runs safely only when the power system and the braking system operating balanced. So does the urban.[1] In my comprehension, the conservation in the contemporary urban development means more than the braking system, and also the steering wheel. As in modern society, the replacement is one of the main characters of the urban development, which results in the disappearing of the traditional identities. While, the conservation endeavors to maintain the traditional buildings and identities of the cities, preventing been replaced by the new ones. And, the contemporary notion of conservation provides a brand new idea, transformation for reutilization, in solving the urban problems. The reutilization is more wise and beneficial then the simple and rude "replacement". So the conservation of the traditional building complex means the control of the speed and direction of the urban development, producing a balanced and sustainable development.

Diversity & Vigor: Jane Jacobs described the historical buildings as the indispensable component of city in her famous work *THE DEATH AND LIFE OF GREAT AMERICAN CITIES.* `*The district must mingle buildings that vary I age and condition, including a good proportion of old ones so that they vary in the economic yield they must produce. This mingling must be fairly close-grained.* `[2]Different from the new buildings and their design notions, the traditional buildings posses the specific structure, space, design and other aspects, which represent their particular built periods and existing evolution. The difference of architectural style and design notions in traditional buildings forms the time distance, mentioned as Zeitinabstand, with those of the new ones. The difference breaks the singleness of urban components, and provides the diverse contents. The diversity of buildings leads to the diversity of the space experience in the city. The collection of constant and abundant space experience or activities is the source of the vigor in a city or a community.

Collective Memory: Aldo Rossi indicated that `*the city itself if the collective memory of its people, and like memory it is associated with objects and places. The city is the locus of the collective memory. This relationship between the locus and the citizenry then becomes the city's predominant image, both of architecture and of landscape, and as certain artifacts become part of its memory, new ones emerge.* `[3]  `*The value of history seen as collective memory, as the relationship of the collective to its place, is that it helps us to grasp the significance of the urban structure, its individuality, and its architecture which is the form of this individuality.* `[4]

From the quotation, we could get a general understanding about the relationship between the urban buildings and citizens' public memory. As stated in the forward, buildings are the containers of the activities, and also the memory about them. So, an urban, the collection of buildings in diverse periods, could be considered as the containers of the citizens' continuous memory. Kurt Koffka expresses the importance of the memory in his great work *Principle of Gestalt Psychology*. [5]In one hand, memory helps us learning. Through the memory, we could closely combine the contemporary moment with the past and future, which means the foundation of learning. When learning, the memory provides the experience in the past, forms the understanding, and forecasts the condition in future. The traditional buildings keep the foundation of learning ability, improving out cities. In another hand, the memory disappears when its traces are cleared away. The trace could not impact

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[1] Alain Marinos. *Memory in the Present.* Technique and Architecture, 465: 50-53

[2] Jane Jacobs. *The Death and Life of Great American Cities.* New York: VINTAGE BOOKS. 1961: 151

[3] Aldo Rossi. *The Architecture of the City.* MIT Press. 1982: 130

[4] Aldo Rossi. *The Architecture of the City.* MIT Press. 1982: 131

[5] Kurt Koffka. *Principles of Gestalt Psychology.* Psychology Press, 1999.

on us, and the memory about it will lose. If the traditional buildings are removed form the cities, the citizens' public memory would lose as well.

2.1.3. Energy

In thermodynamics, entropy is a measure of the number of specific ways in which a thermodynamic system may be arranged, often taken to be a measure of disorder, or a measure of progressing towards thermodynamic equilibrium.[1]

By Wikipedia

In *ENTROPY: A New World View*[2]*,* Jeremy Rifkin with Ted Howard pointed that all activities and stuffs human involved, such as buildings, are strictly all under the control of the first and second law of thermodynamics.

The (first) *law of conservation of energy states that the total energy of an isolated system is constant; energy can be transformed from one form to another, but cannot be created or destroyed.*[3]

By Wikipedia

The second law of thermodynamics states that the entropy of an isolated system never decreases, because isolated systems spontaneously evolve toward thermodynamic equilibrium—the state of maximum entropy. [4]

By Wikipedia

The constructing activities and the life cycle of buildings are strictly following the thermodynamics laws. In the constructing stage, cities and buildings acquire the original energy and value through transforming and collecting from other forms of energy, such as material, manpower. When constructing process is finished, the original energy of the building, according to their function and structure, is fixed (the first law). However, through the time stream, the alternation of natural and social environment causes the alternation of the condition of the building. The natural forces affect the physical condition of the construction, including the structure and the material. The transformation in social environment affects the functional condition of the construction. The users expect that the function demands and the spatial experience in the construct could match the contemporary world. Under the affect from both nature force and human society, the city and building gradually lose their original energy and values. The buildings and cities inescapably experience from effective to ineffective, available to unavailable, order to disorder, and irrepealably go to chaos and ruin (the second law)[5]. They have to improve themselves to match the new world, adding into the new energy, as the first process (the first law). The cycle of the buildings pushes forward the progress of the cities.

The renew studies on the strategic transformation of building and city. First, the value and energy in the buildings are transformed from other objects through construct or renew process. The transformation process, construct or renew process, should apply an effective and economy strategy to augment the value and energy in buildings. Second, the

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[1] Wikipedia. Entropy http://en.wikipedia.org/wiki/Entropy 2013/11

[2] Jeremy Rifkin, Ted Howard. *Entropy: A New World View*. Viking Adult. First Edition. 1980

[3] Wikipedia. First law of thermodynamics. http://en.wikipedia.org/wiki/The_first_law_of_thermodynamics 2013/11

[4] Wikipedia. Second law of thermodynamics. http://en.wikipedia.org/wiki/Second_law_of_thermodynamics 2013/11

[5] Jeremy Rifkin, Ted Howard. *Entropy: A New World View*. Viking Adult. First Edition. 1980

target of the renew design or transformation is to reduce the lost energy in form of entropy and extend their life cycle. Practically, the reasons preventing the traditional buildings from normal function are from all sides. Briefly, besides their poor physical condition, the outdated space and function, which could not match with the contemporary demands, directly lead to be abandoned. So, a smart strategy in the renew process, which is tolerant to the alternation in social environment, is the sticking point. Third, in some conditions, the time could transform the new to the old, and also transform the normal to the valuable, just as Jane Jacobs' words: `*Time makes the high building costs of one generation the bargains of a following generation. Time pays off original capital costs, and this depreciation can be reflected in the yields required from a building. Time makes certain structures obsolete for some enterprise, and they become available to others. Time can make the space efficiencies of one generation the space luxuries of another generation. One century's building commonplace is another century's useful aberration.* `[1]

2.1.4. Firmitas, Utilitas, Venustas (Strength, Utility, Grace)

Early in *De Architectura*, Vitruvius put forward three essential rules for architectural design: *firmitas, utilitas, venustas* (strength, utility, grace). At the beginning of the People Republic of China (1950s), limited by the economic condition, Chinese government put forward three new rules for the architectural design in the specific stage: utility, economy and grace. In the new rules, the "economy" took the place of "strength", which implied the "cautiously choice" and "properly fit" in the designing and constructing process. The "economy" rule greatly reduced the waste in construction and guaranteed the quality.

Although, in the recent decades, China gets a rapid development in economy, and the great mount of money from all over the world gathers in the oriental country. The three rules in architectural design still possess the absolutely predominant position in contemporary, by designating the direction, tendency and evaluation standard for the architectural design. And the rules are still valuable in treating the traditional building complex. The renew design strategies applied in renew designing the traditional building complex should also follows the rules in economy, structure and aesthetics angles.

The three rules get new meanings with further development. The three aspects combine with and limit each other to reach the balance.

2.2. Renew Designing Methods

Generally, in the renew design process, the design methods expressing the relationships between the existing components and new components, or the respect and conserve of the existing components, include mainly two groups: authenticity measures and hermeneutics measures. The authenticity measures found on the material and form of renew objects. They emphasize the original existence, conserving the authenticity of original material, form, structure and so on. While, the hermeneutics measures found on the value and meaning of the renew objects. They emphasize the evolution of the value and meanings. "…interpretation legitimately open up new meaning in old texts"[2].

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[1] Jane Jacobs. *The Death and Life of Great American Cities.* New York: VINTAGE BOOKS. 1961: 189-190

[2] George F. McLean. *Tradition, Harmony, and Transcendence.* Washington, D.C. The Council for research in Values and Philosophy. 1994: 21

2.2.1. Authenticity Principle

Authenticity concerns the truthfulness of origins, attributions, commitments, sincerity, devotion, and intentions.[1] The conception originated from the Europe describing the artwork and relative works. The artwork has to be created in the specifically historical and natural context. The real artworks found on the apperception of the beauty in the nature. And the creation process is the unique and non-copy producing process.

The Second International Congress of Architects and Specialists of Historic Buildings gave birth to the Venice Charter, which is an international pact aiming at the conservation of historic monument and sit all over the world. `…the historic monuments of generations of people remain to the present day as living witnesses of their age-old traditions. People are becoming more and more conscious of the unity of human values and regard ancient monuments as a common heritage. The common responsibility to safeguard them for future generations is recognized. It is our duty to hand them on in the full richness of their authenticity*[2]* It claims the importance of the authenticity. 30 years later, *The Nara Document on Authenticity* made a further expatiation of authenticity from culture diversity, heritage diversity, heritage adscription and other aspects. So, the design notion basing on the authenticity should abide the following the rules: prevent the potential damage on historic buildings; the conservation measures are controlled in minimal intervention; make clear identification between the new and original parts; the new parts are reversible and removable.

Parallel Mode: additional spaces are arranged parallel to the original space in two independent and integrated systems. The additional spaces posses their own forms and structures without restriction by the existing ones. Generally, there would be a clear borderline or border area to partition off the original and additional spaces. The borderline and border area also creates the communication and transition area for the whole building. In this mode, the additional part are less limited by the original part, which means a relative free developing space for the additional spaces to acquire the unique and independent characters. The Statens Museum for Kunst (Copenhagen, Denmark) is a classic case in this style. The additional part is arranged in the northwest of the original building, parallel with the rear façade, and there's an intermediate zone is left in between.
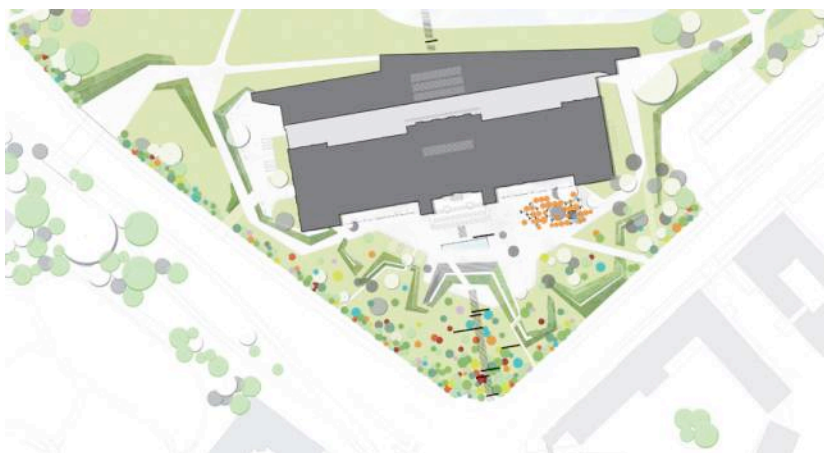

Fig. 2-2 Statens Museum for Kunst
Source: http://act-a.dk/public-space/museumshaven

Fig. 2-1 Statens Museum for Kunst
(Souse: The Architectural Review, 1993,10:59)

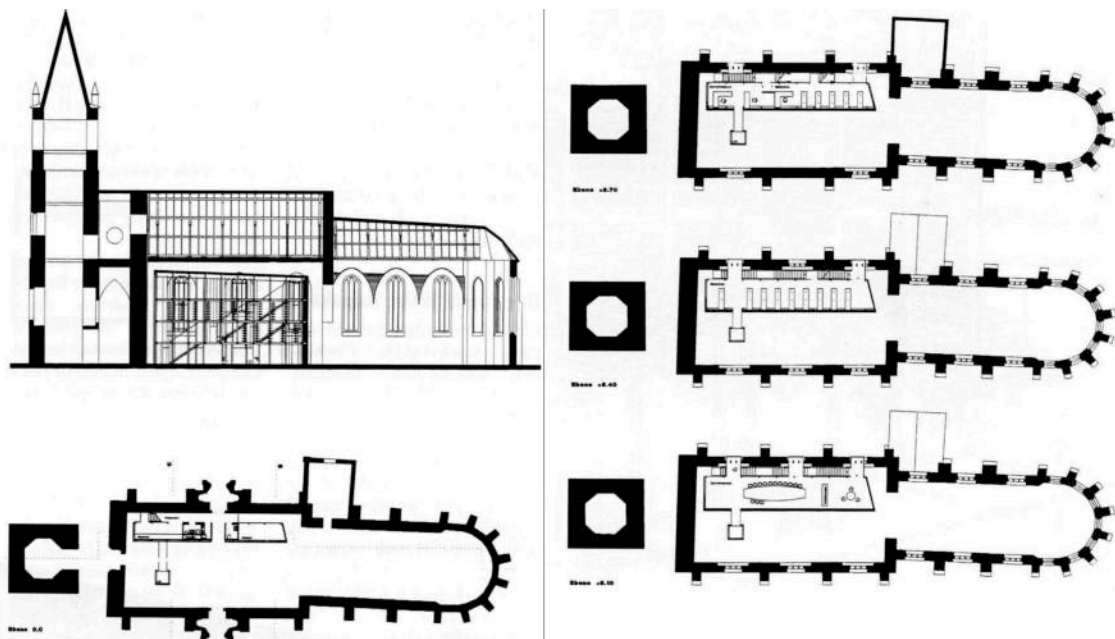[1] Wikipedia. Authenticity. http://en.wikipedia.org/wiki/Authenticity 2013/11

[2] ICOMOS. *INTERNATIONAL CHARTER FOR THE CONSERVATION AND RESTORATION OF MONUMENTS AND SITES (THE VENICE CHARTER 1964). 1965.*

Fig. 2-3 Entrance Level Plan
Souse: The Architectural Review, 1993, 10: 60

Contain Mode: the original space or additional space contains, rounds or covers the other one. Generally, the additional space is arranged inside the original ones, and sometimes it reverses. In some condition, the original space is large enough to contain the additional spaces, and architects infill the new structures to create new functions. For example, St. Mary's Cathedral and St. Michael's Church at Hildesheim is a renew design project. The church was seriously ruined in the 2nd world war. And the architect Sckinkel added a library in the ante hall of the church. He carefully considered about the location of the library, effectively utilized the indoor height arranging the museum reducing the interference to the church, and finally built a similar space and environment as the original part. In some condition, the additional spaces are large enough to contain the original ones. The original ones are treated as exhibits well conserved in the new "library". The original structures acquire the well protection.

Fig. 2-4 Plans and Scetion
Sourse: The Architectural Review, 1999.6: 50~54

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Fig. 2-6 Sections
Source: The Architectural Review, 1999.6: 50~54
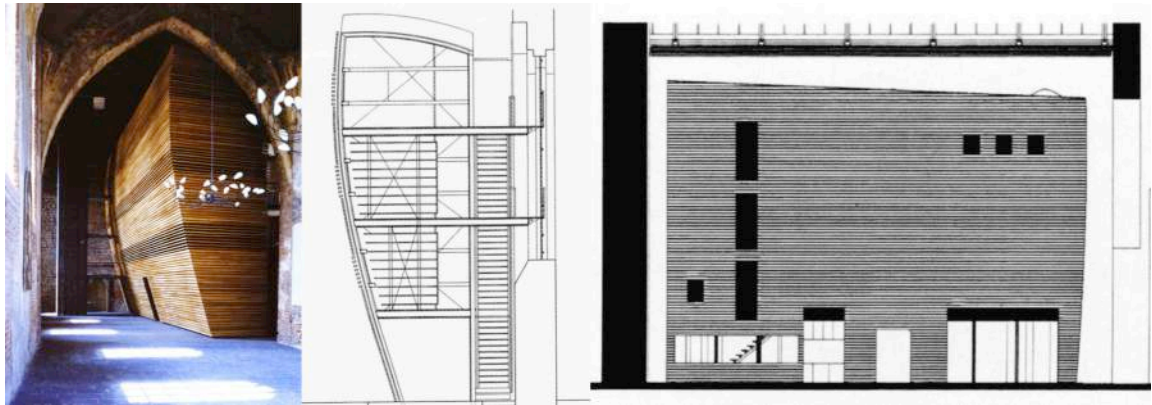
Fig. 2-5 Detail
Source: The Architectural Review, 1999.6: 50~54

Symbiosis Mode: (from Ancient Greek σύν `together` and βίωσις `living`) is a close and often long-term interaction between two or more different biological species. It's a biological concept introducing in architecture. The symbiosis mode means that the original and additional spaces are of the relationship with local independence, holistic combination and

Fig. 2-8 Level Plans
Source: Domus 853: 58

Fig. 2-7 Axonometric General Plan
Sourse: Domus 853: 54

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mutual support. In this mode, the additional spaces embed in the original spaces in fragments, which are different from the other two modes with clear partition. And the both spaces would benefit from the new integration. The Grand-Horum in Belgium was a mining base symbolizing the utopia industry collection. In the renew design, the architect respect the space composition and order of the origin space, and, in the local parts, constructed the modern space with independent elements.

In practice, diverse space modes would appear in the same design to manage the specific condition of the renew objects. And it depends on the actual need and the architect's conception of the renew targets. The ING and NNH Bank in Budapest was an eclectic nineteenth-century Austro-Hungarian palazzo. Erick van Egeraat, the renew design architect, adds the functional parts, such as a two-story extension in organic morphology, in the existing part of the building, and also constructs an seven-story glass box next to the existing part as the new public offices.
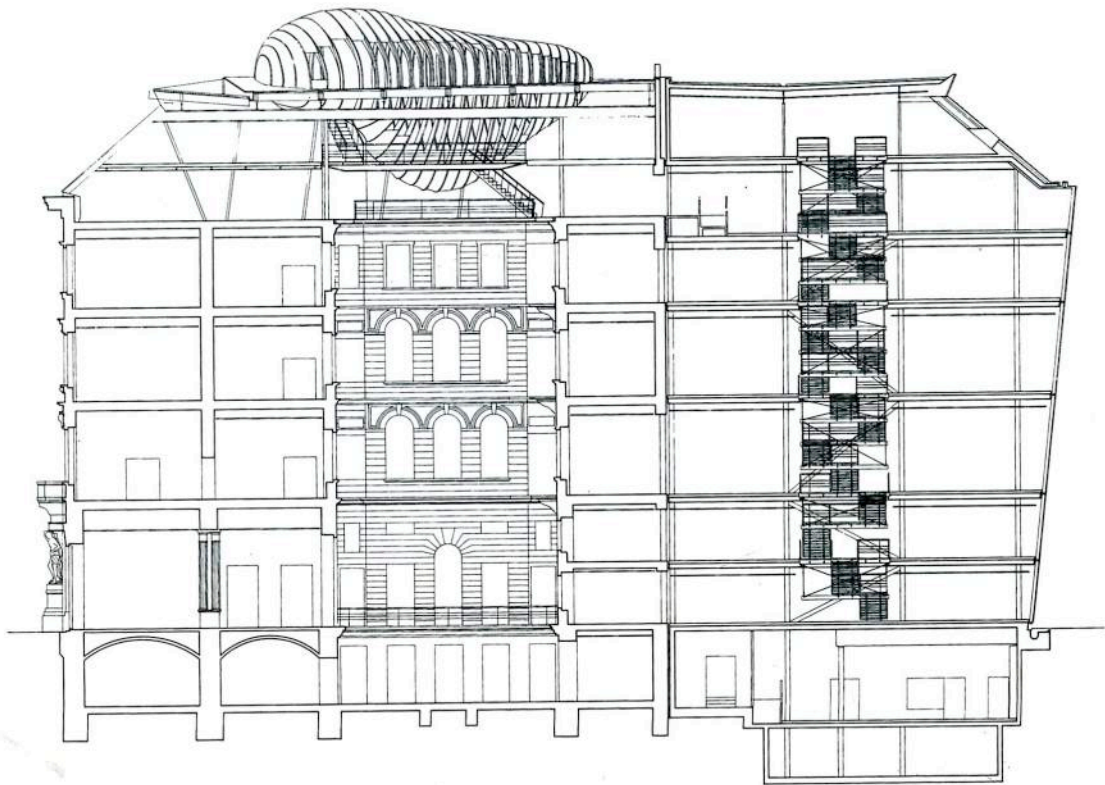
Fig. 2-10 Longitudinal Section
Source: The Architectural Review. 1999.6: 74
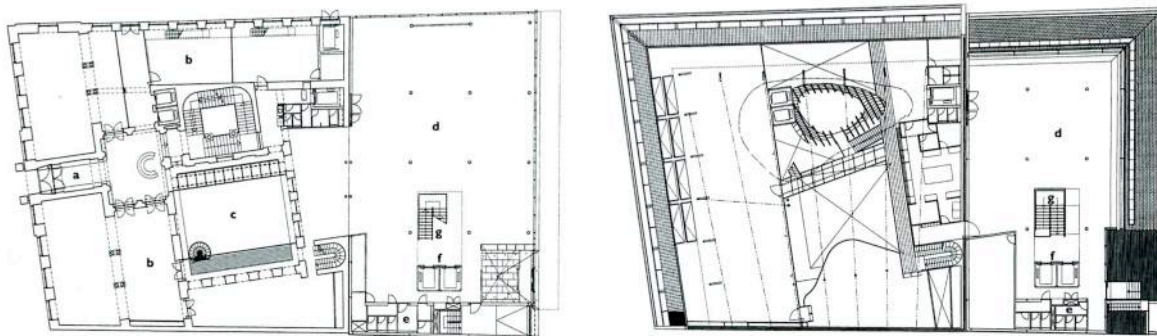

Fig. 2-9 The Ground and Seventh Floor
Source: The Architectural Review. 1999.6: 74

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2.2.2. Hermeneutics Principle

Modern architects propose another answer, hermeneutics, to inherit the information from the traditional buildings. Hermeneutics means a creative method in cognition and transfer the value and meaning of the heritage. "*However, the cumulative proves of transmitting, adjusting and applying the values of a culture through time is not only heritage or what is received, but new creation as we pass this on in new ways.*" [1] McLean expressed his point on the in his work *Tradition, Harmony, and Transcendence*. "*As an active process tradition transforms what is received, lives it in a creative manner and passes it on as a leaven for the future. Let us turn then from the cumulative meaning and value in tradition, its synchronic aspect, to its diachronic or particular meaning for each new time receiving from the past, ordering the present and constructing the future.* [2]" "*The hermeneutics approach directs attention precisely to these unfoldings of the meaning of abstract principles through time.*" [3] " *…our goal should not be simply to reiterate ancient times in reading ancient texts, but to recognize that we come to them from new times, with new horizons and new questions.*"[4] And "*can interpretation legitimately open up new meaning in old texts*".

With the assistant of the methods of hermeneutics, the renew design seeks the new meaning of the historical information, and creatively explores the new comprehension in the conservation and reutilization. The new meaning forms the hermeneutic conception of historic buildings in the renew design process. On the plat form of the hermeneutics conception, the comprehension about the authenticity of historical buildings would extend, enlarge, and introduce in new contents, which promotes the emergence of the new meaning and values in contemporary society. Transform the historical buildings to a `living tradition`. Even in the same case, such as the Tate art gallery competition, diverse architects expressed their own comprehension about the relationship between the modern and the ancient through the separate design works. And the comprehension of the architects extends the meaning and value of the existing construct.

There are diverse hermeneutic approaches in renew design. In my research, I would introduce three kinds of approaches from the angles of inducement event, space match and meaning extension. The approaches appear in the prophase of renew design, and specific originalities for the design.
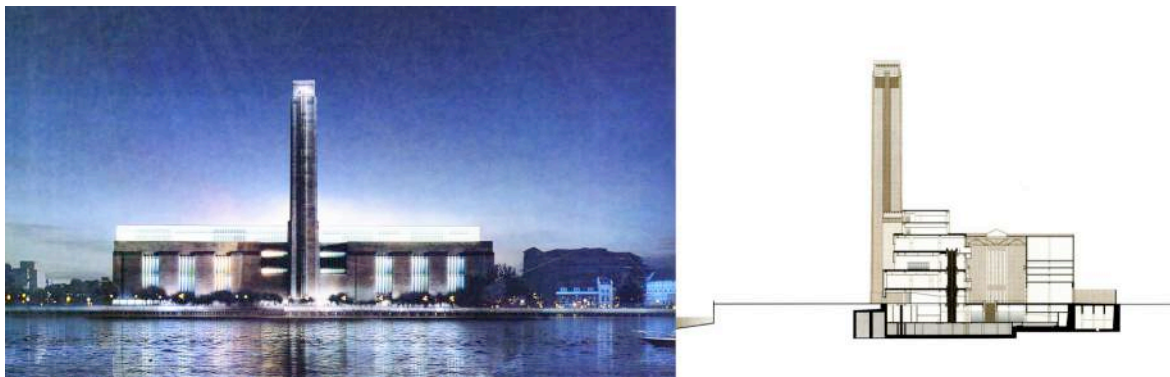
**Fig. 2-11 Herzog & de Meuron's Plan for Tate Modern (Built)**
Source: Technique & Architecture, 449:32

[1] George F. McLean. *Tradition, Harmony, and Transcendence*. Washington, D.C. The Council for research in Values and Philosophy. 1994: 10

[2] George F. McLean. *Tradition, Harmony, and Transcendence*. Washington, D.C. The Council for research in Values and Philosophy. 1994: 18

[3] George F. McLean. *Tradition, Harmony, and Transcendence*. Washington, D.C. The Council for research in Values and Philosophy. 1994: 21
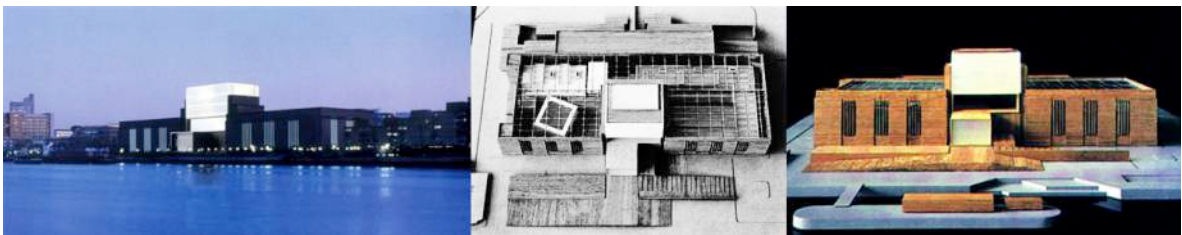
[4] George F. McLean. *Tradition, Harmony, and Transcendence*. Washington, D.C. The Council for research in Values and Philosophy. 1994: 22
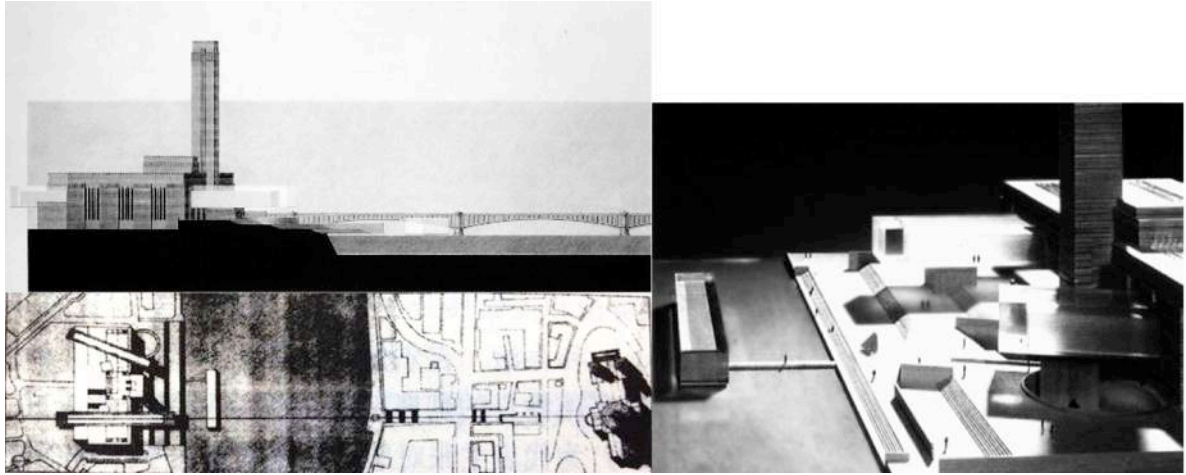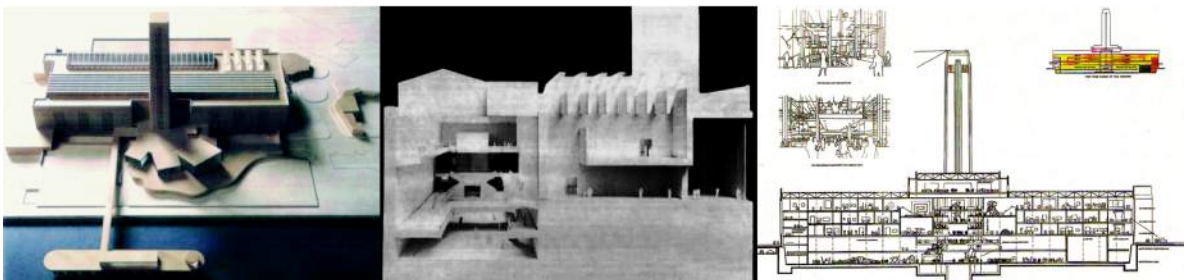
Fig. 2-13 Tadao Ando's Plan for Tate Modern
Source: Tadao Ando. Phaidon Press.1997
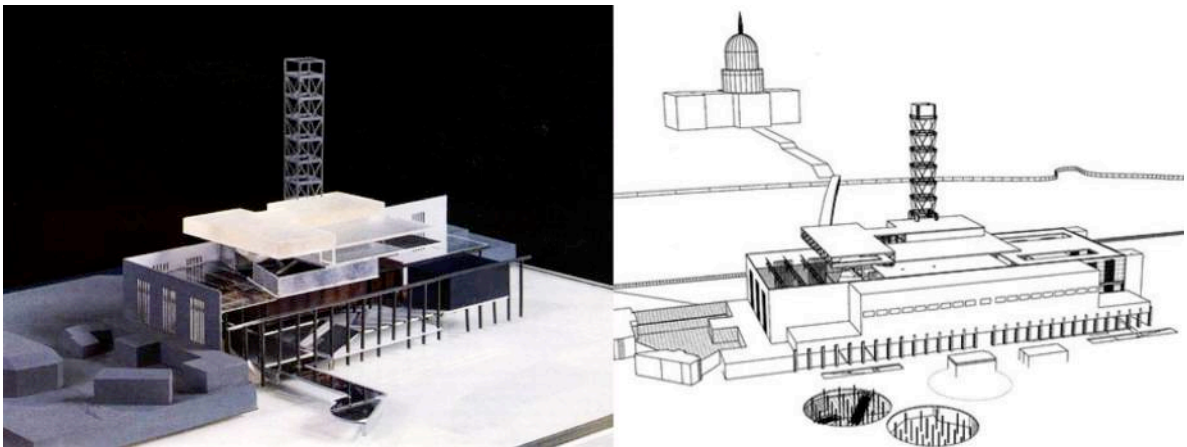
Fig. 2-12 OMA Rem Koolhaas' Plan for Tate Modern
Source: OMA/Rem Koolhaas. El Croquis: 152

Fig. 2-15 David Chipperfield's Plan
Source: El Croquis 87+120: David Chipperfield 1991-2006. 2007

Fig. 2-14 Rafael Moneo and Renzo Piano's Plans
Source: London: Architecture & Design. 2007: 60

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Inducement Events: as mentioned in the foreword, "buildings are the containers of the activities". As the content of buildings, events and its character affect the architectural design and building evolution.

Serious of events shape the evolution of buildings. When built, a building is usually designed for some determinate purpose. While in using ages, the fixed purpose could shift for others. The subrogation of the series of events could reshape the characters of buildings. In *The Death and Life of Great American Cities*, Jane Jacobs gives an example that a building, which was designed as a health club, was used as a school, then, art studio, dental laboratory and others. She points that "what we need, and a lot of others need, is old construction in a lively district, which some among us can help make livelier."[1]

The characters of events would affect the characters of buildings. Generally, the

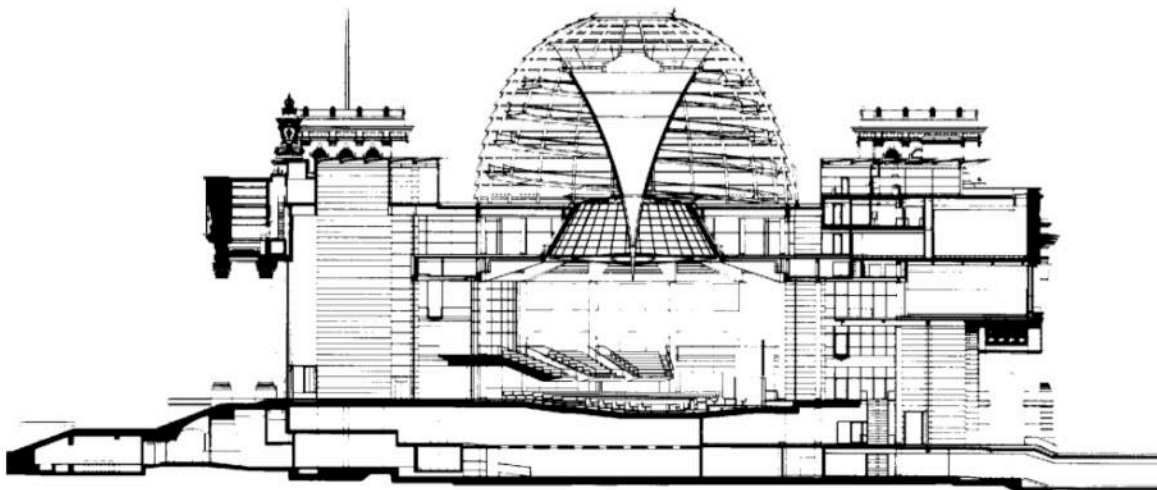**Fig. 2-16 Special Period, Renew Design and Dome**
Source: http://en.wikipedia.org/wiki/Reichstag_building

Fig. 2-17 German Reichstag Building in History
Source: Capital Dilemma 1998: 128
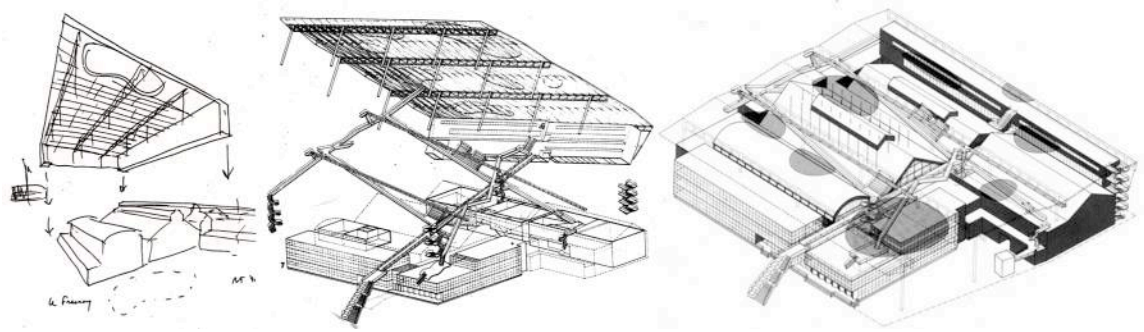　　　http://en.wikipedia.org/wiki/Reichstag_building
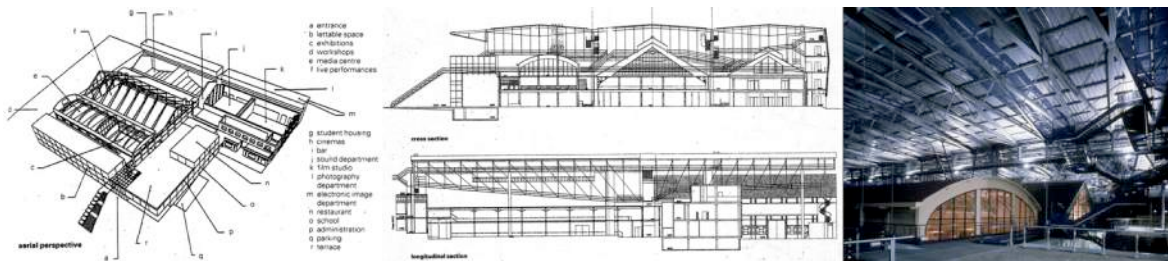

Fig. 2-18 New German Reichstag Building
Source: Architectural Reborn: The Conversion And Construction Of Old Buildings. 1999: 237

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[1] Jane Jacobs. *The Death and Life of Great American Cities.* New York: VINTAGE BOOKS. 1961: 193

Fig. 2-19 Sketches of Art School, Tourcoing, France. Bernard Tschumi
Source: The Architectural Review. 1997.09: 40-42

Fig. 2-20 Art School, Tourcoing, France. Bernard Tschumi
Source: The Architectural Review. 1997.09: 40-42

positivity and negativity of the events determine the public impression, emotion, memory and attitude to the buildings, which greatly impact the transformation and even existence of the buildings. However, architects could guide the public to the positive and rational way with proper designs, such as the renew design of the German Reichstag Building.

Special events related with the buildings could enlighten special inspiration in renew design. Bernard Tschumi, French architect, finished his renew design of the industrial final design.

Space Match: the purpose of the renew designing is to improve the ability of existing buildings for better containing the subsequent events on the existing foundation. According to the purpose, the match is the essential factor to considered about in the renew design.

The subsequent events should match the original characters of the renew objects. When built, a building is shaped for some specific functions, which determine the spatial and structural characters of the buildings. In the renew design, the chosen subsequent events should match the characters of existing buildings, in space, structure, scale and other physical characters.

The renew design should match the renew targets. The renew design should transform the existing building to be tolerant for subsequent events and their possible changes. The renew design chooses the suitable events for the future functions. The subsequent events should not exceed the limits of the existing buildings in space, structure and other aspects. The renew design process should not be over-transformed, which means over the condition and limitation of the existing buildings.

Renzo Piano renewed a factory workshop for a modern opera. The functions of the opera match giant space and structure of the existing workshop. And the architect properly improved the walls and floor to meet the specific demands as an opera.

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**Fig. 2-21 Auditorium Paganini, Parma, Italia. Renzo Piano**
Source: http://www.rpbw.com/project/76/niccolo-paganini-auditorium/

Meaning Continuation: since when got the ability of summarizing and abstracting, human learn to catch the similarity and connection among the phenomenon. The essence abstracted from the stream of phenomenon composes the meaning of human existence.[1]

The environment "meaning" refers to nonverbal communication from the environment to people. [2] And the meaning continuation process is the artificial transformation, comprehension, translation and innovation process of the existing meaning, and the existing meaning evolves and introduces new contents during the process. Existing things, just as the new things, could easily engender the new meaning. Creatively adjusting and locating the existing known things would introduce new comprehension and evolution forming the specific meanings.[3]

The renew design strategies founding on the meaning of existing buildings include the following three methods.

Mirror Continuation: The impacts and limits from the original built environment is an inevitable problem for the renew design. The application of light reflection is a wise solution. The reflection of the existing environment engenders the identity of the environment context through creating an image of the original environment. The mirror reflection creates the new relationship among the protoplast, mirror and image, which provide a particular mode in observing on the original and additional environment, and acquires the fresh spatial experience. The mirror renew design method combines the protoplast and its image, transforms the materiality to immateriality, and realizes the communication between the contemporary and history. The design method continues the meaning and introduces the fresh understanding. A typical example is the Line Art Gallery Extension Project. The architects apply the reflection of the addition part replaying the demands in the existing environment.

cross section   longitudinal section
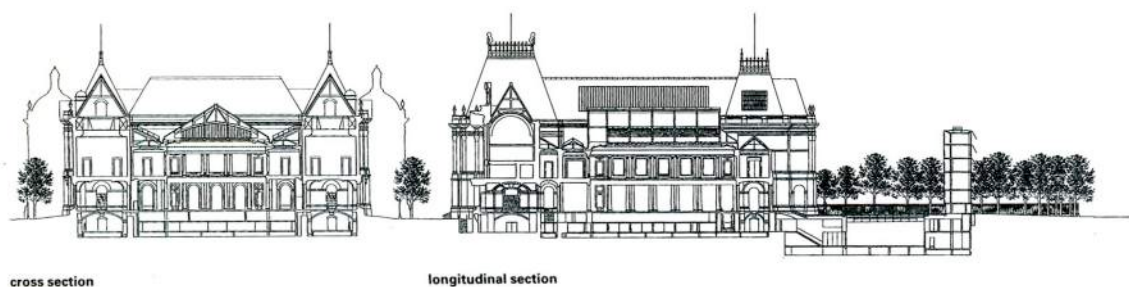
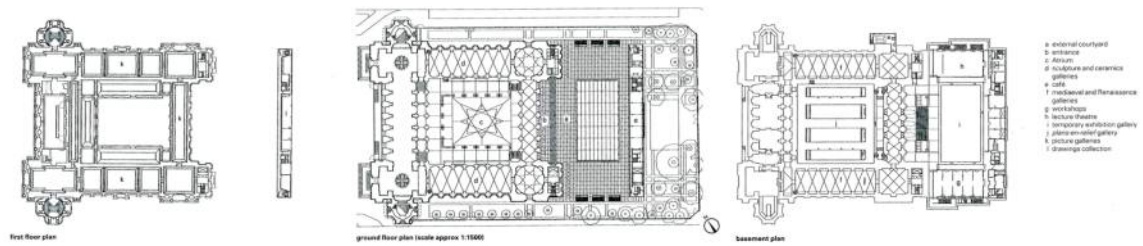**Fig. 2-22 Art Gallery, Lille, France by Ibos & Vitart**
Source: The Architectural Review. 1997: 34-39

[1] Christian Norberg-Schulz. *Meaning in Western Architecture.* New York: Praeger. 1975: 386~290

[2] Amos Rapoport. *The Meaning of the Built Environment: A Nonverbal Communication Approach.* University of Arizona Press. 1982: 178
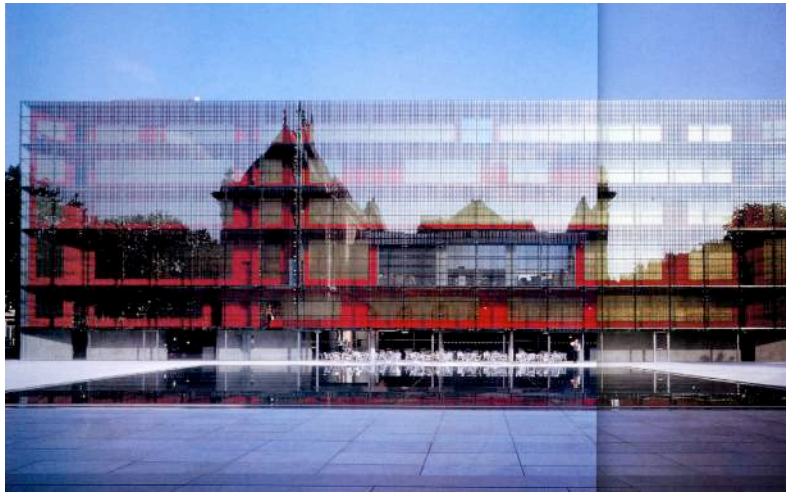
[3] Garth Rockcastle. Adaptive Reuse. WORLD ARCHITECTURE. 2006.05.17-19

Fig. 2-24 Plans of Art Gallery, Lille, France by Ibos & Vitart
Source: The Architectural Review. 1997: 34-39

Fig. 2-25 Art Gallery, Lille, France by Ibos & Vitart
Source: The Architectural Review. 1997: 34-39

Image Continuation: through the metaphor or allegory, architects express their comprehension of the meaning of existing built environment in renew design process with some direct image. The original part and the additional part share some common characters and connections, on which their new image founds. The new imagine of the whole building or building complex extends the original comprehension of the meaning. In the renew design of the St. Maria in Müncheberg, Germany, the architect introduced the image of a boat, which implies the religion metaphor of Noah's Ark in the original part and the knowledge propagation tool in additional part, as a library. The religion thought and the knowledge rescue the whole world.

Code Continuation: affected by the philosophy, aesthetics and other values in postmodernism, the code continuation transforms or extends the existing historic information with a postmodernism way, including which is different from general ways we familiar with. In code design process, the structure, space and traces of the existing buildings experience a series of action,

Fig. 2-23 Deutsch: Der Bau der Arche Noah by Französischer Meister in 1675
Source: The Yorck Project: *10.000 Meisterwerke der Malerei.* DVD-ROM, 2002.

including repeating, overlapping, rotating, shifting and others, forming the concept model. The model is constructed by the original meaning, and its constructing process enrolls the

contemporary ideas. Peter Eisenman established his name in the field, and we could get the related reference with his renew design work of Aronoff Center, USA.
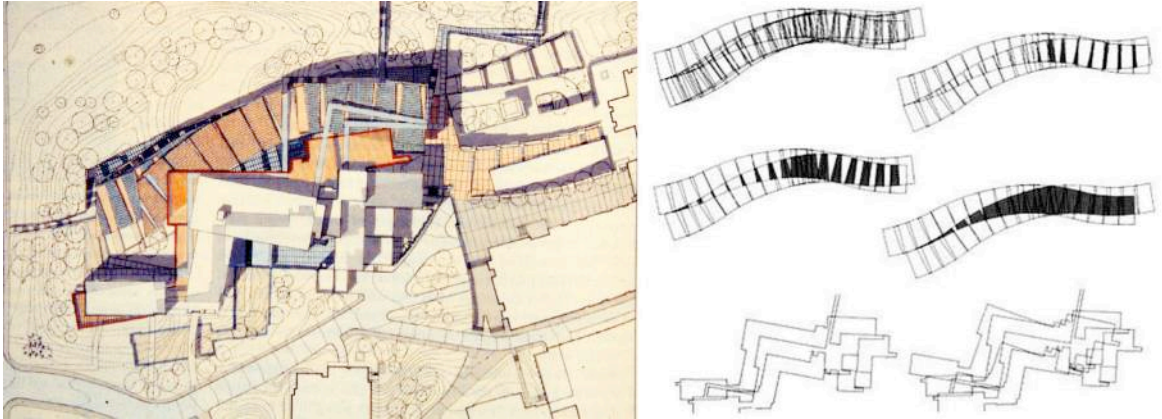
Fig. 2-26 Aronoff Center for Design and Art by Peter Eisenman
Source: Diagram Diaries. Peter Eisenman. 2000
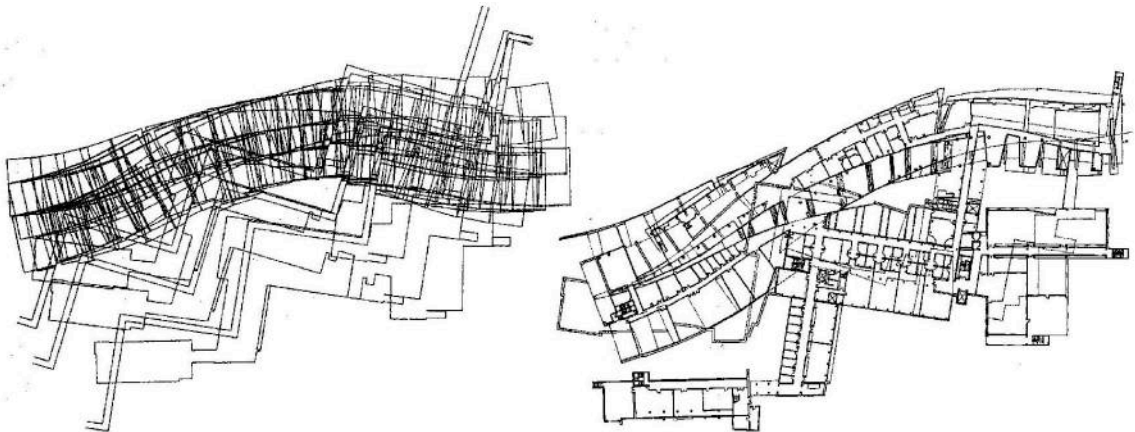
Fig. 2-27 Aronoff Center for Design and Art by Peter Eisenman
Source: Diagram Diaries. Peter Eisenman. 2000

Chapter 3.   TRADITIONAL BUILDING

3.1.   Definition and Form

When talking about the traditional building complex, we have to mention another term traditional settlement. The traditional building complex incorporates the essential characters of ancient settlement, in form of architecture. The settlement is the combination of human residence place, including the collection of building complex and the facilities for production and living. The human settlements provide the places for human social activity, living activity and production activity; and are regarded as the result of collection of wisdom in accommodating, exploiting and transforming the nature world. The outward appearance and the composition mode of settlements are arranged and affected by the local culture and geography condition, and also exert recessive influence on the development of social culture and city pattern.

Fig. 3-1 Embryonic Form of Village
Source: The Development of Urban Design. TJU. 2005:140

The origin of the settlement, and also the building complex of settlement, could trace back to the middle Paleolithic Age, including two basic types: the rural settlement and the urban settlement. The rural settlement is the residence aggregation mainly engaging in the agricultural economy; the composing consists the residence, simply public service, roads, drainage system, and other infrastructure. In some special geography condition, some seasonal and temporary settlements, for example nomadic tent settlement and piscatorial fishermen settlement, appear to meet the special needs, such as food supplying, seasonal temperature, etc. While, the urban settlement gather the non-agriculture population, and is combined by density residence and road frame in large areas, and complicated public institutions for polity, production, education, service and etc., such as government, private school, shopping center. Comparing with the rural settlement, the urban settlement owns obviously characters: large scale, density pattern and close division. Further, the urban settlement is always the politics, commercial and cultural center in the territory.

There were diverse comment and comprehension about the term "settlement". 《史记·五帝本纪》'一年而所筑成聚, 二年成邑, 三年成都'(settlements form in years; towns form in decades; capitals form in centuries.) '聚, 村落也'(people collect and settlement/town form)《汉书·沟 洫志》曰: '或久无害, 稍筑室宅, 逐成聚落。'(No disaster for long; construct for dwelling; finally, form the settlement)"The term *settlement* includes not only the architectural expression—building complex, but the concept of basic social unit in the basement of the agriculture economic system, such as village and town; and the public institutions, which serve for cultural education, politics administration, religion and clan business, are also included in the generalized concept of settlement, such as clan hall, timing tower, temple, opera stage, etc.. So a clear outline of settlement present in front of us: it is a synthesis of nature environment, social culture, constructing system and etc. All the evidence we could get point at the same conclusion: the culture style of the era would dominate the framework of the whole society, engender the architectural pattern, and create the architectural aesthetics. It's unique in the history and follow the change from up to down.
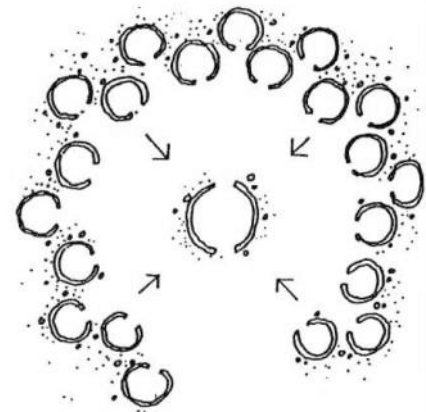
3.1.1. Settlement Setting

The location of settlement reflects the relationship between the human society and natural environment. While in the relationship, safety is only one of the factors. In ancient China, the location of a settlement, ranging from village to capital city, have to possess both the elements of "form" and "image". In ancient China, the human required the natural environments to be part of their daily life, as material supply and spiritual sustenance. So, the settlements were always associated with mountains and water areas. And the measures to handle the relationship between the human settlement and natural environment took a great proportion in settlement planning.

Recorded in *KaoGongJi* (770~240b.C.) and *Guanzi* (475~221b.C.), the cities and towns, considering the population and status in the terrain, were in two essential types: official mode and natural mode. The official mode needed an area in large and flat surface to construct its regular shapes, such as Chang'an (Tang dynasty, 618~907 AD) and Luoyang (Northern Wei dynasty, 386~5 57 AD). The natural mode was usually used in the small towns or villages, which were general in a close chain with the landscapes around, such as the Furong village (Zhejiang, China, since 1750 AD). Although applying diverse condition, the official mode cities built some association with some natural landscapes, such as mountain and rivers. The Beijing (since 1153 AD), Nanjing (since 333b.C.), Hangzhou (since 589 AD) are all the classic models for the official mode combining with natural landscapes.

Further research leads to the comprehension that the combining of ancient settlements and natural landscape is the essential need of people in the time. First, natural landscape provides the great convenience for life around, not only water and food, but also pleasant climate and luxuriant environment. Further, natural landscape becomes part of the folk-custom. Ancient people associated the nature closely with their life, which provide the clues for daily interpersonal communication. Finally, the primitive worship for natural landscape holds the spiritual world for thousands of years, and represents a lofty pursuit in mental world.

Fengshui is an archaic method to select the natural landscape for settlement location, presenting in Jin Dynasty (265~420 AD). It constructed a close connection between human imagination and the shape of natural landscape, especially when the science stayed in the chaos epoch. *Zangjing* , by Guo Pu (276~324AD), first defined the *Fengshui* as:

 "*the core of choose the location is to generate Qi, a growing and energy element. Qi dispels with wind and is bounded by water. The ancients assemble Qi, but not dissipate; make it running with control, so called wind-water, viz. Fengshui.*"

Fengshui is a Chinese system of geomancy believed to use the laws of both Chinese astronomy and Earth to help one improve life by receiving positive Qi. (From Wikipedia) It includes multitudinous fields and embranchments. While for architectural geography, selecting the location of settlement, Fengshui describes the serpentine mountains and flexuous waters as dragon cn., and sum-up four basic types of geographic landscape: Long, Xue, Sha and Shui. Long, the Chinese dragon stands for the mountain chain, which shows the general stream of Qi. Xue, the end of mountains, assembles the lucky Qi in the limited area. Sha, the hills or huge rocks around, protects the


Fig. 3-2 Fengshui Illustrating
Source: 中国民居建筑 上. 2003.119

1. 龙脉
2. 乐山
3. 穴
4. 小明堂
5. 大明堂
6. 右虎
7. 左龙
8. 近案
9. 砂
10. 罗城
11. 朝山

location. Shui, water system, gather the Qi and positive energy for it. A geographic location with nice *Fengshui* needs to meet the demands following: settlement locates in the Xue; Long lies on the back; Sha protects on the left and right; Shui, rivers or lakes, embraces the location in the front.

In the traditional Chinese cultural, the combination of natural landscape and human settlement expresses in general three aspects: the shape of the landscape would be well applied by human settlements, in other words, the natural landscapes affect and fuse in the texture of settlements; the human settlements apply the imagination of the natural landscapes to construct an ideal environment; human also continue the geographic logic of the natural landscape in the texture of settlement, forming the mutual complementation between the artificial texture and natural landscape.
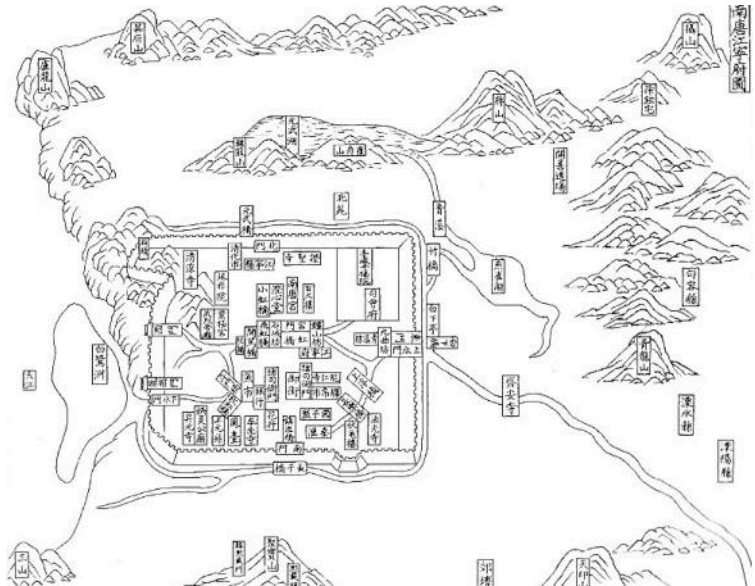

Fig. 3-3 Location of Jiangning, South Tang Dynasty
Source: 《金陵古今图考》陈沂.明. http://zh.wikipedia.org/wiki/江宁府

3.1.2. FORM: Planning (system)

The studying of the formation process of the traditional settlement and also the expression in architecture, traditional building complex, would help to mastering the influencing factors. There are some different between the traditional settlements in orient and occident. In occident, the evolution pattern of settlements follows the order of "inside-out": the radiating and square gridding road system starts from the center and extends to periphery, accompanying with geometric composition and other features. While, in orient, the development of settlement follows the order of "outside-in": demarcating the territory of
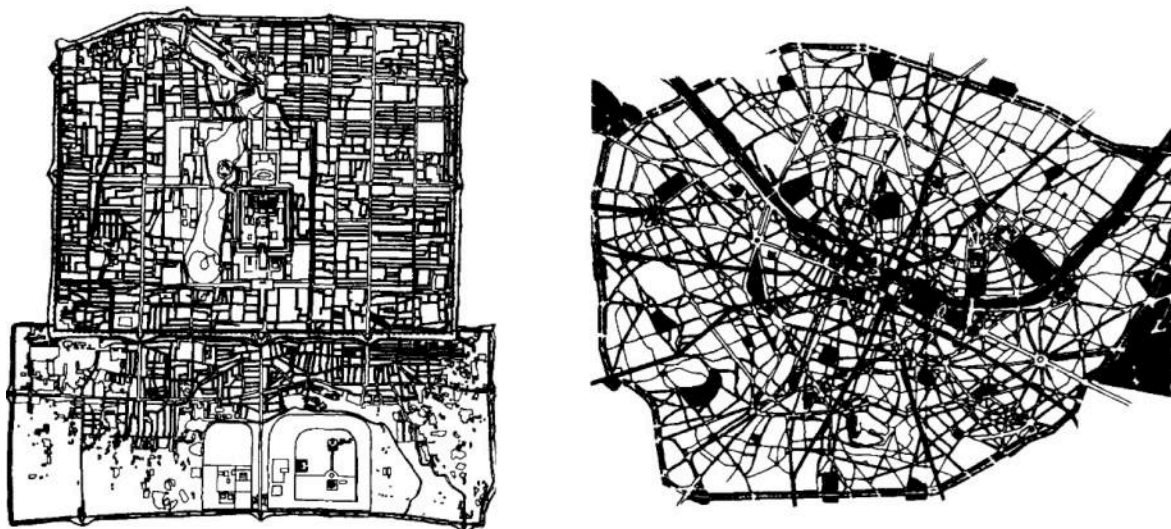
Fig. 3-4 the Orient City Beijing (left) and the Occidental City Paris
Source: 洪亮平. 城市设计历程. 中国建筑工业出版社. 2004:66 HONG Liangping. The Development or Urban Design. CA&BP. 2004:66

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the settlement and the center is for the authority, accompanying with axis line and symmetry arrangement. The factors would be stated from the aspects of the cause of formation, influence mode and influence scope. Generally, the influences come from two aspects: nature environment and human society. The two aspects of influences produce the different effect on the final planning. The planning of the town is the result of diverse influences conflicting and compromising with each other.

Natural factor: (geography and climate)
This part focuses on the geography and climate factors, such as mountain, river and some special weather, which would lay some direct influence in the planning. What's interesting, the natural factors not only play as the block or limit influence, but also provide the essential elements for living.

Mountain: in mountainous region, the altitude difference is the main factor for the arrangement of settlements. While considering the difference, settlements made the appropriate arrangement to fit the vertical change of contour lines. Building complexes extend, following the contour lines, to get the comparatively flat area to construct; or utilize the altitude difference to acquire a suitable geography condition and also better view or ventilation. Public institution and open spaces are arranged on flat lands, where is convenience to access. For example, Ping'an castle is a minority village in the North of Guangxi Province, China, since Yuan dynasty about 1300AD. The contour lines domain the
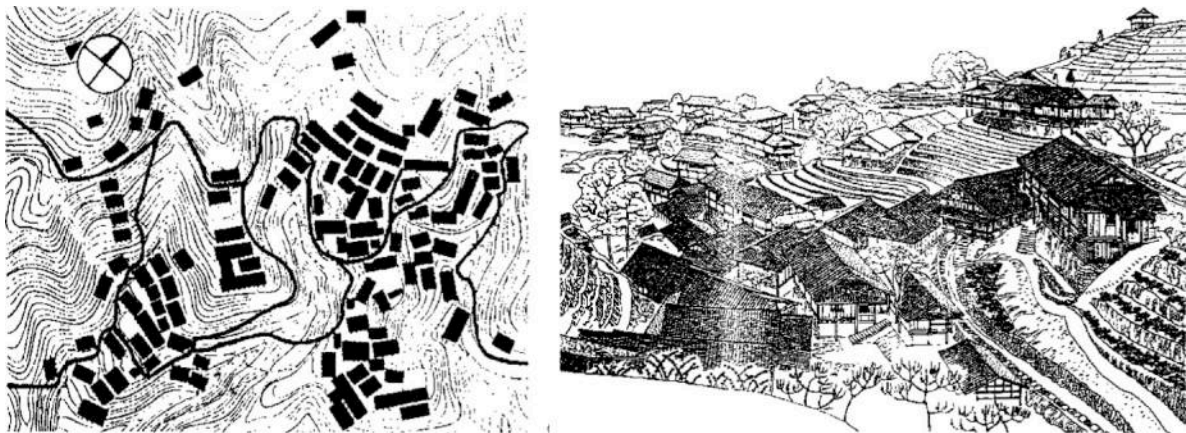

Fig. 3-5 Mountain: Ping'an Castle, Guangxi, China
Source:侯幼彬. 中国建筑美学. 中国建筑工业出版社. 1997:84
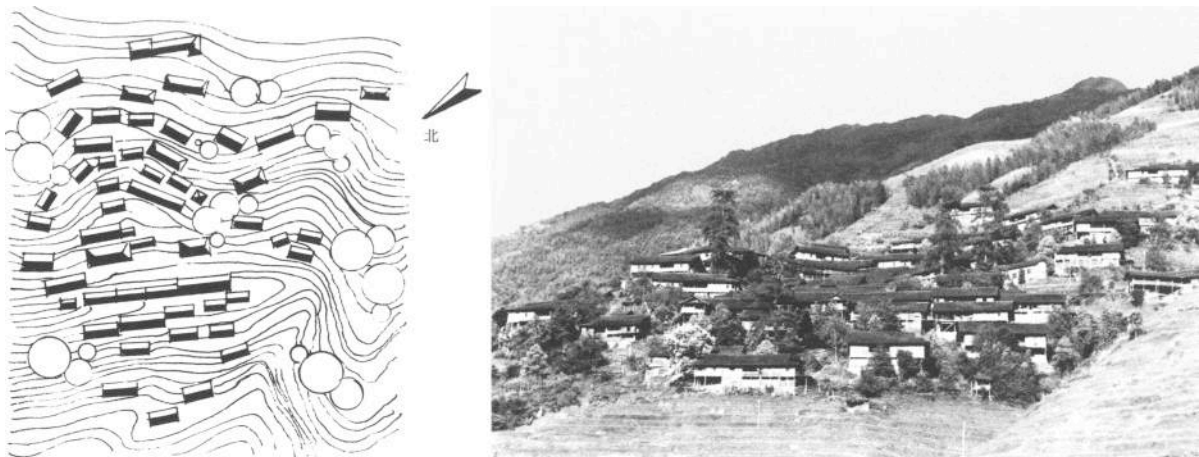HOU Youbin. Aesthetics of Ancient Chinese Architecture. CA&BP. 1997:84

Fig. 3-6 Mountain: Jinzhu Town, Guangxi, China
Source: 陆元鼎. 中国传统民居建筑 下. 华南理工大学出版社. 2003:865
LU Yuanding. Chines Traditonal Dwellings. SCUTP. 2003:865