L'ARCHITETTURA DELLE CITTÀ
MONOGRAPH SERIES

Società Scientifica Ludovico Quaroni

WU LIANGYONG

INTEGRATED ARCHITECTURE

Foreword by Lucio Valerio Barbera

Translations by Anna Irene Del Monaco, Liu Jian, Ying Jin
George Michael Riddel, Roberta Tontini

Afterword by Anna Irene Del Monaco

L'ARCHITETTURA DELLE CITTÀ
MONOGRAPH SERIES #1

Società Scientifica Ludovico Quaroni

l'ADC L'architettura delle città. Monograph Series
The Journal of Scientific Society Ludovico Quaroni

Index

Foreword
by Lucio Valerio Barbera

The 'harmonious city' of Wu Liangyong

A General Theory on Architecture is both a historical and contemporary work. The book was first published in 1989 by Wu Liangyong, one of contemporary China's most influential architects and theoreticians. His eminence is also recognised by the international architectural community, above all, the group of architectural and urban planning theoreticians battling for a more decisive reform to the concepts, methodologies and practices presiding over the construction and requalification of the contemporary metropolis. I first met professor Wu Liangyong in 2005 at the Faculty of Architecture at the Tsinghua University of Beijing; his Faculty. Wu Liangyong founded the school in 1949 – at the age of 24 – together with Liang Sicheng, the father of modern Chinese architectural studies. From this moment – more than sixty-seven years ago – professor Liangyong has remained a central figure in Beijing's academic community. He remains a constant source of inspiration, not only national, to education reforms and, above all, theoretical, methodological and operative research into architecture, the city and the territory. He is a rare figure, present throughout a lengthy historical period witness the world over to tumultuous upheavals in society and its cities. A period whose most dramatic and exalting manifestations were perhaps to be found in China; a period of war, of hope, of revolutions, of great leaps forward, of presumptions, horrors, errors, new leaps forward and incomprehensible economic growth; of irreversible social and cultural metamorphoses and – what interests us most as architects – of staggering urban growth and territorial transformations. The intellect of this minute and genteel figure held fast against the storms of history. The observation of events and the humanist and scientific principles of his personal culture continuously nourished an increasingly more effective reflection on the meaning of architecture in today's world. He also clearly saw its inextricable ties to the substance of the city and the impossibility to substitute the figure of the architect – scientist, humanist and artist. A few years after our meeting, having absorbed direct lessons from Wu's work as an architect and theoretician, I proposed an Italian translation of an anthology of his writings. The material was to be drawn from his many books and essays on architecture and the city published continuously over the course of his incomparable career. Professor Wu Liangyong responded with a challenge: in lieu of this anthology of texts he proposed a full translation, in Italian and English, of a book published twenty years ago: 1989's *A General Theory on Architecture*. Given the pace of cultural debate it would not have been out of place to imagine a book firmly sedimented in history. I understood, instead, that it was a milestone in the expression of Wu Liangyong's ideas; a benchmark that, in all likelihood, served as the starting point for his later theories, even the most recent. Published in other fundamental essays, they range across the vast field of human settlements, touching on all components of the man-made environment. I mention only a few: the fundamental early essay from 1994 on the *Sciences of Human*

Settlements[1]; the 1999 English translation of *Rehabilitating the Old City of Beijing: A Project in the Ju'er Hutong Neighbourhood*[2]; from 2001 *Introduction to Sciences of Human Settlements*[3]; the 2002 *UIA Beijing Charter: The Future of Architecture*[4]; from 2006 the *Second Research Report on the Rural and Urban Spatial Development Planning for the Greater Beijing Region (Beijing, Tianjin and Hebei)*[5]; from 2009 *Architectural and Urban Culture of China.*[6]; in 2010 *Development Tendencies of Sciences of Human Settlements*[7]; 2011's *Integrated Architecture*[8]; and the 2012 text *Beijing 2049, Research on the Spatial Development Strategy*.[9]

The date of the first Chinese edition of Wu Liangyong's book, 1989, is also significant. It represents a historical fulcrum in the development of today's People's Republic of China. It is the year of the events of Tiananmen Square, marking the end of the first phase of the great reforms and the opening up toward successive phases of growth and transformation that continue to this day. The first decade of great transformations began in 1978, when Deng Xiaoping launched the Four Modernizations: agriculture, industry, national defence, science and technology, together with the slogan "emancipate the mind and seek truth from facts". It was a clear call for experimentation in all fields. Society entered a period of ferment and the economy geared up for sweeping changes. The GNP began to grow at a constant rate of 9% per year. The dynamics of reforms rapidly began to profoundly modify the individual and collective habits of the Chinese population. Yet, as Henry Kissinger stated, "what Deng labelled 'Reform and Opening Up' was not only an economic but also a spiritual endeavour"; the years after 1978 were a period of great movement also in the fields of theory, the arts and architecture. "The historical debate on the destiny of China and its relations with the West were rekindled".[10] However, along the way the great debate shifted decisively from the relationship between East and West to that between tradition and modernity. In almost all of the arts modernity appeared to be essentially a problem of language, or better yet a problem of new languages, of their meanings, of their functions. Naturally, even architects – who often consider their discipline only in terms of expression – were drawn into the centre of a discussion raised by many voices. However, as always, the questions for architecture were much more complex; during this decade the discipline was directly involved in the beginnings of the largest territorial and urban transformations ever seen in human history. The first Special Economic Zones were established in 1980 along the southern coast of China, immediately witness to an astounding rise in production and urban growth. In 1984, midway through

---

[1] with Zhou Ganzhi and Lin Zhiqun, published in the second issue of the *Bulletin of the Chinese Academy of Sciences,* 1994.
[2] Wu Liangyong, *Rehabilitating the Old City of Beijing. A project in the Ju'er Hutong Neighbourhood*, Canada UBC Press, 1999.
[3] China Architecture & Building Press, Beijing 2001.
[4] Tsinghua University Press, Beijing 2002, (English and Chinese Versions).
[5] Tsinghua University Press, Beijing 2006.
[6] Tsinghua University Press, Beijing 2009.
[7] China City Planning Review vol. 19, n° 3, 2010.
[8] Tsinghua University Press, Beijing 2011.
[9] Tsinghua University Press, Beijing 2012, developed with Wu Weijia et al.
[10] Henry Kissinger, *On China*, Penguin Books, 2012, p. 398.

the phase of reforms, a further 14 Special Economic Zones were created; five years later the great deltas of the Yangtze River (Shanghai) and the Pearl River (which also includes Hong Kong and Macao) were declared Special Zones in their entirety, together with the exceptionally vast territories of the peninsulas of Shandong and Liadong, to name only a few of the most well-known territories. This same period was also witness to the beginnings of a radical reform of the "home" that, from a collective asset included in the overall compensation paid to each worker became the fundamental private investment capital for families, but also for mixed capital or entirely private companies. This change was not without its difficulties in adaptation and disparities in treatment. The result was a truly differentiated real estate market with the consequent emergence from among the vast number of Chinese workers of a middle class of managers, professionals and important functionaries.

Between 1978 and 1989 all of the tools for creating a profound and incredibly rapid transformation of the Chinese city, territory and society had been developed and thrown into the enormous crucible of reforms, where they tumultuously interacted with one another. In only a few years almost the entire Eastern coast, its cities, its rich fertile fields and the nation's capital, Beijing, were overrun by extraordinary transformations to production and unparalleled growth in demographics and settlement that, for anyone even remotely interested in architecture, the city or the territory, constituted the largest, most impressive living field of observation and, if possible, of study. For those observing and studying it was impossible not to be astonished by the dimensions, vastness and multitude of problems that participated in making the contemporary Chinese metropolis an unprecedented phenomenon in the history of the city, an event whose characteristics appeared to render the notion of architecture as an autonomous work of art irrelevant. What stood out, instead, was the insufficiency of tools – conceptual, disciplinary, design – that architects and planners were accustomed to using when programming and controlling the growth of the modern city.

Wu Liangyong's book thus appeared at a crucial moment in contemporary Chinese history. It was considered, developed and written during most of this revolutionary decade, with Wu himself among the most important witnesses and protagonists. His aim was to offer a profoundly realistic – and thus innovative, organic, multidisciplinary, scientific and difficult – response to the problems of design and the quality of the environment and architecture raised by an urban explosion without any possible terms of comparison. The book is not only a historical milestone in the development of scientific and design theory on the architecture of the Chinese city; it is also a fundamental treatise for comprehending and attempting to resolve the general problems, both present and future, of the modern metropolis. Undoubtedly, in China this condition is expressed and conveyed to the attention of administrators and designers with an exceptional energy. Precisely for this reason the country serves as a laboratory for more critical and advanced experiments. Experiments that include any prophecy on the development or decadence, the success or failure of any other metropolitan system, of any other territorial constellation comprised of human settlements, anywhere in our world.

Wu Liangyong belongs to the first generation of Chinese architects educated in China. During the first phase of the Second World War, still very young, he worked with Liang Sicheng to identify historical and monumental heritage in Beijing to be protected against attack. After founding the Faculty of Architecture at Tsinghua University in Beijing, Wu dedicated himself to research and teaching in the fields of urbanism, architecture and design. The history of architecture, the study of the city and design at all scales thus constituted, from the outset, the arena of his interests, the natural and vast horizon of his manner of intending the profession of the architect, or better yet: his mission. I was struck and convinced by the words of Alexander Tzonis who stated that "As a very young man, professor Wu witnessed the unprecedented massive material destruction and murders that occurred during the Second World War, when Japan invaded China ... It was there, within this devastation that the seeds of his belief in design creating order out of a world in disorder was found."[11] I too am convinced that to the eyes of a sensitive young man, a vision of ruin is more capable of exposing the material complexity of human settlement. Even to a young man not yet fully conscious of its richness and complexity. Prior to the total destruction of each and every element, these settlements were home to the harmonic unfolding of daily life. The vision of war – the destruction of stone, concrete, steel, wood, ingenious inventions, cultivated fields, traditional and modern equipment, memories and meanings, mercilessly stripped bare, coupled with the remnants and fixtures of everyday life and the desperation of survivors – is more powerful than the image of any lively city or beautiful landscape. Thus Wu Liangyong, with the acute lucidity of a genuine, future architect, was able to draw a positive certainty from this condition of desolation. The certainty that architecture, the art of constructing the spaces of individual and collective life, giving them meaning, dignity and beauty, cannot be other than an act of supreme individual expression, despite being the fruit of a synthetic intuition of collective feelings. This is the prerogative of pure art. In Wu's conception, in order to construct and reconstruct the spaces of life and give them meaning, architecture must instead be above all a space of understanding: an understanding of the needs and aspirations of its inhabitants, of the values of place, of the best methodologies and techniques for responding to those needs and respecting those values; an understanding, finally, of the formal and symbolic language with which to fully and humanistically express the individual dignity of each inhabitant and the harmony of the community, large or small as it may be. I believe that Alexander Tzonis was also right when, projecting the figure of the young Wu, now far from the theatre of war, concluded "It was there that what he would later call 'a General Theory of Architecture' was first envisaged".[12] Immediately after the Second World War, Wu Liangyong travelled to the United States where he studied and worked with the great Finnish architect and town planner Eliel Saarinen at the Cranbrook Academy (Cranbrook Educational Community), in many ways considered the American equivalent of Walter Gropius' Bauhaus. It was with Saarinen that Wu probably dictated the conceptually more complete form of his vision of architecture as an activity focused on comprehending and designing the city as an organic whole. His General Theory on Architecture undoubtedly

---

[11] Alexander Tzonis, Foreword to Wu Liangyong: *Reflections at the Turn of the Century: the Future of Architecture* for the Beijing Charter for the 20th UIA Congress, 1999, p. 11.
[12] Alexander Tzonis, *ibid*. p. 12.

contains the echo of Saarinen's principles: "every object, in the human environment, is architecture". Yet Wu Liangyong also folded Saarinen's teachings into his own way of interpreting academic and institutional commitment. Other than traces of the skill of Liang Sicheng, it is also easy to perceive the presence of the Finnish master, with his great trust in the "institutions of research … responsible for maintaining the quality of production in line with new discoveries and new needs".

Approaching the period of the great reforms, at the end of the Cultural Revolution, Wu was once again offered the possibility to travel abroad. His international activity would continue uninterrupted from this moment onward; an activity that – also via his important roles with the International Union of Architects – was fundamental to the construction of his identity as an architect and architectural theoretician, a full member of the generation of new masters continuing the work of a special group of great pioneers – such as Patrick Geddes, Lewis Mumford and, precisely, Eliel Saarinen – who assumed the city as the subject against which to measure the effectiveness of a humanist and scientific vision of modernity. In this framework, Wu's originality lies in the fact that, since his debut, he had worked to construct, and later refine and continuously update, a broad general methodology of designing. The role of the architect was re-evaluated to the point of assuming the value of an indispensable director of any physical transformation of the territory or the city. Its is an almost a Renaissance vision, one could even say "Da Vinci-esque", of the designer, in equal parts scientist, humanist and artist. In reality, I believe that Wu Liangyong's great trust in the search for a general method of designing is animated by and keeps alive the entire history of Chinese thinking. It is founded on the obligation to continuously build and rebuild the equilibrium of the world with method and patient strength, passing from the accurate analysis of objects to the harmonic synthesis of the whole. Hence a special, I would say philosophical added value is acquired by Wu's logical design grids with respect to comparable examples – the "Thinking Machines" of Patrick Geddes, the "Global Ecology Thinking" of John McHalle and the "Yale Grid" of Serge Chermayeff. The same could even be said of the extremely complex and multidisciplinary grids of Costantino Doxiadis, to whom Wu, by his own admission, is indebted for his systemic approach.

With this intense educational experience behind him, and with an obvious projection toward a global and complete theoretical organisation of design, Wu Liangyong actively participated, in his role as architect, professor and theoretician, in the first decade of reforms and the "cultural fever" that accompanied it. As affirmed by P. Rowe and S. Kuan[13], it was an uncertain and inebriating period. There was a flowering and overlapping of diverse cultural approaches: from logical positivism – which appeared closest to the needs of reformers inside the government – to a sort of renewed Confucianism, re-elaborated around the Academy of Chinese Culture presided over by Tang Yijie and supported by a dynamic vision of tradition; from the commitment to a humanist reform of modernism pursued on the basis of Chinese traditions, and in so doing returning

---

[13] Peter G. Rowe, Seng Kuan, *Architectural Encounters with Essence and Form in Modern China*, Massachusetts Institute of Technology, 2002.

to the enlightenment inspiration of the May Fourth Movement[14], to the affirmation of tradition as an integral part of contemporary cultural production based on the critical theory of Hans-Georg Gadamer and Martin Heidegger. A controversial intellectual, Li Zehou, known above all for the 1988 text "Essays on Modern Chinese Intellectual History"[15], appeared to mark the end of the lengthy debate on Essence and Form (Ti and Yong) – that is, between substance and the applied and communicative interface – that characterised modern Chinese culture. He overturned the assumption made by Chinese reformers during the nineteenth and early twentieth centuries, claiming the justness of the affirmation "modern content and Chinese form"[16]. The realisation of the Fragrant Hills Hotel designed by the famous Chinese-American architect I.M. Pei in the periphery of Beijing in 1982 appeared to support his claims. Architectural *postmodernism*, which gradually become known in China sometime around 1986, served to feed an already lively debate on the association between history and architecture. The relationship between different disciplines was liquid: contextualism, always the object of passionate defense or criticism from the world of architects, became a theme to be elaborated and discussed in disciplinary contexts linked not only to the form and structure of the physical environment. In this incredibly rich, though often contradictory situation it is not possible to fully disentangle the comprehensive experience of Wu Liangyong. Speaking on his behalf are a number of fundamental projects realised during this time, evidence of his activity as a scholar – demonstrated, among many other things, by the foundation, in the early 1980s, of the scientific journal *Urban Planning Review*. However, the most eloquent text is that presented here.

A text whose every chapter and page appears to be filled with Wu's unsurpassable desire for a general synthesis of the reality of architecture, consistently conceived as the *architecture of the city*, a multiple material, complex, multidisciplinary *par excellence*. Context is not limited to the elements of the physical environment; more than history, it also includes the life of each and everyone one of us, the spirit of the present, as well as the past and future – as Mumford would say – of the culture of the city. It almost appears as if Wu, while actively participating in the great debate, never forgot the reality of China's cities. In the midst of the philosophical and idealist discussions occupying intellectuals, the country's cities were transforming and revealing the unknown potentialities of the forces brought into play by reforms. They were revealing the fragility and inadequacy of any present method of administration, of any tradition of design. Hence Wu's book is aimed at two privileged groups of readers; firstly, those responsible for governing the city, in order that they are able to recognise the necessity to consider the metropolis and the territory

---

[14] The May Fourth Movement was an anti-imperialist, cultural, and political movement growing out of student demonstrations in Beijing on May 4, 1919, protesting the Chinese government's weak response to the Treaty of Versailles, especially allowing Japan to retain territories in Shandong which had been surrendered by Germany after the Siege of Tsingtao. These demonstrations sparked national protests and marked the upsurge of Chinese nationalism and laid the groundwork for the founding of the Chinese Communist Party in 1921 in Shanghai.

[15] *Zhongguo gudai sixiang shi lun* (Essay on modern Chinese intellectual history) Dongfang chubanshe, Beijing 1987.

[16] Peter G. Rowe, Seng Kuan, *Architectural Encounters with Essence and Form in Modern China*, Massachusetts Institute of Technology., 2002, Chapter *The culture fever*, p. 137.

as living organisms, impossible to divide into *traditional modern sectors*, functional and mono-disciplinary. To administrators Wu indicates the need to consider planning in favour of the city and territory as a unitary multidisciplinary process that is complex, difficult and radically innovative with respect to *modern customs*. On the other hand, the forces at play, the vastness of populations, the speed of changes, no longer permit us to place any trust in the synthesis of ancient wisdom. A new process of synthesis must be projected with farsightedness, patience and broad objectives. It must be marked by elasticity and precision. It must be possible to explore – and modify – analytically and in detail, during all of its phases. It must be able to respond to and converge the contributions brought by any discipline related to the environment, construction and mankind, including the arts. This is the Science of Human Settlement, the true identity of architecture today, the new mission of the modern architect without which no valid synthesis is possible. The second group of privileged readers consists, precisely, of architects. First and foremost the body of professional Chinese architects, but also – I would say – any modern architect who comprehends the marginality his role has assumed in the now deeply rooted functional subdivision of responsibilities, in the exasperated separation of competencies. In this sense, Wu Liangyong's book is a loud and passionate cry to the contemporary architect, to our anonymous colleagues forced back into the limited space of daily professional life and, at best, sterilely debating the adhesion to "chaotic informality" or "authoritarian formalism". Wu's book is thus also an educational work, perhaps his greatest didactic piece; if we look carefully it exactly resembles the treatises or our ancient masters, focused on helping architects to comprehend the actual truth of architecture, the perennial necessity for its renewal. From this point of view, *A General Theory on Architecture* is truly a modern treatise. The fruit of a lengthy maturation overlapped with a complex biography. Published in 1989, it fully traced a new, perennial itinerary of research. Our lives evolve at a velocity unknown in the past; epochal changes are no longer measured in centuries, but instead in years. For this reason we must consider the book presented here as the matrix of a constant flow of innovative ideas. It should thus come as no surprise to find Wu, today, involved in decisively broadening his conception of the Science of Human Settlement; from 1989 to the present, economic crises, climate change, the rising tide of population growth and the physical and forecast scale of urban phenomena, all push for a renewal in the conceptual and methodological latitude of his theories. Thus 2010 marked the birth of the methodological renewal of his *A General Theory on Architecture*, the theoretical substance of his Science of Human Settlement: a new theme that is inherently multiple, which can be synthesized in a fascinating slogan: "A Greater Science, a Greater Humanism, a Greater Art"[17]. I can only hope that I will not have long to wait before being able to present the translation of a new crucial book by Wu Liangyong, the architect.

It is always the case that the work of a true master stimulates reflections on our own country, our culture, our conceptions, our masters. Beyond the imposing intellectual nature of his theory and the architectural value of his projects (which I can only briefly mention here), my interest in the work of Wu Liangyong has been constantly nurtured also by the power

[17] Wu Liangyong, *Development tendencies of Science of Human Settlement*, "China City Planning Review", Vol 19. No.3 2010, p. 11.

lines, in some cases buried in some cases exposed, that feed his conceptions and those of some of Italy's great masters. Is the complexity of Wu's idea of "architecture" not perhaps the same that emanated from the ideas of Ludovico Quaroni? Is Quaroni's passionate interest in the city, intended as the final, and perhaps sole aim of architecture, not perhaps the same as Wu's? Is Quaroni's vision of the city of the future as an organic unit fused with its territory, the generator of an integral urbanism, without distinctions between planning, architecture and historical and figurative imagination, not perhaps the same vision that stems from every page and every architectural or territorial project developed by Wu? Does Wu's constant attention toward a process of design that involves, from the bottom-up, from the truth of mankind, design decisions not correspond with the attention toward the richness of "the lowest and most ancient" humanity that not only Ludovico Quaroni, but all great Italian architects and the most sensible among them put into practice during the hope-filled years of the second post-war period known as "neorealism"? What of Wu's masterpiece of true urban architecture, the Ju'er Hutong residential neighbourhood in the historic centre of Beijing, structured as the organic evolution of the ancient single-family dwelling in a modern multi-family settlement; does it not appear to follow the lines of the typological and linguistic development refined by Saverio Muratori in his search for an "operative history", treated as a science of human settlement, in Venice and Rome? Finally, could it not be said that Wu's familiarity, necessary and pressing, with ancient and contemporary philosophical thinking resembles Giuseppe Samonà's ability to fascinate his young pupils and impose his ideas of *evolutive city* on politicians and administrators, from Palermo to Venice? I will stop here. There are times when I catch myself imagining being present during an impossible dialogue between our Italian masters and Wu as I stand enchanted before them.

Preface to the Italian-English edition

by Wu Liangyong

This book recorded my explorations into the theory of architecture in China in the 1980s. A whole 20 years have passed since the publication of the Chinese Edition in 1989. In the 1980s, China saw a transformation of political thinking from the mistakes of the 1960s and 1970s, and an initiation of the opening-up and reform policies. At that time, every walk of life was searching for a new way of development, resulting in the continuous rising of different thoughts. It is under that background that the Chinese Edition of this book was written. It intended to look to developed countries for experiences and lessons, and to the Chinese tradition for wisdom and insight, and sought to resolve the pressing issues of the accelerating development. The issues that became the focus of the book included, amongst others, the care for land resources amidst rapid urbanization, the protection of cultural and historic heritage, and appropriate housing for all. Personally, it is deeply regrettable to see that many of the concerns we spoke about over and over again 20 years ago have actually materialized as facts today.

De Architectura by Marcus Vitruvius Pollio of Ancient Rome, *De Re Aedificatoria* by Leon Battista Alberti of the early Renaissance, and the development of theories of Modern Architecture in the 20th century all indicated that architecture must reach out as it develops. This is in the nature of its development. In our times when numerous disciplines are growing in parallel, it becomes even more important to reach out beyond the traditional scope of architecture via a conscious effort of trans-disciplinary research. That is what I call 'A General Theory of Architecture'.

After the publication of the Chinese edition of this book in 1989, I turned to a research framework that is based on an outlook of the Sciences of Human Settlements (SHS). In a sense, the Sciences of Human Settlements framework further broadens the proposal of the General Theory of Architecture. In fact, many issues had already been discussed from an emerging SHS perspective in the 1989 book. Since the 1990s, the concepts set forth by the General Theory of Architecture and the Sciences of Human Settlements have gained momentum in China. It has increasingly drawn attention worldwide in the field of architecture. For instance, the *Beijing Charter* from the 20th Congress of the International Union of Architects (UIA) advocated "the development of a general theory of architecture" and "the building of better human settlements of sustainable development is the common goal and ideal of the humankind".

Several years ago, I met Professor Lucio Barbera, Dean of the Faculty of Architecture at Sapienza University di Rome, when he led a team to study the scenic areas around the Fragrant Hill and the Summer Palace in Northwest Beijing. Under his leadership, the joint studio of 21 days produced works that feel like a breath of fresh air, which I appreciate and admire. We became good friends then. I especially acknowledge his kind efforts to see the English and Italian editions through to publication. I look forward to the feedbacks of these editions.

WU Liangyong, 1st March 2009

Introduction

Why are we proposing the idea of *A General Theory of Architecture?* It is not because we consider that Architecture, in the common sense of the word, has outlived its usefulness; neither do we negate conventional architecture (this kind of negation can be heard both in China and elsewhere).

However, one cannot fail to recognize the significant changes in politics, economies, and society world-wide, and the pressure such changes exert on Architecture and the architectural profession. This, we presume, will profoundly transform the theories and the profession of Architecture, at whatever quantities, scales, or tempos. Nowhere is this more apparent than in China, as a result of the unprecedented rate of construction during the past decade.

This prompts us to comprehensively re-think the problems we are facing, and the theoretical approach that we should adopt for our future work.

The human habitat is an entity consisting of natural, artificial, and social facets; the artificial environment includes both the interior and the exterior of the building. In order to fulfil his professional remit, an architect must understand the interlocking relationships between the different agents and factors involved. Only through an in-depth comprehension of these relationships can the architect begin to reconcile the conflicts encountered in production and living, and to find a path between ideals and realities, and to shape the physical environment accordingly.

The scope of design in the general sense should cover a full spectrum from the micro to the macro – for instance from an individual building to building complexes, and to towns, cities, and city regions; even within an individual building there is a microcosm, of different functional and aesthetic spaces. The architect has a role to play at each of these levels; in any case, the architect must be aware of their existence.

Although the sophisticated specialization of labour in modern society tends to narrow the scope of architectural practice, Architecture should not be restricted in its outlook. Of course architects should fulfil their professional duties; however, to perform these duties, the architect should broaden, rather than narrow, the intellectual domain of Architecture. This is also the conclusion reached through professional practice. The successes and failures of architectural design has taught us that it must be done in the context of urban design and urban planning; similarly, urban design and urban planning must be steered by the concept of regionalism. This is a dialectic approach to the design, in the general sense, of the human habitat.

As we start to explore these issues in some depth, whether from the macro or micro perspective, we inevitably come across a wide range of academic disciplines. This is necessary for the understanding of the issues in question. When approached from an inter-disciplinary angle, our existing knowledge of Architecture will be broadened and enriched, so much so that we can understand its structure and function by means of the interaction, the sequence, the layer, the order and the integral composition of the key factors.

For lack of a more suitable name, we propose to call this inter-disciplinary perspective of Architecture *A General Theory of Architecture*. In this book we will attempt to provide an elementary description of it. Our attempt to explore the ideas of *A General Theory of Architecture* is actually an attempt to construct a conceptual framework that would be appropriate for the true professional role of the architect of today.

Since this General Theory of Architecture is not a negation of the traditionally conceived architecture, we do not need to reiterate the premises already established in the traditional thinking about architecture. We will focus on the exploration of the issues surrounding traditional architecture, such as settlement, regionalism, culture, science and technology, policy and legislation, the architectural profession, architectural education, and the arts. We will not claim to be able to provide definitive answers, but we will raise as many questions as we think relevant. Follow-on team work will be required to complete the academic framework through an assiduous programme of research.

As a Chinese scholar, the discussions and statements I make in this book will directly relate to Chinese issues. Some of the issues might be of relevance to other developing countries, or indeed to the general predicament of architects in today's world. However, our analysis will be unashamedly based on the conditions of China today, for architecture is rooted in matters local, and only through an in-depth study of the local reality can we hope to identify issues that are general and theoretical.

Chapter 1
A Theory on human settlements

1.1 Human Settlements

Traditionally, the discourse on architecture confines itself to matters of buildings. For instance, one usually defines a building as "a shelter to protect humans from rain, wind, heat and cold". This shelter is developed technically and artistically to become "architecture". Both the material and spiritual aspects of architecture are recognized, although this traditional view considers architecture as individual buildings. Obviously, this concept of architecture has its limitations. It ignores the important point that human beings have been living collectively for most of their history. From the sites of antiquity to the villages, towns and cities we know today, we can perceive the importance of settlements as an essential form of living. The architectural activities in human history, especially the architectural development in the villages, towns, cities and metropolises that we know, cannot be fully explained if we only rely on the concept of architecture as individual shelters rather than on the concept of human settlements. There is a close relationship between Architecture and Nature. A building is always located in the natural environment. Furthermore, the architectural environment and the natural environment are inter-woven. We are as dependent on the natural environment to sustain our communities today, as our ancestors were in an agricultural society. The natural setting should be also regarded as a part of "architecture". The places where people come to live together form the human settlements. For the ancient Chinese, a place was considered a settlement where people had resided for a long time and started to grow[1]. Some even offered a more quantitative definition of the formation of a settlement, as a place where people lived for more than one year[2] (Figure I-1). The remains of a matriarchal tribe Jiangzhai Settlement has the following characteristics: the resident areas circled and orientated to the central square; there were five residential areas with each centered upon a "big house"; the pottery production area was in the east part of the site; there was a moat around the settlement as defence; the location was near the water source. The formation of a settlement depends on not only the artificial construction but also the in-between spaces among the buildings and civil structures and the transformed natural environment. In my view, these spaces around the buildings and structures should all belong to the general category of architecture in a broad sense. People first chose the location of their settlements based on certain natural conditions. For instance, Banpo and Jiangzhai in Northern China were Neolithic settlements 5000 years ago (Figure I-1). They were located on the second river terrace in geographical terms, which exactly accords with the principle put forward in the ancient Chinese treatise *Guanzi*[3]. Under those natural

---

[1] Paraphrased from the ancient Chinese treatise *Hanshu Gouxuzhi.*
[2] Paraphrased from the ancient Chinese treatise *Shiji Huangdibenji.*
[3] "If we want to found a capital city of a country, it should be either beneath the mountain or on the pf we want to found a capital city of a country, it should be either at the foot of the mountain or on the plain, in which the high sites should not be too close to the arid land in order to avail enough water sources, and the low

conditions, people would further organize their settlement spaces in a certain order so as to compose the place of the human social production and daily living, such as being enclosed by the moat, grouped buildings facing on to a central square, and the specialized sites of planting, pottery production and cemetery, etc. (Figure I-2).
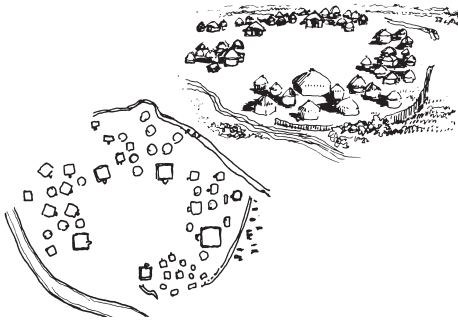
Figure I-1: The Site Plan of Jiangzhai, Lintong
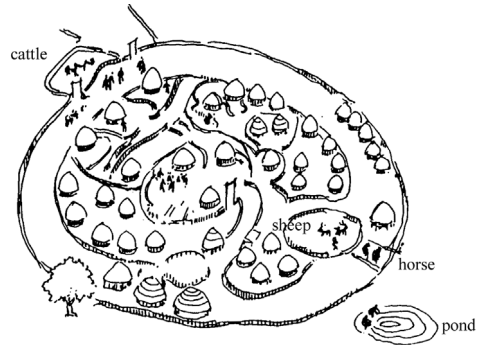
Figure I-2: Map of a human settlement exhibited in the Mexico State Anthropological Museum

Human settlements were developed in different cultures, where their forms and scales vary greatly. Yet it seems that the early settlements exhibited significant common features which might have arisen from fundamental human requirements. For example, a map of a human settlement exhibited in the Mexico State Anthropological Museum shows the fundamental elements of a human settlement, such as: centre-market, warehouse; residential area; livestock pens; pool; woods; walls and gates for land divisions. This demonstrates that there are two essential components here: the architecture of man and the architecture of nature[4].

The integration of the two makes up the habitable environment. If the concept of architecture were only to focus on the artificial aspect but neglect the surrounding spaces and the natural environment, that idea would be half-baked, especially under the contemporary condition that the architectural activities are making a huge impact upon the natural environment. Third, the settlements form a multi-levelled system, e.g. from a village of 3 households up to towns and cities. There were many of these delineations in the ancient Chinese treatises – for example in *Wenxiantongkao*[5] (Figure I-3).

sites should not be too close to the river to avoid the flood. The layout of the town needn't be regular in shape, and the roads needn't be straight; the layout and roads should depend upon the climates and geographies". The settlements should be "wherever under the mountain or on the plain, in which the high sites should not be too close to the arid land in order to avail enough water sources, and the low sites should not be too close to the river to avoid the flood" (*Guanzi Section - Chengma*).

[4] This opinion was first raised by Eliel Saarinen in his book *City: Its Growth, Its Decay, Its future*, Reinhold, 1943.

[5] Paraphrased from the ancient Chinese treatise *Wenxiantongkao*. It notes that: "In antiquity, the emperor started to manage the land and to set up the wells, in order to avoid conflicts… One well served for the needs of water of eight families. There were four roads starting from the well set in the centre to divide the eight families. This would: 1) protect land and nature; 2) save costs; 3) harmonise habits; 4) equalize abilities; 5) circulate the commodities; 6) maintain security; 7) ease traffic; 8) manage marriages; 9) help each other fiscally; 10) help each other in illness. This order is implied to form the city. One well initiated a *Lin*. Three Lins formed a *Peng*.

Lin(邻) Peng(朋) Li(里)　Yi(邑)　　Du(都)　　　Shi(师)　　Zhou(州)
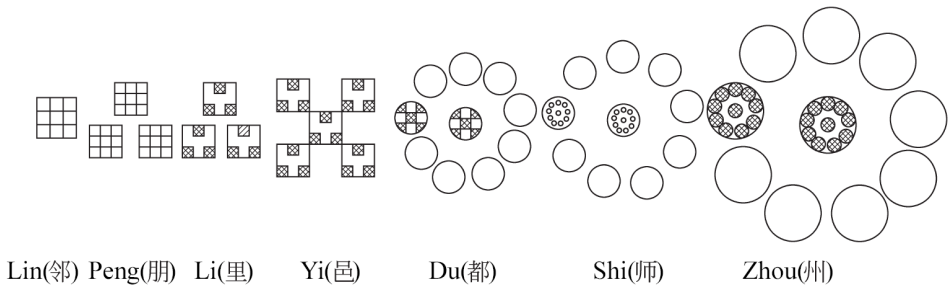
Figure I-3: A hierarchy of ancient Chinese settlements

This short delineation expresses four levels of meanings:

1. The necessity of settlements: the settlements might stimulate the formation of common habits and the circulation of commodities, and would be beneficial to protection and mutual association; it would produce the "agglomeration effect" in the modern sense.

2. Planning is necessary for the settlements: dwelling collectively does mean a certain construction of infrastructure (such as building the road and setting the well), and the land distribution… so as to maintain the social order to "avoid conflicts".

3. The basic unit of settlements and the levels of their hierarchy: actually there were many different descriptions in the ancient Chinese treatises, i.e.: "five families forming a *Lin*, five *Lins* forming a *Li*, four *Lis* forming a *Zan*, four *Zans* forming a *Bi* or *Xian*, five Xians forming a *Sui*" paraphrased from *Zhouli-Diguan-Suiren*; (3) it is unnecessary to make a detailed textual research, but it is clear that the settlement hierarchy is perceived to have many levels.

4. There was a certain common character and changes in quality among the settlements from the lower to the higher levels.

Constantinos A. Doxiadis, a Greek urban planner, also systematically described the hierarchy, the levels and the system of settlements: there are the changes of quality in the transition from the lower level settlement to the higher[6].

Fourth, whatever the shelter or the settlement, the building or the natural environment is the suitable environment in which to organize human productive and living activities. The environment is the space and region centred by human being or things. It includes two points: first, the environment is created with respect to the human being[7], which means

---

Three *Pengs* formed a *Li*. Five *Lis* formed a *Yi*. Ten *Yis* formed a *Du*. Ten *Dus* formed a *Shi*. Ten *Shis* formed a *Zhou*." There are some other descriptions in the traditional Chinese literature, but their ideas of the hierarchical system of the settlements are fairly similar.

[6] Zhang Xiaoming, *A study on Doxiadis and "Ekistics"*, Master's Degree thesis supervised by Prof. Wu Liangyong, Tsinghua University."In order to find the correct way to solve the problem of settlements, we should understand that the hierarchical levels exist in all functional activities. For example, there are totally different functions and conceptions between a small settlement with a few inhabitants and a large-scale settlement. Therefore, we must primarily understand the position of the settlement in the hierarchical structure when we are dealing with the problems of every large-scale settlement."

[7] Liu Zongyuan, *Yongzhou Matuishan Maoting Ji*, quoted by Wu Liangyong, *The Review on the Environmental Creation in History and the Traditional Attitude to the Environment from the Development of Shaoxing City*, in *The Essays on Urban Planning and Design*, Yanshan Publishing House, 1986. Liu Zongyuan in Tang Dynasty had an admirable augmentation on Lanting: "if there was not the depiction of Lanting by

that the beautiful landscape would have not been well-known if not for the events related to famous individuals represented by Wang Xizhi in Lanting. It is clearly the case that the human being is the host and the creator of the environment, and the environment is created in terms of the human being. Secondly, the work on the architectural substance and the natural substance is the material object with which human beings live. But the work on the material is always intended to fulfil human needs and interests. A work would fail in its aim and importance if the needs of the human beings concerned were ignored. As we said, human needs include two aspects: "the natural being" (or "the biological being"), where our lives need sunshine, air, water, food; and "the social being", where people need settlements, communities of various sizes and contents, a constructed environment to foster production, exchange, meetings, study, recreation, etc. Human society would not develop without these demands. Since society is always developing, and is more progressive, there will be more functional demands; where the life content is more complicated, the demand for material construction (including architecture and its environmental construction) will be more complicated. Furthermore, the "material" environment includes the artificial environment and the natural environment, and its content, structure and form will also be transformed along with social development.

The brief analysis above shows that we should not just concentrate on the narrow sense of architecture when we are talking about architectural activity and the development of architectural profession. It must be from the point of view of "human – architecture – environment" that we face the architectural issues. From this general sense of architecture, we should more deeply and scientifically research human beings in order to explore the dwelling, living and environmental demands of different people (with different occupations, economic conditions, educations, nationalities), and to endeavour to fulfil those demands by technical and artistic means. This is the aim of our profession and the fundamental content of our discipline. The definition of architecture in western classic architectural theory is rather broad. Vitruvius's *De Architectectura* mentioned the issues of location choice, urban architecture, demands of environment and sanitation and so on. Those were also described in the important architectural literatures of the Renaissance, such as Leon Battista Alberti's *De Re Aedificatoria*.

However, as modern science and technology develops, the social division of labour has become more detailed. The conception of architecture became narrower and more specialized under these social, economic and conceptual conditions. In this period, the major task of architects became restricted to the design of individual buildings or even the artistic form of the façade. The task of urban planning used to be divided into the domains of surveyors and civil engineers, so that it was regarded as simple technical work exemplified by land surveying, development of the road network, plot distribution, etc. This threatens to marginalize the architectural profession. In fact, large parts of the content of professional and associated works, which should be the responsibility of an architect, have been appropriated by non-architects, or ignored. The architects did not even realize, understand or care, but remained within their ivory towers, so that the application and development of architecture were obstructed. It also damaged architectural education.

Youjun (i.e. the famous calligrapher Wang Xizhi), the limpid brook and the slim bamboo here would have disappeared from people's vision".

Now we have to face reality in order to regard the architecture from an integrated point of view: the individual building is only one element of the human settlement. The settlements composed by buildings are the presupposition of the architectonic works. From this point of view, we probably will "rediscover" some new ideas and principles, and perhaps this will boost the development of architecture.

1.2 Settlements - City - Urbanization

As mentioned above, human collective dwelling will create settlements at different levels. Thus the city appeared when social development reached a certain level. Building is an important component of the city. One could even say: "building is the substance cities"[8]. Architecture development is accompanied by city development. Yet traditional architecture was segregated from urban studies for a long time. The influence of this fatal shortage or limitation still exists nowadays. The view of a 'General theory of architecture' requires linking the development of architecture and urbanization. It would provide an explicit understanding and a definitive direction for the history, the present and the future of architecture.

1.2.1 The worldwide urbanization

The worldwide socio-economic transformation is caused by the progress of technology, the development of productivity and the transition of production relations. One of its results is the appearance of the city. In ancient times, the world went through a long slow urbanization process, in which the urban population only made up 3% of the total population in the world[9]. It was because of this low-speed population increase and social development that cities generally developed very gradually, although large cities, such as Babylon, also appeared during this period, which meant that people could constantly adjust their living environment by themselves. The Industrial Revolution propelled the radical development of the city and brought about worldwide modern urbanization.

Capital and labour concentrated on large-scale production appeared in the industrialised countries; as Engels said, "people were concentrated like capital", in such a way that urban development grew automatically, and became a common phenomenon. However, there was another system of urbanization using the planned distribution of productive and the residential areas, which was introduced by the socialist revolution in the Soviet Union. Under this system, urban development was managed through central planning: urban architecture was part of the national plan. It also significantly influenced the urban planning of China in the 1950s. Of course in the ongoing political and economic reforms of many socialist countries, urban architecture and development under a planned economy in the past few decades should be further examined. The reform of the socio-economic system in China during the last few decades, especially the "bottom-up" township development in the rural areas which started from, for example, the southern

---

[8] Noboru Kawazoe, *City and Civilization*, quoted by Isomura Eiichi, *Encyclopedia of Urban Problem*, Heilongjiang People's Press, translated in 1988.

[9] See the item on "Urbanization" in the third edition of *The Grand Encyclopedia*, Soviet Union, translated by Wang Jinyi, Institute of Urban Planning Information, China Academy of Urban Planning and Design, 1982.

part of Jiangsu Province, seems to be leading another way to modern urbanization. Generally, three characteristics are present in urbanization: the increase in the ratio of urban population; the transformation of economic structure which leads to the increase in the ratio of the secondary and the tertiary industries in the total economy; the direct connection between the urbanization level and the GDP per capita. That means the speed of urbanization is increasing, accompanied by the growth of the economy particularly in the initial phase; urbanization is then characterized by changes in the economic structure of the city regions (Figure 1-4). Some scholars have pointed out that the development of "the neo-technical revolution" and "the postmodern society" must lead to an improvement in urban development and the innovative transformation of the human habitat. Also, the existing phenomenon of "Counter-urbanization" has drawn people's attention. All of these are highly relevant to the development of architecture.
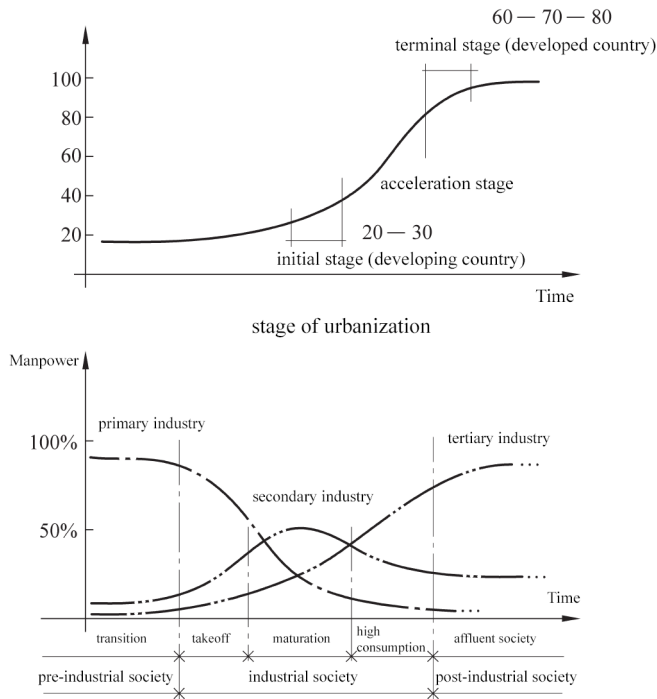
Figure I-4: The diagram of the transformation of industrial structure in the social development and the phases of urbanization. China is at its initial phase of urbanization, which is the launching phase of the industrial society. One can note the universal tendency of the decrease in primary industry and the expansion of secondary and tertiary industries. (Sources: quoted from Economic Future of the Architecture, Ricardo Verges-Escuin, UNESCO)

1.2.2 Urbanization and national development

Urban development is an inseparable organic component of the development of a country. This opinion has been acknowledged worldwide. It has been also accepted by the Chinese *intelligentsia* during recent years. The development of urbanization is affected by both the internal and the external factors of a country. The internal factors include: economic factors such as production, the relationship between technology, industry and agriculture; social factors such as population, social structure, social classes and income distribution; political factors such as the choice of the planned economy or the market economy, and

the political system of the government. The external factors include: foreign investment, the activities of multi-national companies, the flow of international commodities and currencies, the mobility of immigration, etc. Those factors, especially the political factors, obviously influenced urban development in China. Since the "Opening up and Reform", the effects of the external factors on Chinese urbanization have also become significant. The analysis above demonstrates that national development affects urban development and in turn, urban development also provides a strong feedback to national development.[10] It is the existent reform of the economic system centred on the city in China that is vitalizing the young blood of Chinese cities.

1.3 Urban development in China

1.3.1 The process of urban development

Urban development in China, which plays a very important role in world urban history, can be traced back to the remains of the city in the Shang Dynasty almost 4000 years ago[11]. But city development was very slow for a long time during the feudal period. In 1949, the urban population only made up 10.6% of the total population in China. At the same time, the average ratio of urban population in the world was 26%, and even reached more than 60% in Western Europe and North America. Urban development in China in recent decades also went through a torturous development. During the first Five-Year Plan, the ratio of urbanization had reached 15.4% by 1957; but later on, the leading position of the city was neglected due to the interference of the radical "leftist" policy, so that the ratio of urbanization decreased to 12.5% in 1978. Only in the recent years, accompanied by economic development and the reform of the political system, the new development of the city made the ratio of urbanization in China increase to 16.85% in 1985. We can imagine that urban development and architectural practice will progress further as the reforms intensify.

1.3.2 The prediction of the development of urbanization

Although the future outlook of architecture will be influenced by these political, economic and social factors, it cannot, in practice, be separated from the general tendency of the development of urbanization and the detailed requirements of different cities/towns. Thus, architectural practitioners need to pay attention to the prediction of the development of urbanization. It is usually according to the prediction of the potentials of agricultural development, industrial development, national income, and the investment for urban architecture. Based on those features, different Chinese experts predicted that the urban population in China would be 320, 360, or 400 million respectively by the end of the 20th century[12]. Meanwhile, the existing urban population has reached 220 million, which in fact means that there will be at least

---

[10] Lewis Mumford, *The City in History*, translated by Song Junling and Ni Wenyan, *A Selection of the Foreign Urban Science*, Guizhou People's Press, 1984. L. Mumford said: "The city becomes prosperous accompanied with other innovations. During this process, the city also becomes the cradle of those innovations."

[11] Some scholars thought that the city had appeared even earlier in China, possibly in the Xia Dynasty.

[12] Song Qilin, *Some Questions on the directions of China's urbanization* (mimeo).

100 million people migrating from the rural area to the city. We should also note:
1. China is currently still in the preliminary stage of urbanization. Accompanied by the further development of the national economy, this urbanization process will be accelerated.
2. In general, the urban infrastructures in Chinese cities are still deficient (even though they were improved in some cities in recent years, the situation is still quite different in different cities), and the urban modernization process is not keeping up with socio-economic development. This conflict will continue to exist for a certain period.
3. In terms of the imbalance of regional economic development, there are certain differences in urbanization levels, speeds and modes between those regions (which will further be discussed in the chapter "A theory on regionalism").
4. The cities and towns of different scales will be developed to different extents, and in particular the cities in some special regions will be developed radically. It is these situations that make urban development so diverse, and the architectural practice should be to explore different developmental modes.
5. There are still some universal principles that remain unchanged in urban development worldwide after the Industrial Revolution. Yet the development of a special region or city in China should be following its own path according to the particular local situations.
6. Because of the differentiated human resources, foundations and levels of urban planning in different cities, Chinese architects need to improve their knowledge and awareness of planning, to participate positively in planning research, and, at least, to try to integrate the architectural profession more closely into urban development. It will be a challenging task, but also one with brilliant future prospects.

1.3.3. The habitat and the environment

As mentioned above, based on the most conservative prediction there will be at least 100 million farmers being transformed into urban dwellers in the coming 13 years. The impact of this should be considered in two ways: first, it will be an unprecedented event in history. Urban development will expand enormously alongside socio-economic and cultural development, and will bring prosperity to the architectural profession, the science of planning and to architectural creativity in general.

Meanwhile, it will be also a challenging urban planning/construction task. The fields such as housing, infrastructure construction (including both technical and social infrastructure), development finance, environmental development and the protection of urban morphology, land resource and ecology, will be thoroughly explored. The fulfilment of this task will provide a healthy foundation for the environmental development in the future; on the other hand, a failure in this task will probably cause a great amount of social problems. That is because "the city in the future is being constructed today". In order to define the relevant policies suitable to deal with this series of issues, and at the same time to develop architectural discipline, we must re-explore architecture from the viewpoint of settlements and the environment.

We must recognize that each architectural activity in the existing world deeply affects the natural environment and the human habitat. The environment and the habitat thus are the presupposition of architectural activities and architectural design. From this point of view, architecture should be architecture for the settlements first of all. At the same time,

modern settlements, especially modern urban settlements, have changed fundamentally compared with the ancient cities, towns and villages. The ever-present tradition of the comprehensive and the macroscopic exploration in architecture should be not only be adhered to but also further developed. Although the most common activity of an architect is architectural design, he is, in fact, creating and transforming the settlements where the building is located and the environment where the settlements are situated. Therefore, architecture should include the discipline and the research on settlements and their development, as well as the principle of their structure and morphology. The most important point, which would mostly influence the development of the national economy, is the exploration of urban settlements at different scales. At the same time, research on rural settlements is also significant. However, the traditional architectural approaches are not broad-minded enough to embrace research on settlements, or to benefit fully from it. In order to understand in depth the intrinsic qualities and characteristics of urban and the rural settlements, we must extrapolate from the economic, social, political and cultural contexts of the settlements and, with a broad intellectual perspective, gather insights from other academic fields to develop a multi-disciplinary outlook. This will help us to define a more appropriate strategy for future research in the field of architecture.

In the 1940s, when Professor Liang Sicheng visited the famous American architect F.L. Wright, Wright quoted from the ancient Chinese treatise Laozi to illustrate his outlook to architecture. He thought that the essence of architecture is "it is on the void that its use depends"[13]. The "void" here should be translated as the "space" in modern architectural terms. Professor Liang used to mention this dialogue from time to time. The concept has been widely accepted by architectural professionals nowadays. We might further develop this concept: the "void" within a building is just a small void, but the space within the human settlements, which is figuratively depicted by the theorists as a series of "containers" with various sizes and functions, is far more complicated than the space within an individual building and should be considered as "great voids". These great voids would need to be understood in depth. We can further say: "it is on the voids that settlements depend". Here, the "void" is the place to combine the multiple activities of living and working. Thus, we would need to improve our research on urban space and the process of its creation. It is important to have first of all a holistic view of this research, before delving into its different components. Besides, our research should not only concentrate on the physical building process – the aspect of the 'space' and the 'object' of the settlements, but also pay attention to the 'behaviours' of the people living inside. On the other hand, we ought to absorb the opinions of anthropology, sociology, economics and aesthetics to understand more precisely the multi-dimensional meanings

---

[13] The original words are: "Clay is fashioned into vessels; but it is on their empty hollowness that their use depends. The door and windows are cut out (from the walls) to form an apartment; but it is on the empty space (within) that thei use depends. Therefore, what has a (positive) existence serves for profitable adaptation, and what has not that for (actual) usefulness." (quoted from *The New Translation of Laozi*, Shanghai Ancient Books, 1985) The author's note: the "existence" and the "empty" (nihility) cannot be separated, in which the "existence" is primary. The negation of the "existence" in *Laozi* is not correct. Likewise, we should not just accentuate the being and the effect of the space but deny the "object" ("existence") part of the building, which has an indispensable influence on the realistic life and the composition of the artistic form, in architecture. This has been re-recognized by western scholars nowadays.

of the settlements. Thereby, when we are facing the question of the settlements, we would not stop at the examination of their physical forms, but proceed to the exploration of their contents in terms of human activities. That is to say, we would not be satisfied with just the observation of the phenomenon, but would carry on to research into its nature, so as to guide architectural practice. This is the starting point of 'A General Theory of Architecture' towards an 'Integrated Architecture'.

Chapter 2
A Theory on Regionalism
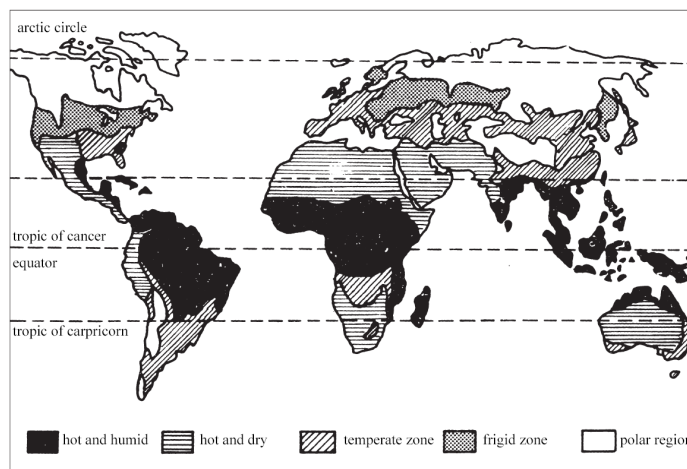
Figure II-1: The Global Climate Zoning (Source: K. Yeang, *Tropical Urban Regionalism: Building in a Southeast Asian City*)

It is impossible to separate architecture from the concept of the region. The surface area of China is around 9.6 million km², which is almost equal to the whole of Europe. It is well-known that there are obvious differences between various regions in Europe. For instance, the area of West Germany is only a little bit larger than the Guangdong Province in China, but the architectural and urban cultures are quite different between the south and the north of West Germany. For a huge country like China, the differences in the natural geographical conditions (i.e. temperature, rainfall, humidity, water and other resources), the economic development levels and the social cultures between its different regions are tremendous. Any idiographic analyses have to be dependent on the local situation. The experts in different academic fields (such as geographers, anthropologists, sociologists, etc.) used to make different definitions of regions based on their own research purposes and requirements in order to explore the allocation of the sub-national geographical system. So too did the architectural scholars, for example, the research on regional architectural climates in the 1950s, the regional research on urban geography, and the recent regional research on traditional residential buildings. However, compared with the significant progress of research in Chinese geography, especially in natural geography and economic geography, during recent decades, we have to say that our understanding and comprehensive exploration of the regional character in architecture and urban planning are still deficient. In fact, in China, despite the geographic and economic conditions, the level of urbanization, or the level of social, economic and cultural openness, there are great variations between the coast and the hinterland, the south and the north, the east and the west, even local areas within a province. Also between the urban and the rural areas. The contexts and the identities of different regions should thus be emphasized in the research on architecture and the city.

2.1 Architecture and Region

2.1.1 The architecture and the natural environment

Architecture cannot exist independent of nature. In ancient times, the material and technical means available to human beings were far more limited than is the case today. However, these limitations produced some fascinating building designs that adapted to Nature, to enjoy its benefits and to avoid its dangers. The people then had the most detailed consideration on sunshine, ventilation, lighting conditions, and disaster-prevention, using the scientific and technical know-how of their times, in order to meet the fundamental requirements on safety and sanitation. Those considerations were evident in the choice of location of the settlements, the siting of the buildings, the adoption of building materials, and the forms of spatial layout. People primarily used local materials to build, and made an effort to present the materials aesthetically. Since the amount and the volume of the materials for building were enormous, and caused problems in transportation, the cost of building materials occupied a high proportion of the total budget of a building. Thus it was necessary to develop ways to quarry and produce the materials. The influence of local economic, social and cultural conditions was clearly reflected in the typology of architectural forms, which became part of regional identity. In general, regionalism is one of the basic qualities of architectural practice. It means that the production of the final products and the consumption of these products usually occur in the same places; the buildings are unmovable once they are constructed, and form a relatively permanent physical environment; a gradual change and evolution is also a feature of this environment. What we call "the built environment" is in a sense the sediment of a great amount of human efforts, a long term accumulation of materials and wealth and cultural development. Accompanied by the progress of modern technology, the human ability to reshape the environment is incessantly increasing. It is reflected in the availability of new materials, new structures and new equipment for building. The expansion of the possibility and the scope of human architectural activities is a positive thing. The large-spanned, high-rise and underground spaces, the above or below water spaces, and even the astro-space are all being actively pursued. This enables us to construct breath-taking infrastructure projects. The human ability to solve practical problems and to configure the physical forms by architectural means has been tremendously enhanced. People are very proud of these achievements. This enables the construction of breath-taking infrastructure projects. The human ability to solve practical problems and to configure the physical forms by architectural means has been tremendously enhanced.

People are very proud of those achievements. Yet we should also consider its full implications. Some people think that modern technology is omnipotent, and even theories similar to technical "fetishism" emerge from time to time. The concept of regionalism in architecture, the idea of integration with nature, and the skills to invigorate the natural environment had been great assets of the ancient architects and planners. Such concepts, ideas and skills tend to fade from people's memory when faced with the human technical capabilities of today. But there are architects who would disagree with this tendency. For instance, F.L. Wright used to say: "I consider air conditioning a dangerous thing, which makes a sudden change of the temperature which splits the building and damages the

health"[1] And his design was trying to depend on "the nature of Nature", and to exert "the nature of a site". More prevalent attention to this issue arose after the Energy Crisis in the 1970s. By rethinking the use and preservation of energy, people then rediscovered regionalism in architecture. For example, there emerged Energy Conscious Designs, studies on passive and active solar energy buildings, environmental control technology, energy design technology and the lighting theories related to the local condition, the energy model used for energy-saving. The scientific development in these fields also pushed ahead new possibilities for architectural form.

The Indian architect Charles Correa raised the idea of "form follows climate", and strived along this direction; the British architect Ralph Erskine used the principles of aerodynamics to create a special planning layout and architectural design for the frigid zone in order to control the regional microclimate[2]. Both of them are explorations based on the same starting point but adapted to two distinct climates which are poles apart. The zoning of the region is not only influenced by geographic factors, but also affected by historic and cultural factors. People settling in a region would gradually recognize the particular local natural conditions, and develop appropriate building technology to meet different human requirements, including the habits. These experiences accumulated generation after generation, and they contributed to a gradual establishment of regional architectural identity, style and the "spirit of place". This is reflected not only through buildings, but also through building complexes and clusters, the urban pattern, and in many cases easily identifiable through vernacular housing. Indeed, these identities crystallize with great intensity in the historic cities and towns.

2.1.2 Regionalism in architectural production

The idea of regionalism-based architectural production is an old one. With the rise of new architectural movements between the beginning of the last century and the '30s, assisted by the rapid building development of the post-war period, the theory of the International Style provoked temporary turmoil which continued until L. Mumford opposed it with the idea of a regional style, referring to the regional characteristics of American architecture in California and New England, which prevailed in the 1940s. The diffusion of this theory brought attention back to the previously prestigious projects of the brothers Charles and Henry Greene in California which once again gained recognition and general attention. This was the first modern appearance of "architectural regionalism", unfortunately little known at the time.

In the '70s, the publication of *Architecture without Architects* (Bernard Rudolfsky) created considerable interest in architectural circles. Various local architectural artefacts which had been neglected became once again points of interest. These were buildings constructed on the basis of regional characteristics such as climate, technique and culture as well as the symbolism linked to them, and which had survived the passing

---

[1] This is quoted from the book *Solar Energy*, and its origin is yet to be confirmed. "The nature of Nature" is quoted from Zhou Yiguang, *The Architectural Arts of Master Wright (the 2nd part)*, in "Architecture Journal", 1987.1. *The nature of a site* is quoted from B. B. Pfeiffe, *Frank Lloyd Wright. In the Realm of Ideas*, Southern Illinois University Press, 1988.

[2] Ralph Erskine, *Architettura = Ambiente*, edited by Province, Municipality and University of Ancona, Tecnoprint 1990.

of the centuries without losing their own intrinsic vitality. These constructions display their residents' intentions of promoting a new synthesis between artificial production and the environment, a starting point which research into the theory of architectural design should certainly not ignore. After research into the architectural production of various geographical locations in Africa, Greece and Afghanistan, some hold that "the architecture of these regions not only continues to reveal sources of inspiration for the work of planners, but its art and techniques continue to be taken up in the production of designers of Third World countries, and to possess vitality"[3].

Similar research continues today, inspiring the architectural work of eminent professionals and at the same time giving rise to two trends: the so-called "conservative trend" – which uses the technical methodologies and typical styles of the regional architectural tradition – and the "progressive trend" – which reconciles new techniques with the styles and the organisation of space of regional architecture.

In the debate over the development of architecture, the promoters of 'localism' tend to converge towards a regionalist stance. There are those who speak of "regionalism in modernism", of "modern regional architecture", or of "identity in architecture"; the researchers involved in the dispute tend to extend the debate to the so-called "regionalism of form" and "regionalism of substance": what is clear is that in the attempt to promote diverse modes of production. a new regionalist architectural culture is expressed[4]. The growing support given to the regionalist thesis should be interpreted as an attempt to steer architecture towards a well-defined orientation or the development of social aims. The architects supported by the Aga Khan Prize foundation, for example, proclaimed the so-called "Asian conscience" in support of Islamic culture. In 1984, the Association of Asian Architects made "Asian identity" the object of their first general convention and, in 1988, "Asian spirit" was made the subject of the third convention. These phenomena should not be underestimated. For their part, Malaysian architects recently involved in in-depth exploration of local modern architecture speak of "tropical urban regionalism" in their systematic analysis of the urban architecture of South-West Asia[5].

This multiplicity of efforts betrays a resolute promotion of regionalist culture as an integrating direction for architectural development. In short, the regionality of architecture is an objective reality which architecture as a science should be careful not to neglect despite its having been so long suffocated in the tumult of the international schools. Geography, economic development and social culture are key concepts in regionalism which under careful examination reveals itself to be based upon a synthesis of these factors. Architectural regionalism is reflected in particular in transformations which involve architectural styles and morphology, whose new interest for the regionalist approach should be sought in the effort to develop a theory able to assist an international

---

[3] Paul Oliver, author of *Shelter and Society* and *Shelter, Sign and Symbol;* cfr. *Jianzhu de diquzhuyi,* included in the series *Yisilan wenhua jianzhu de tuozhan,* Mimar Book, Singapore, 1982.

[4] Suha Ozkan, preface to *Architectural regionalism*, in the series of *Development of Islamic Architecture*, Mimar Book, Singapore, 1982.

[5] KenYeang, *Contemporary Malaysian architecture and the research into stylistic regionalism in the current transition phase*, UIA periodical VI, 1984, issue on *Vernacular, Pastiche, Modern? The Search for a Malaysian Architecture*. Analogous inclinations appear in the writings of various idealist architects with a critical sense. Ken Yeang,*Tropical Urban Regionalism: Building in a South-East Asian City*, Singapore, A Mimar Book, 1978.

architecture which is threatened by the progressive withering of architectural culture. Assumptions and aims should also be examined, even without considering the purely architectural implications.

2.2 City and Region

As we have discussed above, we should not only focus on the issue of regional architecture, but also further explore the development of regional settlements including cities and towns. The settlements with different sizes, such as town and city, are the centre of different regional hinterlands. The economic and cultural development of a region cannot exist without the role of the city; in fact, it is closely related to urban development. Also, a city or town cannot exist independently without its surrounding region. Urban development cannot be separated from its regional economic development conditions. In the 7th Five-Year Plan, China was divided into several economic zones, such as the East, the Central, the West, etc. Although this zoning was not very precise and had to be further adjusted through detailed research, it began to reflect the diversity of economic resource, population, city distribution, city/town systems, urban morphology, urbanization speed, urban-rural relationship in various economic zones, and the differences in the nature and process of urbanization. According to the detailed research on these vast regions in China, the differences between the economic zones follow a "ladder"[6] order. Hence, we must propose development targets that are in line with the characteristics of the different regions, and should set down respectively suitable policies in order to deal with the problems in the different developmental phases and regions[7]. Meanwhile, besides the difference in economic fundamentals, there is also a difference in culture between the regions. Through a self-conscious spread of the new ideas of modern science, technology and culture as well as the rediscovery and promotion of regional and folk culture, it will also be positive to maintain and develop the diverse regional identities while enhancing the level of modernization in the development of cities, towns and villages. When researching the regional urban system, we should pay attention to the agglomeration and radiation effects, including economic, social and cultural effects, which should not be ignored no matter the level of development of the city/town itself or the integral function of the region. In the opened-up areas, megalopolis, hyper-megalopolis, and the "city-region" (such as the areas in the Yangtze River Delta and the Pearl River Delta) of China, where the population and technologies are highly concentrated, the effects on cultural development are remarkable. This is also reflected in the creation of regional architecture and the development of urban culture. The most prominent effect is seen in the radiation from the culturally developed regions to the closed or half-closed hinterlands and the vast rural area (for instance, the influence of some architects in Guangzhou on the architectural design in the surrounding counties/towns, such as Panyu). At the same time, we need to survey, research and re-assess regional vernacular architecture in order to

---

[6] TN: Ladder-step doctrine

[7] See Zhou Ganzhi and Lin Zhiqun, The Architecture and Civil Engineering Section, Department of Applied Sciences, Chinese Academy of Science, *An Important Concourse of the Applied Sciences – the Urban Science*, 1986.

present the identity of folk culture and to create a contemporary architectural culture. Here, we should not become bogged down in the arguments of 'the conservative' or 'the translational', of 'representational regionalism' or 'abstract regionalism'. These arguments, which are similar to the debate on the "formal similarity" and the "imaginative similarity" among Chinese architectural professionals, are no more than the different attitudes on design methodology present in the multiplicity of the development process. It would be too difficult to reach a unified conclusion as the circumstances are so diverse according to the times, the places, the contexts and the personalities of the designers. What I wish to accentuate here is that the regionalism of architecture includes both the distinctions and phases of urban development in different regions during the urbanization process, and the diversity of building design contexts. From this point of view, we may consciously recognize its meanings for architectural design.

2.3 Architecture, city/town and the regional resources

Architecture, the city, like the birth and growth of other biotic or abiotic beings, are all the production of Mother Earth. The natural landscape and man-made landscape of the different regions in the beautiful land of China, from the Tibetan Plateau to the coast of East China Sea, from the Grand Xing'an Range to the Hainan Island, whatever the landscape, the important big cities, or the remote small towns, are so wonderful and colorful as to make dwellers proud, and visitors excited. The research on this aspect has been increasingly developed, and we will not further discuss it here. What I wish to point out in this section is not concerned so much with such scenic beauty in our country, but the fact that there remain a great many places to be renovated and a great number of problems, such as population, land, ecology, etc, to be solved. These challenges have brought various difficulties and pressures on to different regions, which are serious issues that need to be addressed by the research on human settlements. Architecture and urban architecture consume large amounts of regional resources. A rational and efficient construction will need to take into account the exploitation of regional resources. This had been ignored for a long time until the recent emergence of the worldwide environmental and energy crisis, which has now led to efforts to conserve energy. It has influenced various academic fields, including architecture, and architectural practice has been affected to a large extent (Figure II-2). Here we shall consider the issues on regional land resources, the preservation of regional natural environments, and the preservation of regional landscape resources.

2.3.1 The regional urban and architectural development and land resources

China is a huge country with one fifth of the world's population. One of the major problems is the lack of farmland per capita, which was only 1.57 Chinese acres (the world average is 4.8 Chinese acres)[8] according to the data in 1977[9]; according to 1986

[8] TN: Chinese acres, *Mu* correspond to 666,7 sqm; the anglosaxon – american – acre is about 4.000 sqm; an hectar is 10.000 sqm

[9] See *The References of the Economic Research*, n. 603, 1982; the data in 1977. The data in 1986 depends on
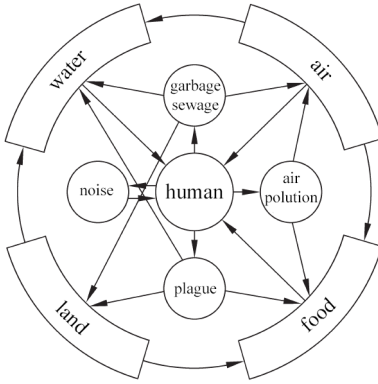
Figure II-2: The human being in the middle (the chinese caracter 人 (rén) and the natural environment. The damage coused to the environment by its interaction with human beings
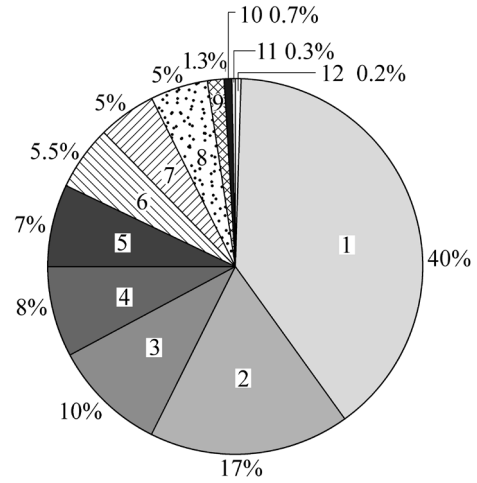
Figure II-3: The proportions of twelve fundamental areas in the globe. (Source: quoted from Doxiadis, *The Construction of Entropia*)

data, the existing total farmland was 1.5 billion Chinese acres, which only occupied one tenth of the total land area of China, and the farmland and the permanent agricultural land per capita was 1.4 Chinese acres which was less than one third of the world average. Moreover, those farmlands are mainly concentrated in the delta and plain areas, which are also the densest population areas in China. Due to the policy of openness, the economic development, the prosperity of construction and the expansion of the urban and the rural settlements, there were huge amounts of land occupied by construction. From 1957 to 1977, the total farmland area in China was reduced from 1.67 to 1.49 billion Chinese acres and the reduction was 0.18 billion Chinese acres; if we exclude reclamation in the calculation, the actual annual farmland consumption was 20.76 million Chinese acres. In the farmland reduction in 1985 and 1986, 90% was caused by new construction in the rural area while 10% was caused by the national infrastructure. If these phenomena were to continue, especially in terms of the large scale reconstruction in the rural areas caused by economic development, it would have a deep impact on land use. Although town planning will also be developed, the results would be unimaginable, if the construction by billions of farmers was illegal or without enough regulation so as to destroy the farmland. The Greek scholar Doxiadis was also worried about the ecological problem in his late years. In his *The Human Settlement and Ecology*, he asserted that we can positively think the resources in the earth would be not be used up, but any increase of land, air and water would be impossible, so that "it will indeed limit the numbers of human beings living on the surface of the earth". He researched the diversity of "livability" on the earth and argued that the habitable levels in different regions are also

the references published by UN FAO.

different. These differences are presented in the following three aspects[10]: (1) Altitude: areas over 3000 metres are uninhabitable, while the areas with altitudes between 1000 and 3000 metres are habitable but living is difficult. (2) Climate: the difference in climate conditions may define the comfortable, normal, endurable, rigorous, unendurable and hyper-unendurable regions. (3) Water resource: 5 litre/second·thousand m^2 is regarded as the standard of sufficient water resource, below which the region is without enough water. In any case, according to the integrated analysis above, we can categorize the habitable and the uninhabitable areas in the earth and their various differences. In order to change the lack of foresight on land, air and water use by human beings, Doxiadis suggested using the land resources reasonably, based on the definite division of the character of the land at a global level. He divided the land into four basic typologies: the human living area, the industrial area, the natural area and the agricultural area. Each category was divided into other kinds of areas, and there were twelve types of fundamental areas in total. Hence, we can find: even though the surface of the earth is large, the primitive and the uninhabitable areas take up 57% of it; traditional or modern cultivation areas occupy 10.5%; and the low-density residential areas, the middle-density generic urban areas and the high-density commercial centre areas of human use only take up 2.3% of the total land area of the earth, which, plus the sports and recreational areas of 5% gives a total of 7.3%; if we add the 10.5% of the cultivation areas, it would also only take up 17.8% of the surface area, comprising the most essential regions of the earth (Figure II-3). While this is the general global condition, which means that the proportions in each country could be different, the author estimates that the conditions in China should be difficult, though we have not seen the relative research on geography at the same standard. However, what we learn from it is that we should not ignore the limitation of land resources, especially the land resources in the essential regions, which are quite few. The land area of the Shanghai Economic Region, for example, which is the most prosperous area in China and possesses 4% of the population and 15% of the production of the country, and whose GDP per capita has reached 1000 US dollars, only owns 0.6% of the total land area of China so that it is called the "golden land"[11]. Even inside this region where many functions are overloaded, the housing, industry and transportation are still developing. So the protection of the land surrounding the existing cities and each natural environment such as farmland, mountain and forest, or river and lake, as well as the agricultural zone surrounding the highly dense urban areas must be strengthened, so that they will not be eroded by over-construction or contaminated by industrial pollution.

2.3.2 Regional urban and architectural development and the ecological environment

Urban and architectural development and production not only occupy large amounts of land, but also exert a significant impact upon the environment. Where the consciousness of the environmental issue is weak, the damage will be particularly serious. Deforestation, soil erosion, vegetation damage, water shortage, flooding, desertification, and

---

[10] Zhang Xiaoming, *A Study on Doxiadis and "The Theory of Ekistics"*, Master's degree thesis, Tsinghua University, 1986; so that "it will indeed limit the amount of human being living on the surface of the earth".

[11] Wu Liangyong, *The Small Town Development and Planning in the Taihu Lake Region*, in *The Essays on Urban Planning and Design*, Yanshan Publishing House, 1986.
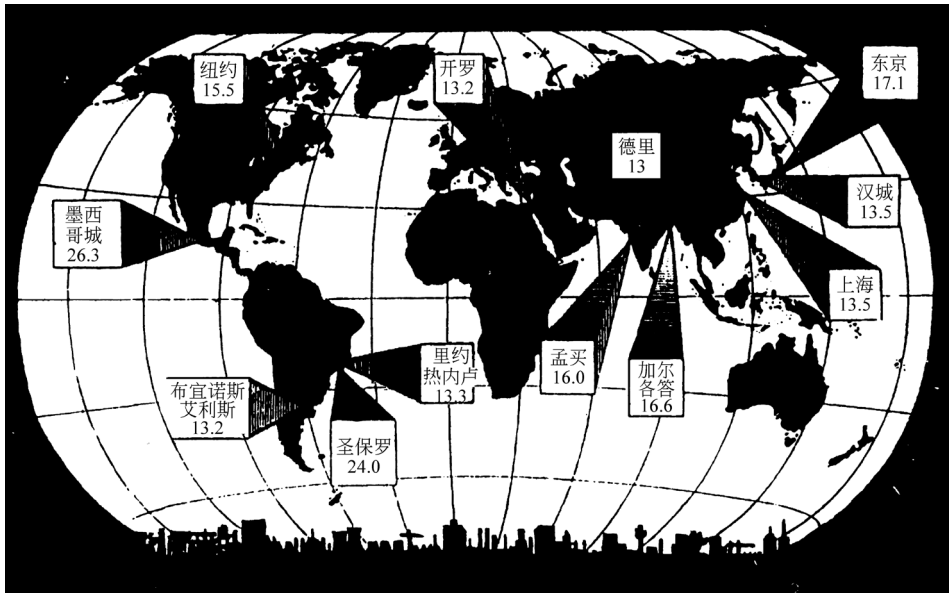
Figure II-4: *The urban explosion* – the prediction of the worldwide development of mega-cities in units of million people. (Sources: The report of UIA, 1986)

encroachment of farmland, all these effect potentially large-scale ecological damage. These problems have existed for a long time in history. The cities of Gaochang, Jiaohe and Anle, which used to be prosperous in the Tang Dynasty have perished because of environmental change and can be only imagined or pondered upon nowadays by their ruins. Even the historically famous Chang'an City of the Han and Tang Dynasties (near present day Xi'an) was a prominent example in this regard. The Chang'an city of the Han Dynasty from its establishment in 197 B.C. used to be a place where there was abundant fresh groundwater to drink without any records of the bitterness in the drinking water. But by 582 A.D. it had become a city that "all the water was bitter and unsuitable to drink". That was one of the main reasons for the Sui Dynasty to choose a new location nearby for its capital city. The new city was built to the southeast of the old Han Chang'an, where there was "the Longgu Hill with its beautiful landscape" and "abundant fresh water for the vegetation". Yet this new Chang'an city also suffered from bitter water wells. By the Song Dynasty (1014 A.D.), "most of the wells or fountains were too bitter to drink by the inhabitants". By the Ming and Qing Dynasties, "all the water was bitter and undrinkable". Even in the Song Dynasty, people had been blaming it on the over-crowded urban population and the environmental contamination[12]. In ancient times, due to the relatively small populations, slower urban development and the absence of modern industries, the environmental damage occurred at a far slower rate than today. But along with the acceleration of demographic growth (the population explosion) and urbanization

---

[12] Quoted from *The Groundwater Pollution in the Han/Tang Chang'an City and the Ming/Qing Xi'an City*, in "The Historical Information of Northwest China", 1980.3.

(the urban explosion), the conditions have been deteriorating at an alarming rate (Figure II-6). There have been frequent reports on serious pollution damage of the urban and rural environment in China. That can be also exemplified by the urban groundwater resources: first, the significant fall of the groundwater table; second, the deterioration of water quality. According to monitoring, among 47 Chinese cities, the water resources in 43 of them have been contaminated in varying degrees[13]. In Beijing, the water resource is facing not only pollution but also the threat of exhaustion according to the existing rate in the fall of the groundwater table. Furthermore, the regions with the fastest urban architecture development are those with the densest population. Higher production and faster wealth creation are at present accompanied by more pollution. The spread of urban architecture is an important reflection of the fast economic development in China. It also creates a new problem where pollution is no longer limited to concentrated production sites, but is now scattered across the regions. Although it is necessary to develop the township enterprises, there is no justification for the pollution they generate. Even though we have started to formulate a response to this challenge, it appears impossible to change the conditions in the short term. Moreover, if the 'urban disease' transforms into a 'regional disease', the recovery would become much more difficult (Figure II-5).

2.3.3 Preservation of regional cultural and natural heritage

China abounds in areas of natural scenery which the Chinese people have carefully looked after and protected over the generations; some have already been named landscape monuments of regional or national interest, while others are counted as cultural heritage sites of world interest (as in the case of Mount Taishan), and although their value has already crossed local and national borders and they already belong to all humanity, they will always remain the pride and treasure of a precise region. Whenever the region in question neglects their safekeeping, the slow but inexorable progress of decay is inevitable, decay which has revealed itself historically in various forms: consider the example of Xi'an, or the equally notable scenery in the suburbs of Chang'an in the Tang era, which inspired the verses of Du Fu and of Wei Yingwu. Nobody who is familiar with classical literature can resist their charm. Li Bai's verses praise Nanshan, its "… marvellous scenery which will not be folded into words, whose green, like the sun, impregnates the gaze". The poet Wang Wei experienced "… the charisma of the forests and the springs for (his) whole life," choosing Wangchuan[14] for his own retreats. The verses which describe these regional landscapes enjoy immense fame, and yet the continuous destruction of the forests from dynasty to dynasty until the Qing age caused the ruin of the forests of Nanshan, whose peaks no longer boast scenery of which to sing. An analogous process has involved Xi'an and the main historical cities of China. In recent years the increasing speed of urbanisation and the development of the tourist industry (which should not automatically be linked

---

[13] Wu Liangyong, Lin Zhiqun, Zhou Ganzhi, *The Dwelling Environmental Problem of Chinese People – the Speech in the Architecture and Civil Engineering Section in the Department of the Applied Science of the Chinese Academy of Science, 1982.11.18*, in *The Documents Compilation of the Enlarged Meeting of the Applied Science Committee*.

[14] Ma Zhenglin, *The basic solution to the issue of water source in Xi'an: An analysis based on the water supply in history*, in "Journal of Shaanxi Normal University" IV, 1981.

with environmental decay, as with good management it can have potentially beneficial effects upon the environment), the imperative of the environmental exploit has ended up turning, in many regions, into savage devastation. In reality, despite the geographical size of China, despite the abundance of natural scenery, the fame of its peaks and the length of its rivers, those areas invested with indisputable prestige can be counted on the fingers of one hand, and the number of quintessential landscapes in this group of illustrious treasures is limited. Even though only very few of these distinguish themselves unconditionally, this has not been enough to dissuade numerous constructors from the obstinate idea of undertaking large-scale construction: think of the construction of the cablecars on the peaks of the Qinshan, the hotels erected on the peaks of Huangshan, near the Yingkesong (the "pine which welcomes wayfarers"), or the imposing buildings constructed along the banks of the Xihu (Hangzhou's Western Lake) and the Li Jiang (the Li River, in Guangxi). Subjecting these regional treasures to similar systematic destruction cannot but initiate the progressive and inexorable eclipsing of their antique splendour.

Architecture is 'regional architecture'. In discussing the question of regional architecture from the point of view of a general theory of architecture, the question of a local production style emerges immediately, and the issue of the regional environment should be given equal attention. The concept of regional environment may be examined from general or detailed perspectives, but the presuppositions for a good residential environment in which to live lie in a healthy economic reality accompanied by a sound ecological context. The launching of regional architecture and urban planning are certainly priorities, but must be carried out scientifically, rationally and gradually on the basis of the concrete resources of the region involved. There is no equilibrium or uniformity in the resources available to the various regions, and each has its own set of more or less evident problems and obstacles; furthermore, regional architecture cannot – nor should – have a single style, but should rather harmonize with the location and the age. It is in any case a priority to give universal importance to the abovementioned general issues, problems regarding land, environmental pollution, the protection of the landscape, etc. Some architects perhaps feel that all this falls under the competences of other scientists. Well, it does not! It is a huge mistake to maintain that there is no connection with architecture, and the issue deserves profound reflection; look at the appeals launched in the West by various notably broad-minded architects. Alexander, author of *Pattern Language*, a work familiar to many architects – expresses himself thus: "The land which is best for the countryside is often also the best for architecture; cultivatable land, however, has its limits and although it only takes a day to destroy it, a hundred years might not suffice to restore it."[15] The author of this work would thus promote, within the limits of the possible, the construction of houses on slopes in order to protect agricultural land and remove it from any architectural development, since this inexorably compromises its fertility –although even the territory used for cultivation should be protected and transformed, eventually, into fields, parks or open countryside. After a series of studies, the Greek planner Doxiadias suggested a maximal concentration of pernicious industries, with the aim of stemming sources of pollution and facilitating checks and management; an approach worthy of careful consideration. The authoritative Indian architect Charles Correa, a constantly active participant in

---

[15] Christopher Alexander, *Pattern Language,* Harvard University Press, 1971.

北

噪声
废水
烟尘
废气
废渣

工业用地   仓库用地   交通用地
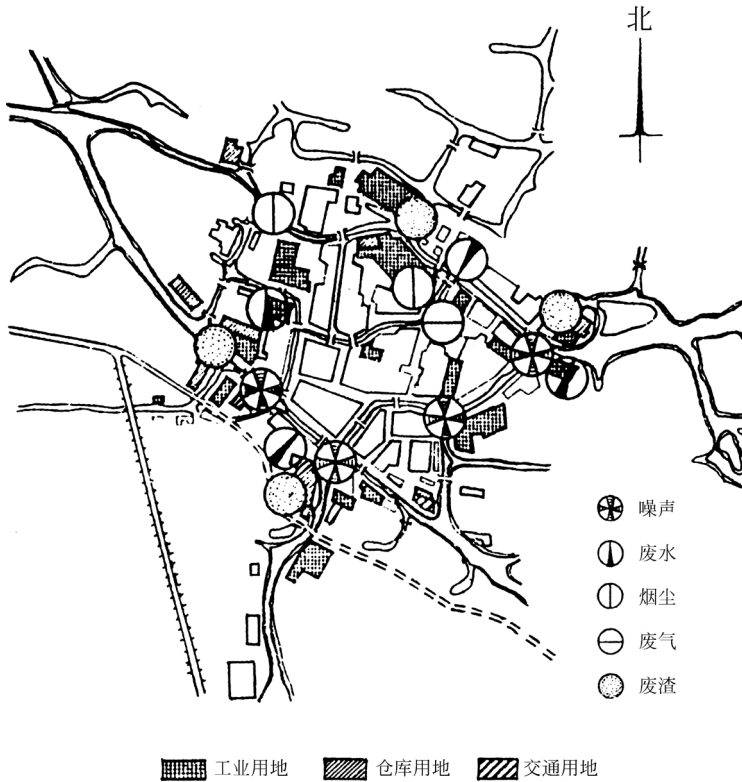
Figure II-5: The pollutions of Tongli Town, Wu County, Jiangsu Province (Source: China Academy of Urban Planning and Design, The General Report of "the Economic and Technical Research on Developing Small Towns", 1986)

architectural movements, can find no peace of late because of the grave uncertainties linked to construction in the context of the rapid urbanisation of the Third World. In his recent work *The New Landscape*[16], in which the problem of urbanisation in developing countries, beginning with India, is discussed, the author suggests new perspectives for reflection upon urban residential solutions. He firmly believes that developing countries must develop their own itinerary and, quoting F.L. Wright, scoffs at ingenuous proposals for building criteria standardisation, as he does at the promotion of a single style aimed at concealing the multiplicity of possible choices in a heterogeneous reality like that of human existence.

The above serves to demonstrate how the real problems of the modern world require from architecture an extension of their own perspectives; otherwise, like it or not, and however lofty the level of academic training, architecture and man will finish by respectively losing the conditions necessary for their own existence and survival.

In 1978, reflecting upon the real problems of China, I myself raised the issue of

---

[16] Charles Correa, *The New Landscape*, The Book Society of India, Bombay, 1985.

safeguarding farmland[17], while in 1983 I brought up the issue of architectural regionalism[18]. Finding appropriate solutions is no less urgent today, and requires a greater number of people involved in study. Problems discussed above such as the safeguarding of territory, the protection of the ecosystem and natural scenery etc. must be resolved through contemporary extension of the scientific domains of the research programme and perspectives, and among other things require analysis of the construction and regulation of the regional environment, the planning of the various cities, and the structure and morphology of urban space and architectural styles, and favouring conscientious collaboration between the various branches of the sciences. Trustful of the benefits of such collaboration, architects should set about deliberating and researching as scrupulously as possible; this is, after all, what their training has prepared them for, and they should not waste the title of master in the management and saving of space. We should also be careful not to neglect the objective differences and peculiarities which distinguish each region. As for architectural research in the strict sense of the term, we are called upon to not neglect the regional nature of architecture itself in the production of new urban models. "The Earth is the spring which dispenses everywhere the finest wine, and from in its flowering forests sparkle everywhere every richness": a good ecosystem is the principal resource of architecture, but it is also the principal resource of human life. Our relationship with the environment should not be based upon its greedy exploitation, but the environment should rather be meticulously safeguarded like a treasure. Take care of the marvellous lakes and rivers of the ancestral land, treat each centimeter with the greatest respect. When designing cities and individual architectural works, take care to arrange them scrupulously, in devoted harmony with Mother Earth: the profession of architect is as much saturated with such a sentiment as in the development of the architectural sciences.

[17] Wu Liangyong. *Nowhere to buy land though at high cost. A talk at the meeting of Committee of Urban Planning Science of Lanzhou*. in *The Essays on Urban Planning and Design*, Yanshan Publishing House, 1986.

[18] A talk at the Jinan Architects Association in Shandong, whose considerations were partially inserted in Wu Liangyong, Lin Zhiqun, Zhou Ganzhi: *Housing, Environment, Urban Construction*, distributed in 1982 as single volume of the disciplinary commission for Architecture and Construction of the Chinese Academy of Sciences.

Chapter 3
A Theory on culture

Since ancient times, people have always been constructing and developing their buildings, roads and settlements, generation after generation. The fruits of the constructions at different times are the steps in the process to create an architectural culture. The existing building and city are the residue of past urban cultures. Hence we can say: "the city is a great book written in stone", "the city is the printing house", "the city is a mirror", or "the city is a showcase of culture". Gotelind Alber, a scholar from Germany, used to say that the city is similar to a parchment for writing in ancient Europe. People always cleaned and reused it, but the traces of usage are always there. I really appreciate this analogy, because it vividly and imaginatively explains the building activities of human settlements, in which the buildings and the building complexes are their words, punctuation, sentences and chapters. As times changed, these components incessantly evolved, yet the urban pattern, the road structure, the individual architectural legacy, usually remain, which reflects the sedimentation of a culture.

What I have discussed above is merely to explain that the past of cities and architecture is closely related to the history of human culture, and as a concrete form and image, it represents human culture; but the city possesses both old and new components and the latter is plentiful and increasing. If we could say that the vitality of historic remains lies in their permanent value as regards history, culture and art, the architectural aesthetics in our new age should present a vigorous architecture. It should be the architecture of the future, that not only inherits the historical context but also meets the requirements of new lifestyles and reflects the aesthetics of the time. Culture itself is a constantly initiating, developing and dynamic process, in its creation and survival. This is true also of architectural culture.

3.1 An integral and heterogeneous global culture

3.1.1 Opposition to the eurocentrist approach

The nucleus of architectural culture has for a long time been identified with Europe. This is because traditional Western culture is highly developed in Europe and includes the Greco-Roman tradition and the glories of the Renaissance. It was there that the industrial revolution first took place, and it continues to the present day to prove itself a breeding ground for new technological and scientific theories. This means that this idea and habitual way of thinking has some basis in fact. American cultural, technological, scientific, economic and social development, crowned in particular by the overwhelming progress of the last century. This has attracted numerous first-class talents to the United States, and Eurocentrism has imperceptibly transformed into Euro-Americentrism, a process which became particularly evident in the years immediately before and after the Second World War, and at the basis of which lie determining historical convergences. In the '60s, with the resurgence of the Japanese economy and large-scale construction came the gradual

appearance of a conspicuous number of capable architects. The success of Japanese architecture began to be taken seriously and some of its masters actively distinguished themselves on the international stage. This was on the whole, however, a single aspect of the modern situation, an expression of the strenuous efforts of a circumscribed number of people, and not representative of the East as a whole (many Japanese academics agree that it is difficult to discern even the current direction, and still more so to forecast the future development of Japan). The Euro-Americentric approach continues therefore to hold a dominant position and to exercise a strong influence, and the ancient Oriental cultural tradition has never, either in the past or today, been given the consideration it deserves. With the exception of a few sporadic scientific studies which have produced notable results, the inspiration of certain 'Oriental fashions' or 'Chinese charm' has for the most part resolved itself in the search for something 'new' which does not offer a deeper understanding of the authentic essence of Oriental culture and, in some cases, offers a distortion of the original image. In such a situation, the Euro-Americacentric approach will necessarily enjoy a certain position. In the history of architecture, the Euro-Americacentric thesis finds authoritative support in Sir Banister Fletcher's old publication *A History of Architecture on the Comparative Method*; the contents of the work imply, among other things, an a-historical vision of Chinese architectural styles (non-historical style), an error repeated from the publication of its first edition in 1896 up to the present day, or more precisely until the publication of the nineteenth edition in 1987 when it was finally corrected[1] (Figure III-1). For a certain period, scientific and cultural development can effectively prosper around a certain area, a certain country or even a certain city, as the interpretation of scientific development offered by the famous "Yuasa phenomenon"[2] illustrates. This is not however the case of Eurocentrism, which exploits the codification and successive fossilising of this phenomenon in support of a presumed 'European cultural superiority', snubbing alternatives, erring inevitably in partiality and misleading thought from objectivity into error.

3.1.2 Multiculturalism: knowldege without masters

Even though the contents of European architectural culture are rich from a historical point of view and exercise considerable influence, from the point of view of historical development, 'Eurocentrism' is permeated by every type of prejudice and does not square completely either with history or with reality. If one discusses the emergence of urban civilisations in the world, there are six great universally agreed upon examples: Egypt, Western Asia, Greece, India, China and central-southern America. In addition to these, world architecture on an intercontinental level is heir to Indian culture, Islamic culture, Central-South American culture (the ancient Maya and Inca civilisations) and the cultures of North, Central and South Africa. Many original cultures, like the native Australian culture, can boast glorious pasts, and some of them have managed to develop for centuries

---

[1] In order to comply with the requests on the Chinese section made by the re-editors of the text, in the 19th edition of 1987, edited by Guo Daiheng and Wu Guangzu, a separate re-written version of those portions dedicated to ancient and modern Chinese architecture appeared.

[2] The Japanese Mintomo Yuasa believes he has identified the following rotations in the pivots of world scientific development: Italy (15 0-1610), England (1660-1730), France (1770-1810), Germany (1810-1920) and the United States (1920 to today); a somewhat controversial theory.
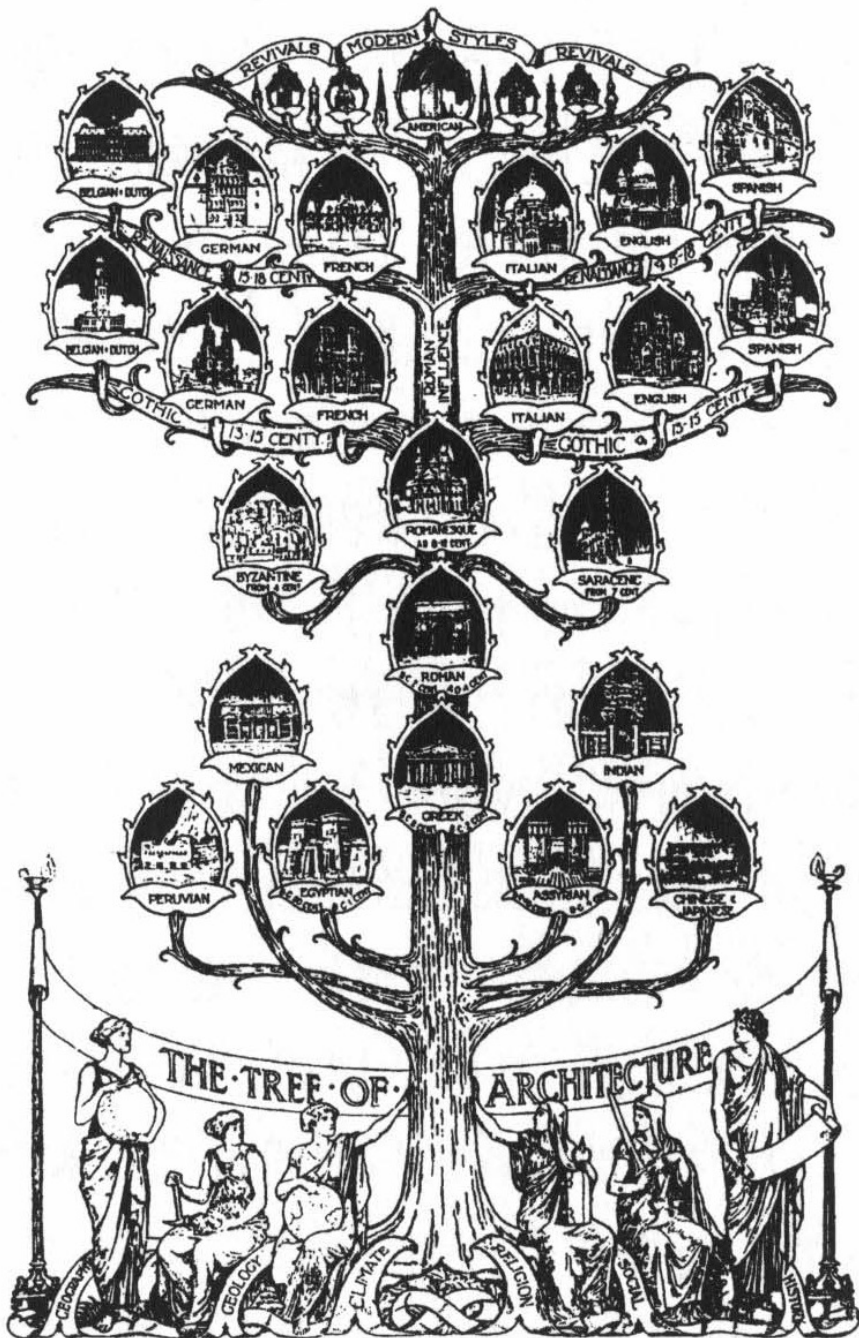
Table III-1: In the history of architecture, the Euro-America centric thesis finds authoritative support in B. Fletcher's old pubblication 'A History of Architecture on the Comparative Method'

or survive uninterruptedly to the present day. The 'Eurocentric' concept is also incorrect from the point of view of the historical development of world culture: in history the cultures of the East and the West enriched one another in a luminous process of mutual exchange. Furthermore, in antiquity the cultures of Western Europe experienced the medieval 'Dark Ages' (upon which no conclusive judgements exist; the culture of this particular period has continued to supply its own contributions, but overall coincided with a stagnant phase in European social development), while Western Islamic culture, on the other hand, strengthened by its own consolidated architectural and town planning traditions, never ceased to prosper. I myself began by receiving an architectural education influenced by the precepts of 'Eurocentrism'; and yet, in my visits to Egypt and the Middle East in the '80s, I not only had the chance to see close up the magnificence and splendor of the great Egyptian culture (with the history of which I was already somewhat familiar), gaining a clearer idea of its greatness and perfection, but I found myself as astonished as a child to discover for the first time the enchantment of the images and styles of the "Thousand and One Nights" of Islamic culture. In the multitude of diverse styles which distinguish the Mosques, a stylistic culture finds expression which differs radically from that of European churches or Chinese monasteries. Furthermore, the Islamic city tends to form a single body with habitations in local style creating a thoroughly pleasing result. In no way could I have imagined it and only with difficulty could I have understood it without personally experiencing it and making a careful 'reading' of it. Before the remains of the Mexican Maya culture, the intense beauty of the forms, the pervasive sense of mystery, its peculiar examples of subtle convergence with, and distance from, certain artistic models of ancient China itself, I had the genuine sensation of observing a masterpiece of the history of civilisation. With my homage to these twin beauties I filled a gap in my knowledge. Within China itself, however, there is always, everywhere, something new, whose charms I find hard to resist, and there are a wealth of places which deserve study and the collection of evidence of the local culture. From all this emerges the image of a compact but heterogeneous global culture, of a flow at times tenuous and circumspect, at others vast and violent, able to draw sustenance from and at the same time sustain a multitude of tributaries destined to carry the endless multiplicity of its contents together to the sea. Each culture has its own fertile terrain upon which to ripen, a great populace able to mould it and authoritative personages who can represent it. It automatically possesses its own urban architectural tradition and landscaping solutions, masterpieces which reflect the wisdom, the philosophical maturity and the echoes of tradition and local customs. In all of this is truly concealed a limitless knowledge which cannot be grasped with a single glance and which one can never exhaustively investigate. There is certainly a difference between spontaneously becoming aware of and ignoring it, and once this has been understood and the origins of global culture and the relationship of China to the real world are known, it will finally be possible to carry out that extension of thought necessary for an orientative conception of the route to take.

3.2 A Cross-sectional view of contemporary architectural culture

The description in the last section attempts to present the historical axis of world

architectural cultures. What I will discuss in the following section is the cross-section of the contemporary architectural culture.

3.2.1 Pluralistic approach and mutual penetration

After World War II, accompanied by the independency of the former colonies, the trend of worldwide political-economic development significantly changed. The world was divided into the developed countries and the developing countries. From an overall viewpoint, in the recent half century the developed countries continued their development to a large extent while the developing countries also made significant progress (they have to be evaluated with a different criterion, since they had different starting points). But the latter usually have not drawn enough attention, which is an eccentricity that must be corrected. In general, the urbanization in the developed countries has entered the phase of slow development, and has even progressed toward suburbanization and "contra-urbanization". The renewal, management and conservation of the existing city areas are further accentuated. There have been new developments in architectural technology, materials and forms. The architectural culture is more respected, and the requirements of building volume are normally met. Although the lack of housing still exists in cities like Moscow or New York[3], it has been a problem on a different level. In those developed countries, people demand high-quality buildings and the transformation of existing buildings or facilities of a former low standard, in order to ensure more numerous and more comfortable living spaces and to meet the higher requirements of architectural art. Indeed, there are still some differences and variations between developed countries. However, these can in no way be compared with the super-imbalanced developments that widely exist in the developing countries, e.g. between the rich cities and the poor countryside. In the central areas of big cities, especially in the developed zone, modern and high-standard architecture consistently appeared, which even allowed some city areas to become tentative cases of urban planning and architectural design for the star architects from the developed countries.

On the other hand, the illegal shantytowns are sprawling around the cities (According to the available data, of the 4.5 million inhabitants of Bombay 20 years ago, there were less than 0.4 million people living in the shantytowns, but this number has reached 4.5 million people in today's (i.e. 1985) Bombay with its 9 million inhabitants[4]. That means while the urban inhabitants increased twofold during 20 years, the numbers of people living in the shantytowns increased more than ten times). From the point of view of the general conditions in the urban and rural areas, the lack of infrastructure, such as water supply, hospitals, schools, etc, and the lack of proper housing, caused very serious social problems. In short, the universal problem is poverty. According to the statistics of World Bank in 1983, in the Asian populations, those of per capita GNP below 350 US dollars made up 75% of the total, while there were 13.3% of them with a GNP of 351-860 US dollars and 6.32% with 801-1840 US dollars. Only 5.4% of them had a per capita GNP more than 1840 US dollars (which includes the oil-exporting and developed industrial countries and regions,

---

[3] Wu Liangyong, *Housing and City – Transforming the World to the Future – the Main Tune of the UIA Brighton Conference*, in "Architectural Journal", 1986.11.

[4] Charles Correa, *The New Landscape*, Mimar Book, Singapore, 1985.

such as Japan, Hong Kong, Singapore). The difference in economic conditions has a direct impact on the construction of the living environment. Though some urban planners insisted on the relevant research and carried out outstanding experiments, progress in solving the poverty problem is proceeding slowly since it relates to every aspect of society. In any case, different problems exist respectively in the developed and the developing countries. Even in Asia, where half of the world's population lives, the common and the unique features exist in parallel, which indicates the diverse paths of development. Recently, there has appeared a new tendency concerning the cultural issue, which has not become the mainstream but is still a concern: in the developing countries, people have started to search for their own way forward instead of a creating a simplistic imitation of the developed countries as they had done before. Some have pointed out that their countries are rich in native cultures, although still poor in economic development terms. They have strived to explore new strategies and to find the cultural identity that is rooted in the natural, human and economic resources of their own regions. This point has been reiterated by scholars in many countries, i.e. the scholars in Malaysia, Singapore, Philippine, Sri Lanka, etc. (I really appreciate their broad experiences, unique thinking and outstanding designs), with whom I have been in touch personally. I recently received a letter from the president of the Indian Architectural Academy, who is a pioneer of Indian architectural education. He also mentioned this point at the very beginning in his letter. There have also been some new trends in the research into urban architecture in the developed countries; for instance, people have turned their attention to South America, Africa and the Middle East after a great amount of research on their own countries and regions. Now the trend is also turning to South and East Asia, so that "China fever" appears frequently. In general, the architectural cultures of the Third World countries are receiving more notice and research in this area has been intensified. Beginning with the postwar Peace Corps, a group of "Third World scholars" gradually formed in the world to engage in research on the developing countries. Many western universities now provide the relevant funds to sponsor this kind of research. Under the influence of Eastern thinking and philosophy, the attitude of architects in the developed countries has also changed, and they are exploring new ways. For instance, architectural theory, such as we discussed above, has been transformed from Internationalism to Regionalism; design begins to be inspired by the traditions of the developing countries. Their interests are multi-faceted, for example, it could be about "Fengshui", the Chinese garden, vernacular housing, cultural relic preservation, or urban transformation, when they are talking of China. Their ideologies are also diverse, in which there are some explorations of radicalism in parallel with some pragmatic works. For instance, some scholars and architects have accepted the idea of "appropriate technology" so as to engender the movement of the"Barefoot Architect" for architectural practice at the grass-roots level. Some of these experiments have been successful and partly acknowledged by society.

3.2.2 The rise of the "eastern stars"

In his famous poem *Lunshi* (On Poem), Zhao Yi, a poet in Qing Dynasty, said: "When we see the popularity of the poems written by Li Bai and Du Fu, we may feel they have moved far away from their original creativity; when we review the talented poets who

rose in this world, each has led the trend for several centuries."[5] When we review the development of modern architecture, we can see the important role played by architects, from the challenge to tradition by precursors at the turn of the 19th and 20th centuries, such as O. Wagner, P. Berlage, P. Behrens, and L. Sullivan, to the appearance of the masters of modernistic architecture – F.L. Wright, W. Gropius, Le Corbusier, Mies van der Rohe – in the first half of the 20th century. They led the trend, and seemed to form "The Fountainhead" of the new architectural thinking. We say that they were "The Fountainhead" because their creativity broke the constraints of technology on the old architectural forms and promoted the rise of architecture based on new technologies, so as to contribute to the growth of modern architectural science from a trickling brook to the mainstream. Due to the abundance of the introductive literatures on those modernist masters, I will not discuss them over much here. There are also real stories about the "The Fountainhead", which prove that those masters were regarded in this way at the time. For instance, there was a movie "The Fountainhead" at the end of the 1940s whose protagonist was modelled upon F.L. Wright (originally Wright was even invited to appear in the film, but he refused this invitation in his usual humorous way, by asking for huge amounts of money).

The movie generated the creation and the contribution of the 'master' with the story of his fight against conservative forces. It made the 'master' in the film full of heroic spirit. Related to this is the discovery and the promotion of "talent". In 1949, the Architectural Record held a design competition "Hidden Talent", in which the winners of the 1st, 2nd and 3rd prizes were the followers – even the absolute followers – of Mies, Gropius and Le Corbusier respectively (Mies himself was on the jury). It also serves to show that the young architects at that time regarded the forms created by those masters to be the 'fountain head' of design. A member of the jury, E. Saarinen, was not satisfied with the result of the competition. He wrote an essay entitled *Some rethinking on the Hidden Talent competition* when the result was publicized. In that essay, he criticized the result of the competition, of which he thought the pursuit of formalism was blotting out even the basic pragmatic problems of architecture. The editor of Architectural Record also wondered if there were any difference between this phenomenon and the promotion and the imitation of Palladian and Albertian modes in the days of Neoclassicism and Eclecticism, and showed his uneasiness and suspicion of this tendency. There are two sides to everything, and the over-propagation of the masters produced side effects, which eliminated the creativity that was advertised and pursued by the masters themselves. Moreover, all schools, including the achievements of the masters, always have their successes and failures. The theoretical limitations must be clarified along with the problems that appear in practice. This is normal and understandable. When vivid creativeness changed into the mere copying of the form, and when they only repeated incessantly the forms created by themselves, their creativities became recessive and decayed. And so the second and third generations of various theories or "isms" unremittingly arrived, and the star architect, theorist and critic duly appeared. The new theories are widespread and argued over. From the viewpoint of the development of theory, this is inevitable and unsurprising. As for declarations like "the modernist architect was dead at a certain moment", this is just the

---

[5] Paraphraprased from his famous poem *Lunshi* (*On Poem*).
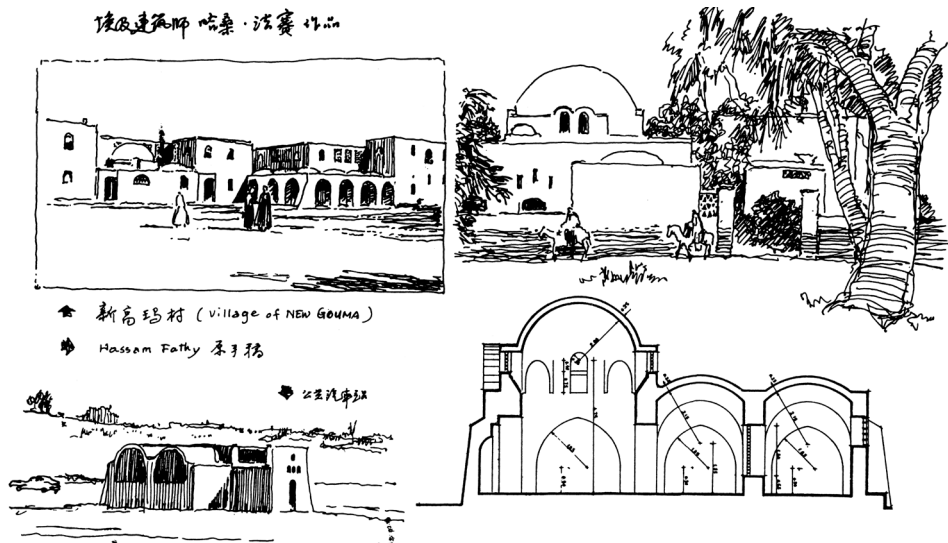
Figure III-2: The Designs of H. Fathy Village of New Gouma; 2. Bus Stop; 3. A hand sketch of Fathy

artificial statement of the critic out to shock. Like the various slogans on the designs, it is something that is not really meaningful. The entanglements of this issue would make us lose the ability to discern facts from fiction. Nevertheless, the understanding of the trend of new theories and the exploration of some relevant issues are still necessary. From the historical point of view, in parallel with the esteem and praise (even the adulation) of the masters, the appearance of the "non-master theory" is also inevitable in history. Actually, the "non-master theories" have existed for a long time. It was in the opening session of the last UIA conference (Brighton, July, 1987) that R. Hackney, the chairman of RIBA and the candidate chairman of UIA definitely asserted: the superstitious admiration of the masters will make people consume energy and go astray. The young architects should learn from the public and explore the fields that no one has touched before[6]. This is indeed correct. Another example of the "non-master theory" is that of Philip Johnson, who was a follower of Mies at the beginning and became a "master" himself later on. In the AIA conference in Orlando, Florida (May, 1987), he announced that the age of masters had passed and there would be no more "super stars" or giants in the next generation. Anyway, Johnson is famous for his catching up with architectural fashion. So the "non-master theory" has also become in some ways a fashionable ethos. The success and the failure of historical characters should be judged by the scientific attitude of historical materialism. Yet the rise of new characters, the flash of fresh thoughts and the production of outstanding designs should also be sincerely welcomed. What we have to notice is the rise of new stars in the Third World countries. The discovery of, and praise and respect for, the outstanding achievements of the "ordinary architects" in the Third World countries, such as the Egyptian architect Hassan Fathy and the Indian architect Charles Correa, who used to be unknown but is now highly valued, are among the good examples. Hassan Fathy was

[6] Wu Liangyong, *Housing and City. Transforming the World to the Future.* The UIA Brighton Conference, in "Architectural Journal", 1987.11.

born in Alexandria, Egypt, in 1900 and graduated from the Giza Institute of Technology in Cairo. He received the Beaux Arts in traditional training and education. He found that new technology in architecture developed and gained profit because of the radical growth of population and the progress of technology but, on the other hand, went hand in hand with the eclipse of traditional skills and the disappearance of the craftsman. In fact, the housing problem in many areas became more serious in terms of the unaffordable new technologies. Fathy devoted himself to the design of housing by rediscovering the origins of local construction. He helped to train the members of the local community as a combination of architects and craftsmen to develop suitable living environments by themselves. Cultural roots were truthfully considered in his design works. An architect's design for the poor usually only derives from his humanitarian spirit, so much so that it tends to ignore beauty and even deny the visual arts, yet for Fathy, even an arch or vault made from rough clay should be endowed with artistic fascination.[7] Correa called him "one of the real great architects in this century".[8] According to his important contribution to "architecture for the poor", he received the Gold Medal of the UIA in 1983. I also appreciate H. Fathy very much. His practice can be seen as an important illustration of "A General Theory of Architecture", though some think that these examples are very rare (Figure III-2).

The Indian architect Charles Correa, as a Third World architect working in the tropical area, is becoming more and more noticed in the world. He explored the possibility of suitable architecture for the geography, economy and culture of India. He thought that an architect should research "the mode of life". The *pergola*, which is a canopy against strong sunshine, is the best shelter in the tropical area of India, and the place under the big Banyan tree is a good outdoor living environment. Thus what he has tried to design is the "open to sky space, open to sky architecture", which is unknown and unfeasible in the colder Western countries. He created a "passive (cooling) architectural system" for saving energy under local conditions. On the other hand, he studied the urban culture of India to explore "the nature of change".[9] Because of his extraordinary contribution, Correa obtained the Gold Medal of RIBA in 1985.For the developing countries in Asia, there are many excellent staunch explorers in this field, who have devoted themselves to traditional housing culture, the usage of modern technology, the adoption of local materials, and the discovery of new factors from vernacular architecture as well as having created several good architectural designs. Their achievements should become much more influential. I spent quite some time in introducing those representatives of the age, for three reasons. We should study and understand thoroughly the outstanding contributions of the masters.

---

[7] Quoted from Richards, Serageldin, Rastorfer, *Hassan Fathy*, Mimar Book, Concept Media University of Michigan, 1985. Some thought H. Fathy's works very valuable, because they "preciously bridged the West and the East, the high-tech and the low-tech, the poor and the rich, the rustic and the exquisite, the urban and the rural, the past and the present. His design is a contribution to the folk culture and a devotion to architecture in the 20th century.

[8] The speech of Charles Correa in *UIA Cairo Conference* in 1985, please see the conference proceedings; Hassan-Uddin Kahn, *Charles Correa*, Mimar Book, 1987.

[9] Uddin Kahn, *Charles Correa*, *Ibid*. He thought that "we are living in the country with abundant historical cultural relics", and "we should not forget the actual living conditions of the most of inhabitants in this celestial body, who are struggling for the improvement of their future lives. It is only the decadent architecture that looks backward, but the vital architecture is always dynamic and looks forward to tomorrow!"

But they should be analyzed and criticized objectively by readers themselves. We ought to learn not only from their professional achievements, but also their spirit of creation and exploration. All masters are the production of their times. They are the pioneers of the time but have their limitations and deficiencies due to their times. It is not good practice to follow them blindly or imitate the building forms they created. The practices of the masters were created in the ideological emancipation of their times, which should be not become the fetters of further progress. The warning of the critic of Architectural Record in 1949, which we mentioned above, was one of the negative illustrations. Qi Baishi, a famous contemporary Chinese painter, said: "Those who learn from me will flourish, and those who only copy me will reach a dead end". What an insightful remark that is! The unsuitable admiration for the masters, including the "star architects", makes it hard to avoid the negative influence on the students and the amateurs who have not reached a mature understanding of architecture. That is probably the core issue of the "non-master theory".Chinese explorers and creators, as well as outstanding figures, appear in the great practice of China. The aim of the study of every ambitious Chinese professional, who of course might learn from foreign experiences, is to explore and to create basing himself on native requirements and practices. The praise for Fathy and Correa in this book is not only because of their outstanding professional achievements but also, more importantly, because of their sincere and creative wish to devote themselves to their countries and people. I also wish that the Chinese architectural academics would also identify and publicize the unyielding spirit and the outstanding achievements of Chinese architects.

3.3 Cultural assimilation and regional identity

3.3.1 Cultural assimilation

Along with the progress of science and technology, the development of transportation and the speeding up of information flow, the knowledge, skills, aesthetics and even life styles of the richest societies, constantly transmitted from, certain global centres, have gained ever more dominant positions in the world. This has resulted in a gradual strengthening of the social and economic, social and cultural globalization. A Paris fashion, an American pop song, a fashionable dance, or the success of a new architectural design can rapidly spread over the world to be appreciated and imitated.

This trend has even expanded to the fields of culture and thinking, to the methodology of recognizing and presenting the world. It can be called the "assimilation" or "popularization" of world cultures.[10] These words will not be difficult to understand if addressed to the condition of architecture. Some worldwide academic conferences, some

---

[10] Amadu-Mahatar Muhbo, *Exploring the Future*, published by UNESCO. Therefore, Amadu-Mahatar Muhbo of UNESCO warned us: "This unified logic gradually encompassed more and more fields of human activities but produced the chaos itself, because it tried to promote everything accorded with it and demolish everything boycotted it. It benefited the knowledge derived from some ways of thinking but damaged other forms of knowledge; it made the advantage of some values, whatever they belonged to the aesthetic category or the ethic category; it stimulated the leap of activities in some domains and encouraged the development of some talents and emotions but ignored all others. Thereby, the whole creative domain was constrained, and the social individuality and uniqueness were demolished".

exhibitions in museums, the propaganda on the covers of magazines, the awards of the international competitions, etc; most, if not all, of them are penetrated by this atmosphere, which would bore any insightful person but which triggers the eagerness of the youth. The intelligent light shines within an absurd daydream. That is the intrinsic reason for the long-term existence of the phenomenon of assimilation. Besides this phenomenon, we can find non-mysterious mystery in the ironic talk of some western architectural scholars. For instance, some masters in some cultural institutes have been bored by a certain kind of architectural form. We never know what fashion they would like to sell to the world architectural and cultural market next time. Thus, it is not difficult for us to imagine the inner mystery.

3.3.2 The question of national or regional identity

The above is only one aspect of the existing condition.[11] This leads to the pursuit of regional identity, local identity and the national culture. The increasingly intentional and conscious development of the local culture includes the preservation of the "sub-culture group" in the city, the protection of the historical city or the historical area in the city, designs with local architectural identity, etc. A young Finnish female architect asserted: "the next international style is cultural and regional identity"[12]. Although this assertion sounds a little arbitrary, it clearly presented the point of this kind of argument.[13] The pursuit of local identity and assimilation, as the coexistence of the waves of modernization and the appeal or endeavour to inherit the local culture, are the indispensable two sides to research the modern world culture, including the architectural culture. It looks paradoxical that the different schools are searching for different ways which are full of divided opinions and mutual contradictions. Yet it is just our existing world, in the unity of opposites of contradiction and with its cultural multiplicity and coexistence that can explain the fading of the masters who used to steer the architectural world, the incessant transition of the "star architects" (except for a few of them) on the stage, and the rise of the eastern architects. Let us see what Ken Yeang, a Malaysian architect.[14] This also raises a question for the Chinese researchers wishing to understand well the ethos and schools in the changing world architecture; to soberly, practically and seriously think of our own way of development in the conditions of reform and openness.

[11] Charles Correa, *op. cit.*. On the other hand, "facing to the increasing globalization of the fundamental social process, facing to the pressure from the unification of the individual and the collective psychosis, the awakening of the individuality is an overriding request, which is the presentation of the demand of identity. This presentation can be seen everywhere in the world, and is consistent with the achievements or the recent actions of some countries to improve their native cultural values".

[12] A speech in The Liacon 17 "International Conference on the Environmental Art", Chicago, USA, 1985.

[13] Amadu-Mahatar Muhbo, *Exploring the Future*, published by UNESCO. "In any place, cultural identity seems to be one of the major motives of historical development"... "The defense of the identity should be regarded not only as a simple resurgence of the old values, but also mainly as the presentation of the purpose of the new cultural conception".

[14] K. Yeang, *Tropical Urban Regionalism: Building a South-East Asian City Area*, Mimar Book, Concept Media, Singapore 1987. "35% population of the tropical Asian developing countries is living in the urban areas. As the sovereign states and to face the impact of development, a sturdy and confident spirit appeared. Accompanied with the ethos of anti-modernism, this spirit pushed ahead with the pursuit of the national identity".

3.3.3 The development of Chinese architectural identity from the point of view of cultural comparative methodology

To continue with this digression upon culture, a comparative study of Chinese culture in relation to others would be useful not only for a deeper understanding of the world but also for a more lucid understanding and development of oneself.

This is an extremely complex issue which we cannot investigate thoroughly here, but international relations and social development encourage careful analytical investigation beginning from the point of view of the global cultural situation and cultural comparativism, and it is at this starting point that each of the points analyzed above presents a problem. The solution to these unknowns, however, requires an amount of hard work which is impossible for a small number of people to accomplish. In examining them, it is however equally opportune to reflect upon the importance of a conscious visualisation of the strong points of Chinese architectural culture, as well as its weaknesses. Methodically persevering in this type of study until the desired results are achieved is easier to talk about than to do, and the important thing is not to undertake a hunt for conclusions but to begin to observe each problem concretely, bearing in mind human achievements in China and elsewhere over the course of the centuries and mastering those principles which determine their validity. Examining breakdowns of reasoning will thus be anything but fruitless. A large number of ancient and modern specialists have undertaken constructive analysis of traditional Chinese architecture, its structure, its distinctive characteristics, its essence and the specific qualities of each work, but if a large number of researchers allow themselves to be drawn into the study of individual and collective structures, fewer will dedicate themselves to the study of methods of urban planning and the design of architectural complexes. It is this sector, in fact, which embraces urban theory and design methods to the point of involving philosophical thought, and where differences with the West become more marked and deserve further analysis: this is design whose structure does not lend itself to satisfying the complex needs of modern reality, and therefore to seek inspiration in the rules of composition of Western architectural complexes, in order to derive new urban planning rules and its own philosophical theory of the whole. China has managed to distinguish itself by the refined sophistication of its wooden constructions, but at the heavy price of sacrificing its forests and the devastation of its natural environment, resources which in our day and age are difficult to recuperate, and the backwardness of many brick structures and the ingenuousness inherent in attempts of the 1930s to blend cement and wood, substituting wooden structures with the former with the aim of revitalising them, should also be admitted. On the other hand, would welcoming theories on architectural typologies and structural support as well as the characteristics of the dispositive arrangement of Chinese architectural complexes not perhaps mean putting new possibilities to the test on the basis of modern compositional structures? The theory and praxis of the garden arts are part of China's loftiest inheritance, and still enjoy intense vitality. The ancient garden is, however, somewhat distant from modern needs (designing too many buildings in parks would not necessarily be as successful as might be hoped today), but the development of the compositive theory of the Chinese garden would in any case be a positive move, welcoming the legacy of the world's landscaping heritage, not least among which are the achievements of the Japanese, and integrating new blood

into the development of modern Chinese gardens.

Often in Chinese architecture, it is the assembly of individual architectural bodies which transforms external space, and the most significant construction from this point of view is represented by garden complexes themselves, but the interior design, from buildings to temples to traditional houses – with the exception, for example, of those of Zhejiang, and with them the relatively deft interiors of certain particular localities – often reveals itself to be excessively stylized and inflexibly monotone, and its defects are almost glaring if juxtaposed with the interiors of Western architecture. In short, it is possible to satisfy the complex needs of present-day and future life without mechanically and repeatedly offering up the methods and strategies of tradition: this means maintaining the strong points and selecting those principles ripe for rediscovery in the present. The issue of production in a typically Chinese style is still a serious one, to be faced by analysing project proposals in conjunction with place and objective convergences. As regards the issue of creative strategy, new tactics could spring from an approach able to "inherit abstraction, mobilising thought to realise the image". 'Inheriting abstraction' implies firstly beginning from architectural tradition, the strengthening of the quintessential aspects (philosophy, fundaments of design, etc.) of the main compositive and theoretical principles, and integrating them in the praxis of realisation, and secondly the recovery of the salient characteristics of traditional morphology in design, refining and concentrating them into a fundamental motif. Such recovery work must not be considered plagiarism or the passive rearrangement of old components, as it in fact requires a talent for reception and creative development, re-elaboration and figurative reproduction. In engaging in the dispute on so-called 'resemblances of form' and 'resemblances of substance', the possibility of reaching a compromise should not be excluded, as seeking a resemblance in substance does not absolutely exclude a margin of formal resemblance: what matters is keeping attention upon local circumstances and objective conditions. All of this is 'mobilising thought to realise the image', where 'mobilising thought' means introducing one's own imagination into the form of the object, while 'realising the image' means guaranteeing genuine expression. This is a term borrowed from the painter Gu Kaizhi, whose words, originally referring to painting, are used here to illustrate the methods of architectural production and environmental design, methods recognisable in the ups and downs of the story of Lanting (Pagoda of the Orchid) in Shaoxing, originally known as *liushang qushui* (chalice suspended between tortuous waves) and later re-baptised *liubeiting* (pagoda suspended between the waves; it should be considered as previous to the Song era, as its construction strategy already at the time included a plan), or in the landscape design known as *zuoshi linliu* (repose of stone upon swirling currents) and of Yuanmingyuan. In settling upon the design of the Xiangshan Hotel the architect Bei Yuming proposed a recovery of the themes of *liubeiting*; he did this by proceeding simply but with undisputed originality in the adaptation of the platform of the swimming pool at the centre of the garden and the recovery in the upper carvings/reliefs, the decorative motifs of traditional *liubeiting*, in order to moderate any abstraction and offer the concept of the *liubeiting*, originally placed at the centre of the park. This type of form, of measure and of style is an alternative approach which breathes together with the new architecture of the garden. Fundamentally, this would not have been possible without resorting to a

series of principles developed in the heart of ancient and modern architectural culture, both Chinese and foreign, and it also necessarily presupposes an 'independent…' and imaginative… artistic conception'.

A careful study of foreign countries will help to know and understand China better; a sober analysis of modernity will help shed light on ancient dynamics; a knowledgeable re-reading of origins will help achieve modern aims; a timely appeal to the perspectives of the diverse sciences cannot but assist in the investigation of unknown factors while analytical reflection on the characteristics and precedents of the real problems will surely help to identify those relevant contributions to be found in ancient Chinese and foreign cultures. A particular tradition or the dictates of some modern theory, methodology or strategy will not suffice to manage the intricate complexity of the issues described above: it is important to draw extensive nourishment from this every-changing and multi-colored world heritage, exploiting the point of view of cultural comparativism to better understand and refine oneself, gathering one's strengths and deciding which of them may still be useful. But it is yet more important to know how to amalgamate knowledge and to have a platform suited to production. To summarise, if we base architecture upon cultural assumptions, the method most suited to the analysis of the architecture question will be equally cultural, and the encouragement of cultural growth will be the tangible and concrete manifestation of culture. Beginning from a viewpoint of this kind allows us to grasp the regional foundations of architectural culture itself – as we have seen, in the final analysis architecture is local architecture, a useful piece of knowledge for liberating oneself from any trace of 'Eurocentrism' and rejecting any presumed superiority of Western culture or any other partial or merely technocratic point of view. It is, of course, equally important to guard against crossing over into surly localism. At the same time, architecture continues, even in modern society and to a greater or lesser extent, to offer up the distinctive mark of the place, and we must thus reflect upon this whatever the location or local culture. Human settlements are a combination of architecture and various other components, but the richest and widest-ranging contents of the settlement itself should be sought in the culture and art which contributed to its formation, rather than in the architectural structure. Generally, settlements are the mirror of their age, and in them the surface of the mirror is larger than in individual architecture and systematically reflects the country, the society, the people or the historical culture of the region in question. Whenever the politics, economy, society or culture of the country or region undergo a phase of transformation, the urban nucleus and architectural complexes reveal themselves to be extremely sensitive to this, despite the extreme slowness of the new cultural system's transformation process. Facing and analysing the problem of architectural culture and art from a macroscopic point of view of the city can promote a widening of the observer's horizons. Ingenuous generalisations can, however, cause errors which necessarily determine a fall back into partialism, and in order to achieve more reliable results and an even greater breadth of thinking, architecture should be developed by placing the accent on its environment in a wider sense. There may however be even more serious issues which are too large to ignore, and research must be conducted with the constant consideration of the composite whole of the local and objective temporal contingencies of the city, and not within the restrictive parameters of isolated construction. Examining

architecture from the starting point of urban culture and art will also allow us to see that architectural production and art do not belong solely to architects but also involve the population and individual artisan, justifying the extraordinary and undying survival of the principle which states that 'there is no architecture of architects'. Certainly, architecture cannot do without the contributions of architects (including its eminent maestri), who are anything but marginal, but when considering the development of the construction of the urban environment as a creative and conscious human undertaking it is equally important not to neglect the role played by the masses, by capable craftsmen, and the creativity and farsightedness of the political personalities involved (an issue discussed in more depth in the section dedicated to the 'theory of the professions'). It is for this reason difficult not to be swept away by an intense perception of genius when reading the celebrated words of V. Hugo in 'Notre-Dame de Paris': "… from its origins through the entire XV century of the Christian age, architecture is the great book of humanity, the principle expression of man through the diverse stages of his development, both as a power and as an intelligence"[15]. Society carries on its development and humanity progresses, while the monumental work of architecture goes uninterruptedly on, enriching itself with glorious new chapter.

[15] A quote from the China Grand Encyclopedia – volume on architecture, gardening and city planning and contained in the first passages of the volume on Architecture

Chapter 4
A Theory on science and technology

Building is one of the earliest of human productive activities. The verse "manage it and design it, people then build it" in *Shijing* (The Book of Songs) of ancient China is an early record of architectural activity. Along with the production of buildings, people simultaneously created brilliant architectural art, settlement design art and other relevant arts. The architectural art was well-recognized and fully discussed in history; but any architectural art had to be established on a solid material foundation, so that the material factors and the spiritual factors of architecture are only actualized and unified during the process of building. Thus, to solve the comprehensive problem related to these two factors, we need to discuss architecture and the architectural discipline from the point of view of building.

Building material and technology are essential elements and methods of building (which we can call the "hardware"). This point is recognized and respected in general. However, the architectural scheme, the technical code, the regulation, the institution, etc (which can be called the "software"), are usually neglected (sometimes even by the architects). Only when we adapt the viewpoint of the settlements to the comprehensive viewpoint of building in discussing architecture and the architectural discipline, can the synthesis of the "hardware" and the "software" really be achieved. We will discuss technology, policy, law and management of architectural science respectively in the following pages. The development of human society relies on, to a large extent, the progress of science and technology and the development of productivity. So does the architectural profession. Indeed, the development of technology and art are not always parallel to each other in history. It was possible to create wonderful artistic work under conditions of low productivity, which can be seen in the various achievements of ancient architecture and art. Yet the progress of science and technology provides new possibilities and conditions for the architectural profession, and further promotes the creativity of art. The development of modern architecture and industrial arts are good examples[1].

4.1 Technological possibility and economic feasibility

Within the process of human evolution, some ideals have been attained due to the progress of science and technology, which makes people believe that nothing is impossible. For instance, the story of the goddess in the moon was just a legend in ancient China, but landing on the moon is no longer a dream with modern technology. Meanwhile, spacecraft and many other science-fictional ideas have also come true. If we anticipate

---

[1] Originally, I planned to put the chapter "A Theory on Science and Technology" before the chapter "A Theory on Culture". But in terms of logical continuity from "A Theory on Regionalism" to "A Theory on Culture", which means the consequence of "space – time – science/technology" that sequence is easy to understand. So I adjusted the sequence of chapters as such. And the comments on economics have been distributed among each chapter of this book.
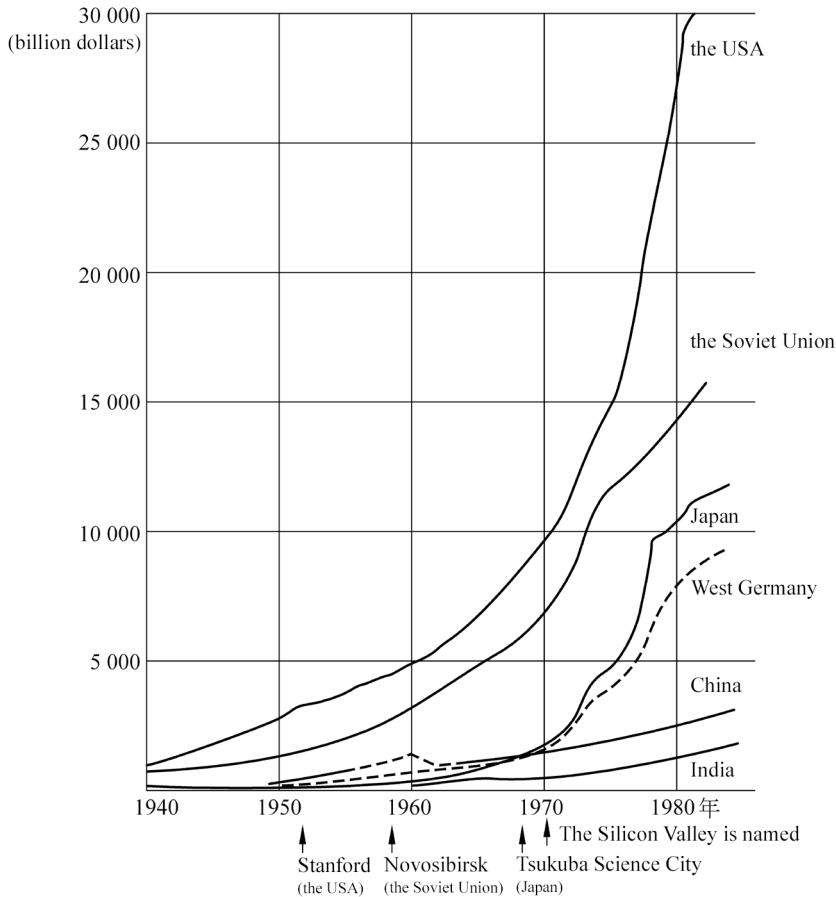
Figure IV-1: The High-tech Park and the National Economic Developmental Level (Source: Institute of Architectural and Urban Studies Tsinghua University, *A Research on the Development and Planning of the Cultural, Educational and High-tech Area in the Northwest Suburb of Beijing*)

new technological achievements, why not build cities on the sea (which has been begun to be achieved in Japan in the form of a platform on the sea, and some people have discussed the possibility of the sea city near Tokyo conceived by Kenzo Tange), or even cities in space or on the seabed? However, the possibilities of technology, which is highly dependent upon the economic development of a country, are not necessarily adequate to the realities of architectural practice. For instance, the development of satellite cities was proposed as a sound strategy in the urban planning of big cities in China, but building them met with many difficulties, since the Chinese economy could not yet support this sort of urban expansion. Peter Hall discussed five modes of development for the world's large cities, which can be used to explain that the city in a developing country would still be centralized and congested if the national economy had not reached a certain level[2].

---

[2] Peter Hall, *The World Cities*, Weidenfeld & Nicolson, 1977, 1984.

Another example is the proposal to create high-tech parks, which has been around for a long time and planned in Beijing in the 1950s and in Hefei in the 1970s. The difficulty of creating them was also rooted in economic problems. The high-tech development is proportionate to the GNP of each country (Figure IV-1). As far as regards housing, according to a UN survey, on average 5% of GNP is invested in housing development in each country [3]. To expect that the national investment on housing could surpass the economic ability of a country is unrealistic, even if the lack of housing investment would mean not meeting people's living requirements. Also, the decision to build other systems, such as subways, should also depend on certain indicators and the economic "threshold". If there is no economic idea or plan, as well as the concept of a "threshold", certain practical planning/architecture projects will surpass the economic developmental level and would be difficult to be carry out. Even the most powerful decision-maker with the greatest technological support would not be able to make its realization possible. In 1958, with the slogan "entering the communist society in advance", a "multi-floor housing with electricity supply and telephone" pilot project of the "Communist New Village" movement was put into practice without the basic conditions to produce concrete floor slabs, for example, in one county of Hebei Province. It was even not "a great empty talk" but really more like a "farce", and of course had to be demolished before long. While seeming ridiculous with hind sight, it was in fact a project that was carried out seriously by a team of technical professionals. Should we learn something from this lesson?

4.2 The level of technological-scientific development of Chinese urban architecture

In dealing with the forces to which Chinese construction has recently found itself exposed, it is undoubtedly necessary to develop strategies of large-scale economic growth, that great theme of state reflection, and it is equally opportune that the individual professional sectors react dynamically, initiating the development of policies of scientific-technological development in line with China's real conditions. In formulating opinions on the scientific and technological development level of construction in China, the following must be considered.

In recent years, opening up to international relations and traffic has caused pronounced development, but on the whole there is a certain backwardness, determined in part by the continued scarcity of technical personnel, and in part by a lack of soundness and organisation of scientific bases. Although in certain fields of urban architecture and construction there has been rapid progress (on a legislative level the codification of the various technological policies was preceded by a great deal of experimentation), numerous other fields remain obstinately backwards and feeble. Dramatically, in some cases the level of development has subsequently been revealed and have been non-

---

[3] Wu Liangyong, Lin Zhiqun, and Zhou Ganzhi, *Issues of Human Habitats in China: Housing, Environment, and Urban/Rural Construction*, in *The Documents Compiled for the Enlarged Meeting of the Applied Science Committee of Architecture and Civil Engineering in the Department of the Applied Sciences of the Chinese Academy of Sciences*, 1982; based on the conclusion of data analysis of 72 countries 1975-1977 in *The Statistics of Housing Data* of the United Nations.

existent. Even though scientific circles show some dynamism, a sort of 'tendentiousness' continues to afflict choices and methods: with the aim of removing this, it would be wise to promote greater practicability and realism in research methodologies. I personally feel that a positive beginning has been made in China. In recent years the development level of urban planning science has increased dramatically, although a general analysis still reveals a margin of backwardness which involves, among other things, human resources and concepts of development themselves – a fact which requires the most sober and lucid reflection. This situation is caused mainly by the fact that in China the industrial revolution and the reform of technological-scientific systems took place 150 or 200 years later than in the capitalist powers of the West. The development of architecture echoes the influence of national development and the development of the organisational system, and in the framework of the national economy it has not yet assumed the role of a 'pillar'. Furthermore, the history of the development of architectural science is not in fact particularly long, and this necessitates a concentration of effort in order to understand how to achieve a state of 'minimum wellbeing' within determined timeframes. China also finds itself having to catch up in many lessons, such as the development of secondary industry (without neglecting the progress and reform of traditional industry technologies), the development of energy resource traffic, which took place at the beginning of the century in more advanced nations, and the development of tertiary and quarternary industry. The country must also be as attentive as possible to the eventual appearance of new forms of scientific-technological revolution and, in some way, prepare itself. It is absolutely vital to carry out posthaste that which was not carried out in the past, which, given the level of development of production forces and the serious underdevelopment of the economy, agriculture and industry, is an extremely serious and onerous task.

4.3 Formulation of Technical Policies

The aim of technical policies formulation is to guide the harmonized nationwide development of different technologies, of which we have both experiences of success and lessons of failure. Of course, we must actively improve the development of new technologies. But we have to pay attention to some misunderstanding on technological development, i.e. the over-"enthusiastic" promotion of advanced structural technologies in the 1960s and the unrealistic talking in the abstract of "the new technical level in the 1980s", where it appears that the more advanced technology and materials are, the better a building will be. The impact of this misunderstanding caused enormous economic problems and waste in production. Technology is the means but not the aim. Its key point is to clarify the problems and the technical means to solve those problems at a certain time and in a certain place. Modernization for modernization's sake without the necessary conditions would make it difficult for budget control and will not benefit the development of architectural practice. Because of the imbalance of the economic factors, the scientific/technological and the cultural development between different regions in China and the relevant imbalanced development levels of urban and rural areas between different regions, we have to adopt the policy of developing "appropriate technology" to local conditions. The so-called appropriate technology is a type of technology which

can adapt to the national or local conditions and exert the greatest effects. According
to the existing conditions in China, the appropriate technology should be understood to
include advanced technology, the "intermediate technology" and the improved traditional
technology. Our preliminary thoughts are that it is essential to introduce a multilayered
technological structure to develop architectural technology in China[4]: we ought to
pay close attention to the worldwide development of advanced technology. While the
development of advanced technology is diverse and multi-faceted, we should find the
mainstream and analyse its potential and feasibility based on our local conditions. With
this practical and pragmatic viewpoint in mind, some of our architectural projects should
follow certain kinds of international standards, for instance, the crucial facilities in the
world cities or the potential world cities should be designed according to the international
standard (such as international airports and the telecommunication technology of the city),
which is like the speed standard in running, the weight standard in weight lifting and the
technological standard of the stadium or gym for the international sports competition.
On the other hand, it is unnecessary to design everything according to the international
standard. For example, it may not be necessary to include the height of a storey of a
building, and the degrees of luxuriousness of the conference hall decoration should not
be the technological standard of an ordinary house or office building. An indiscriminate
insistence on a high standard will lead us onto the wrong track.
The international advanced technologies should be selectively chosen to combine with
the practical Chinese situations in order to be useful, understood and transformed into
something popularized and developed, which could improve technological progress
in China, such as the development of concrete structures. To improve the traditional
technologies by research that is based upon modern science and technology. This kind
of technological research and improvement will need to be economical, simple and easy
to disseminate. Meanwhile, these technologies should be gradually improved over time.
The continued use of traditional technologies. These traditional technologies are still used
in many areas of China. They should not be underestimated and ignored in that they
are still active, practical and dependable for construction in some regions. On the other
hand, they need to be rediscovered and improved upon to meet today's needs. Here I will
further discuss the potential to improve traditional technologies. The structure system of
adobe arched roof created by Hassan Fathy was derived from the traditional Egyptian
vernacular technology. Besides the improvements to the applicability of this technology,
it was enhanced to a kind of highly developed new architectural art.[5] Architects cannot
design all the buildings in the world. Yet the successful research made by architects could
reveal the new approach to design that would be helpful to improve the living environment

[4] Wu Liangyong, Lin Zhiqun, and Zhou Ganzhi, *Issues of Human Habitats in China: Housing, Environment,
and Urban/Rural Construction*, in *The Documents Compiled for the Enlarged Meeting of the Applied Science
Committee of Architecture and Civil Engineering in the Department of the Applied Sciences of the Chinese
Academy of Sciences*, 1982; based on the conclusion of data analysis of 72 countries 1975-1977 in *The Statistics
of Housing Data* of the United Nations.
[5] Charles Correa, *The Task of the Present and Future Architects*, the speech in the 1983 Cairo UIA conference
and published in the conference proceedings. Correa therefore appraised Fathy's work as "the architecture for
the poor, which is not to say how to design a building for the prole, but to create an approach to inherit and to
develop something that has already existed, so that this approach is re-vitalized".

once it was broadly understood by the engineers/craftsmen and the lay people. Currently, we have had new experiments in vernacular architecture and the use of solar energy in the rural areas. We hope that it would not just remain in the research field of architectural physics but, as the result of scientific and technological research, it could be used by designers as a foundation to their design creation. There is another example that has not been much noticed. The "ground heating system", which used to be thought a Korean tradition, has been de facto recorded in Shuijingzhu, written during the Bei Wei Dynasty in China[6]. Li Daoyuan, the author of Shuijingzhu, lived in the 5th century AD, which means the floor radiation heating technology had come to existence in China at least by the 5th century. Later buildings of importance, such as the Forbidden City of the Qing Dynasty in Beijing also applied this heating technology. However, the story about the rediscovery of this old technology could be traced to F.L. Wright: there was an account in his own words, in which he found the so-called "Korean room", which was warm and cozy, when he was living in Japan from 1919 to 1922. Therefore, he developed "floor heating" – a novel heating technology after he went back to America[7]. The floor heating technology was applied to the lobby of the new railway station of Belgrade, Yugoslavia, built up in 1940s-1950s. In terms of the large volume of space in this kind of public building, it was unnecessary to maintain the same temperature over the whole interior space, where it was only necessary to keep a certain level of warmth surrounding the places that people used, so that the building was economical and pragmatic. In the middle of the 1950s, when Prof. Yang Tingbao visited Yugoslavia, he rated this design highly. This case proved that a traditional technology could be transformed into an advanced one (some western historians of technology already have more theoretical demonstrations of this aspect), in which the key points are research and creation. But if even western architects can be inspired by the traditional Chinese technology, why cannot the architects living in the east do the same?

Actually, if Chinese architects really opened their minds, this kind of conception could be much more possible and useful. In the 63 km² loess area of the Yellow River fluvial basin and some other areas in China, there are more than 100 million people living in cave-houses or adobe buildings. As we all know, the cave-house has certain merits: comfortable microclimate, energy saving, use of local materials, flexibility to the local situations, protection of the environment, the expansion of living space (to save the farmland, in which the dug-up soil could be also used to make more farmland), and an economical budget (since the houses could be built by the farmers themselves). Thus, it is still an active building type. More than 22,000 cave-houses were built in the Yan'an region in 1980, which was even more than the total amount of cave-houses during the ten years before. Although it is an ancient architectural technology, the cave-house is still widely in use, and can be regarded as "living architecture". On the other hand, the

[6] See "Huodi" (Heating Floor), *A History of Chinese Ancient Architectural Technology*, p.325, The Science Publishing House, 1985; Wang Ling, *Heating Wall, Heating Kang and Heating Tunnel*, in *Beijing Evening News,* 1987.8.8 "… in the Guanji Temple to the east of the river, there is hall which is big enough for thousands of monks. The floor of the hall is made of stone and has a painted finish. A special heating tunnel network is made underneath. It covers the whole foundation with the side outlets opened to the exterior. The fire is started from the outlets and the hot air flows into the maze of tunnels, thereafter the whole indoor space is well heated.
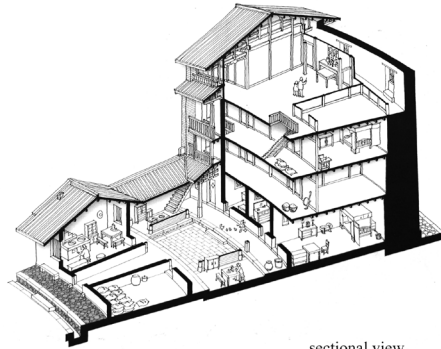
[7] Copper heating pipes are installed inside the concrete floor to warm the room by floor radiation.
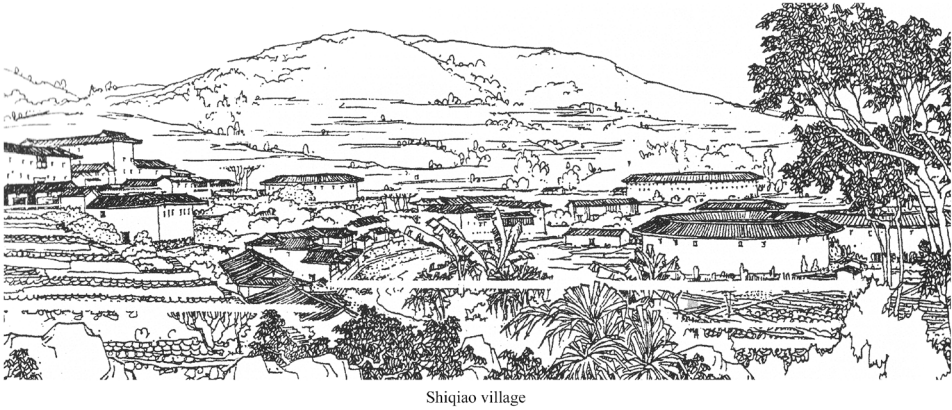
Shiqiao village
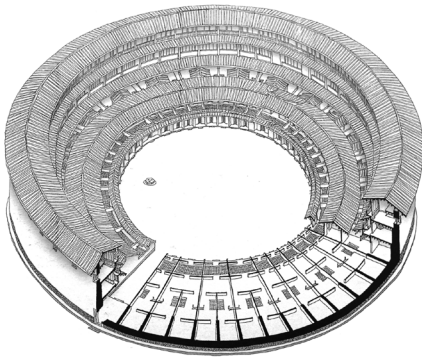
perspective view and plan

sectional view

Figure IV-2: The Adobe Round Housing (the "Round Village") in Yongding and Nanjing, Fujian Province. These ring-shaped buildings were located on a hilly area in the southeast of Fujian Province to compose a special settlement; this building typology was formed at the end of Ming Dynasty and constantly developed in history. They are still in use due to easy construction, economical expenditure and the unique form, such that it can be classified under living architecture. (Source: the measuring drawing upper and lower left: the College of Architecture and Urban Planning, Tongji University)

weaknesses of the cave-house, such as the problems of lighting, humidity, ventilation or earthquake protection, should be also researched and overcome. The achievement of relative improvements, for example, one kind of improved private cave-house in Henan Province, have been noticed at an international level. According to scientific research, some economical approaches can apparently improve the ventilation and the moisture proof conditions of the cave-house. In the "Adobe Architecture" conference held by the Architectural Society of China in 1985, all the participants thought such research would have tremendous potential for both the academic development of architecture and for social/environmental benefits[8]. Indeed, it is not only the cave-house, but also the adobe

[8] This conference was held in Beijing in 1985 with the publication *The Proceedings of the Adobe Architecture International Conference* (in English); a relevant book was published in Japan based on the conference proceedings one year later.

church in Xinjiang, the adobe round houses in Yongding and Nanjing of Fujian (see Figure IV-2, where the more recently documented ones are shown), the adobe arched house in the south of Shanxi and the Tibetan adobe tower in the south of Gansu that have revealed the future of the scientific improvements of this traditional technology. Second, the multi-layered technological structure is not cast in stone but incessantly developed, improved and transformed. The relevant clue can be found in the development and the transition of the postwar architecture in Japan. While the diagram above is only a statement of one Japanese scholar[9], it is quite reasonable and could give us some insights: (1) Traditional technologies (such as the work of a carpenter or mason), which were the mainstream in the phase before 1945, were relatively reduced along with technological development in the second phase (1955-1965). However, we have to notice that even in the current phase (1975-1985) the traditional technologies, although their scope for application has shrunk, still occupy a certain proportion of the technological stock. This means that the traditional technologies are still a requisite in society and the works of craftsmen are also continually updated and improved. (2) On the relationship between industrial technology and culture, the development of modern science and technology, new materials and industrialization were emphasized in Japan mainly from the time before 1945 to the second phase reached by the development of new technologies (1955-1965). However, after the 1975-1985 phase, the relationship between "science/technology – the city", "life" and "environment – historical preservation" are balanced. And "the Japanese", "the eastern" and "the western" each occupies a certain proportion, which is also to be further transformed in terms of architectural thinking. All these indicate the importance of scientific/technological development, which should be improved and promoted; and illustrate the necessity for modernization combined with protection, inheritance and development of traditional culture. Learning from the Japanese (and other countries') experiences on architectural progress in national development, a strategy to develop a system of multi-layered technologies is a fundamental principle. Thus in time, the balance between different technological factors should be noticed in the existing developmental phase of China, in order to avoid an unnecessary detour in development.

4.4 Technologicalism and Ecologicalism

The progress of science and technology will directly enhance productivity and benefit social development. New scientific/technological progress leads to the development of architectural materials, building structure and construction technology, and initiates various possibilities for new architectural forms. It opens a new page for the development of architecture. All the precursors of the modernist movement advocated and admired technology, as well as explored and designed the architectural art based on modern technology. For example, Auguste Perret, a French modern architect, wrote a poem, which gave insightful comments on the progress of technology[10]. However,

[9] Ojima Toshio, *An Introduction to recent Japanese Architecture*, A lecture in Zhejiang University, China, 1980

[10] See UIA, *A Report on Standard Design*, 1955; translated by Leon Hua and Wu Liangyong, in "Architectural Journal", n.3, 1955

technological development has its other side. In the early stages of human evolution, our ability to influence nature was minimal, but the man-made destruction caused by the blind exploitation of nature, which accompanied the rise in human productivity, has also incurred the "retaliation" of nature. It is as Engels said: "We should not be illusively satisfied with our victory over nature. Nature retaliates to each of our victories. In each victory, while at the first step we did indeed achieve what we predicted, totally different and unpredictable results occurred at the second and the third steps, which usually negates the first achievement.[11]

The same is true in urban and building construction. For a long time, we were proud of our postwar construction and architectural development, yet, afterwards, people found that "building construction means destruction of the land", which is a reasonable though extreme remark. While the starting point that caused most of the new construction which destroyed the ecological environment as well as the regional architectural culture was the admirable willingness for local development, its side-effect of constructive destruction would result in a terrible disaster, which would be against our good intentions, if we did not deal with it successfully. In history, some scholars, such as Heckel, Geddes and Mumford, who soberly treated the development of technology, had predicted this problem much earlier. But their opinions were not commonly noticed. Only after the occurrence of a series of worldwide disasters, people started to be worried about the environmental crisis and to look for responsive strategies. Thereafter, the "Man and the Biosphere" programme and "Only One Earth" appeal were raised by the UN, and ecologicalism, environmentalism and the "limit of growth" of the Club of Rome appeared in the academic world, of which the basic idea is similar to what we discussed above: "People have not recognized the most important limitation of the earth where we live – the space and the land which can be used by human beings are limited and can not be increased" (Doxiadis). The negation of "technologicalism" and the debates and appeals on natural environmental protection are especially prevalent in the developed countries. This movement has been developed from environmentalism and ecologicalism to the creation of certain kinds of political parties or groups – such as "Greens" and "Greanpeace", whose activities have transcended the boundaries of countries and continents. This movement naturally influenced the development of urban planning and architecture, for example, the rise of studies in urban ecology, architectural ecology, housing ecology and landscape ecology. In architectural ecology, McHarg put forward "design with nature" to warn western culture, which is based on individualism, and which has brutally exploited and plundered nature to meet its material requirements and greed but has forgotten that human beings are also a part of nature and an element of its metabolism. He repeatedly emphasized the importance of the concord between man and the natural environment and asserted that the planner could play the role of a catalyst and thus would do something in ecological planning. Also, the research target of "housing ecology" in the Soviet Union was the relationship between people and a certain exterior space in the housing area

[11] *Selected Works of Marx and Engels*, Volume 3 Chinese Version, p.517, People's Publishing House, 1972. It is as what Engels said: "We should be not illusively satisfied with our victory over nature. We are retaliated by nature each time of this victory. In each victory, whereas we indeed got the achievement as we predicted in the first step, totally different and unpredictable results occurred in the second and the third steps, which usually negatges the first achievement."

in order to gain an ecological balance, to ensure the health of inhabitants, to meet the functional requirements of a residential area and to create a safe, hygienic, comfortable and convenient environment. The research of landscape ecology aimed to preserve the natural landscape and the ecological environment on a large scale, so that human beings would have a beautiful and hygienic living environment. However, due to the various socio-economic conditions and scientific-technical levels in different regions, the advantages of their anthropogenic ecosystems – the ecosystem centered upon human productive activity – are quite different. Therefore, the different approaches should be applied to the different regions with their respective local ecosystems during the process of modernization, so as to exert the efficiency of the ecosystems to the largest extent and to avoid the destruction of the natural environment; and for these approaches, we should be not only be focusing on the natural conditions but also consider the social situations; in this way the effect of the adjustment for the ecosystem should be considered as one of the criteria of modernization.

In conclusion, architecture depends on technology, but it also provides a feedback to the development of technology; otherwise design would be impossible. One eccentricity in the past and which still exists even now is the neglect of the importance of technology and the lack of the relative comprehensive research, which had led to confusion in technological development so that we have missed various economical and efficient technical solutions and new possibilities; the other eccentricity is the over-emphasis on technology to the extremes of "technical omnipotence" and "technical supremacy", which includes the idea of unilaterally regarding technical possibility as the tool to pursue architectural form or spatial novelty. To a degree, the high-tech school's pursuit of new technological images has led to unique styles of design, and this is not to be faulted. But it would be problematic to pursue novel styles for their own sake[12]. For the General Theory of Architecture, we have to have a comprehensive reassessment of the functions of technology in building, with a view to re-conciliate the conflicts between technology and humanity, economy, society and ecology, insomuch that we could, based on the local conditions, establish a position of science and technology for the local building professions, and explore its future developments.

We could then actively and efficiently promote the development of technology in order to have the best economic, social and environmental effects.

---

[12] The high expenditure of Pompidou Centre in Paris and HSBC Headquarter in Hong Kong, as the representatives of the high-tech architecture, was seriously criticized by some architectural scholars.

Chapter 5
A Theory on policy and legislation

The issue of policy and legislation is prone to be ignored by architects, perhaps even more so than the economic issue. However, policy and legislation has been an indispensable aspect of building and construction throughout history, particularly as the sizes of human settlements gradually increased. The building of a city in history was always based on certain institutions – for instance, in the antiquity of China, there was *Jingtianzhi*, i.e. the well-and-field system which was a concept for regulating road and land plot distribution. The spread of city building activities at the beginning of West Zhou Dynasty also resulted in the formation of the theory and the institutions of urban architecture[1]. Such urban institutions evolved dynasty by dynasty to form their own relevant urban institutions[2]. These institutions had rather complete planning and management systems, and it is regrettable that this part of the Chinese heritage has not been sufficiently noticed and has even been ignored. There was always a certain administrative and management institution for Imperial public building projects in ancient China. Originally, the treatise *Yingzaofashi* of the Song Dynasty was published as the "official book" of legislation[3], which was essentially a technical code to regulate design standards, building materials and technologies. It was transformed into *Gongchengzuofa* later in Qing Dynasty, which was associated with "Yangshi" (i.e. building type) and "Suanfang" (surveying and accounting) with the specialists on architectural design, and constructive technology to form the institutions for construction. Modern urban planning was created and developed by the trialectics between theory, practice and the establishment and achievement of the legal system. The problems with actual urban architecture results spurred the exploration of theory and planning practice, which gradually led to the formation of policy and legislation. In turn, policy and legislation always influence theory and practice. It is a process of constant iteration.[4]

5.1 Scientific research: the basis for technical policy

Architectural professionals usually hold their own opinions on architecture and urban architecture. They present their ideas or proposals by means of academic essays, speeches at conferences and even letters to politicians, which probably influence policy making to a certain extent. But these cannot be considered as an established institution, because

---

[1] He Yeju, *Research into the Building Institutions in Kaogongji*, in *The Selection on Chinese Ancient Urban Planning History*, Architecture and Building Press, 1986.

[2] *Ibid*.

[3] Liang Sicheng, *The Illustration of Yingzaofashi of Song Dynasty,* China Architecture and Building Press, 1985

[4] Wu Liangyong, *Urban Planning,* entry in The Chinese Encyclopedia – Architecture, Landscape, Urban Planning, and Entry City and Urbanism, in Essays on *Urban Planning and Design*, Yanshan Publishing House, 1986.

they normally cannot be directly translated into policies. Each important building project at national, urban and rural scales must be guided by comprehensive, well defined and systematic polices; otherwise, disparate and short-sighted construction could bring about squandered and contradictory developments, and result in harm overall. These problems were far less noticeable when the scales of construction were limited. Yet their negative impacts have become prominent under the current large scale construction and high-speed development.

The important policy making process depends on long term accumulation of practical experiences and theoretical discussion. Its formation also proceeds from the investigation of the relevant governmental departments and agencies through pilot projects, through to the formation of legislation. National and local governments should pay more attention to the investigation of important policies related to urban development, including urban policy, housing policy and land policy. Urban architecture, as a science, in which many basic policies are common all over the world, is an area researched and tested by every country. For instance, the new-town policy is almost a common urban policy tried out by many countries in the postwar period. But some succeeded, some failed, others were changed. What is the reason for this? It seems that a comparative research is necessary. In a word, the important policy making should be based on a crystallization of the relevant experiences both in and outside China. In the last ten years, the research on urban architecture policy has been developed in China, e.g. the blue book of "Housing and Material Technical Policy" and "Urban and Rural Developmental Technical Policy"[5], which were unprecedented achievements. But in my view, these works should be made more systematic. We need a long-term plan to motivate the relevant forces for promoting systematic research on some important issues. This basic research might be conducted by government departments or their agencies; some of the research of this type is commissioned to specialist consultancies or planning researchers in foreign countries; or it can be carried out by the research institutes in the universities through the commission or sponsorship from the government or from nongovernmental organizations. It is up to the government to decide whether the conclusions of their reports are accepted. However, the accumulation of this research would help to build up basic databases, information and analyses, which make the research worthwhile from a medium to long term viewpoint. In western countries, the report submitted to the government is normally the summary of survey/research on special topics, which play an important role in government policy making. For instance, the British government appointed "The Royal Commission on the Distribution of Industrial Population" chaired by Barlow. Its report with 26 pages of references was submitted in January 1940, and it was the first detailed analysis of the relationship between industrial distribution and urban development in Britain. Both the 1943 plan of London and the 1944 "Greater London Plan" was the technical reification of the policy foundation affirmed by the *Barlow Report*. This is a good example of scientific policy making in modern urban planning history.

---

[5] *The Blue Book of State Science and Technology Commission*, Number 2 and Number 6, published by State Science and Technology Commission and the Ministry of Construction, 1985.

5.2 Legislation: the outcome of scientific research

The fruits of policy research are law and statutes, which are legislation on two different levels. The technical policies that we discussed above need to be presented as laws including an "Urban Planning Law", a "Housing Act" and a "Land Law" for implementation. The drafting and constituting of a "law" requires further scientific work based on the research of technical policy. It involves some more fundamental issues: (1) The basic precise concepts in each discipline/domain needed to indicate the directions of theoretical and practical development; (2) The establishment of the basic conception, principle and system of the law; (3) Legal study based on research of comparative references combined with native conditions. For example, most scholars think that the legislation on urban planning and building construction in Germany are very precise and comprehensive, but some also criticize its "complexity" which may need to be improved. Our research should synthesize these different opinions. A multi-layered legislation system – including the national, regional (provincial, municipal and autonomous regional) and local legislations – should be established on the basis of this work. The multi-layered structure is extremely crucial, in which the national law both guides and provides flexibility to the lower political layers. This requires a very rigorous body of scientific work and large-scale systems engineering to manage it. Any mistakes in this system would lead to unpredictable results. The relevant lessons that we have already experienced have revealed the extent of possible harm if this is neglected.

5.3 Administrative management of the planning project

5.3.1 The need for specific norms in the administration of urban architecture

Foreign experiences in the field show how the creation of an organic map of urban development is a job of undoubted complexity, although the effective implementation of the relative norms is even more onerous. Consider the example of Holland; the city of Amsterdam grew into a centre of trade between the 14th and 15th centuries, as is shown by its triple expansion in 1367, in 1380 and in 1450. The city boasts a consolidated tradition in the field of urban regulation, and laws enacted in 1521, in 1533 and in 1565 dealt respectively with the substitution of wooden buildings with tiles and bricks, the improvement of structures for public hygiene and the participation of each single private property in the construction and maintenance costs of the road surface and the canal dykes, as well as the submission of the construction of dwellings for the approval of the municipal authorities. The severity of these norms imposed an organic layout upon urban architecture, a factor of inestimable value for the final implementation of the overall urban plan of the 17th century. In 1609 the municipal authorities promoted the obligatory acquisition of land rights, introducing certain parameters for its use, and the administrative committee proceeded to subdivide land, putting it up for sale on the market. The terms the contract buyers were offered contained a series of clauses which, among other things, prohibited the transfer of ownership or the altering of usage, as well as the conservation of a determined percentage of green, etc. Even the material with which the external walls were to be built was defined in detail. This tradition conferred on the city a desirable order and appearance, making it a relatively old example of 'modern' urban architecture. This leads to the following conclusions: firstly,
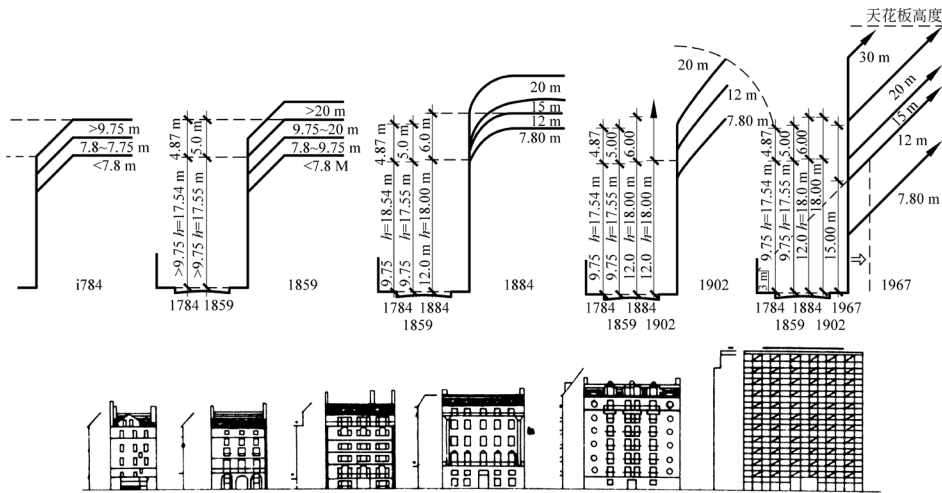
Figure V-1: The design of various modern residential complexes in the districts of the old city continues to follow traditional architectural models, from the choice of the black roof to the arrangement of the windows and the door jambs, from the use of the 'French window' to the choice of steel balustrades of every shape and size. All this is disposed with surprising coherence for a final effect of calm harmony with the quarter and with its ancient streets, giving a wholly Parisian flavour which is organised according to a charming plan at once new, original and imbued with the tastes of the day.

as well as basing itself upon specialist knowledge, architecture and urban architecture must be integrated with social resolution with the aim of guaranteeing appropriate execution; in the second place, urban planning deprived of political direction and adequate forms of regulation cannot avoid running aground in the planning stage[6]. Even the appearance of the streets of Paris shows the implementation of architectural regulation. All those who have had the opportunity of visiting the city have noticed the homogeneous and varied beauty of its streets and squares; here too, this is the effect of norms imposed on urban development. Laws regulate the precise relationship between the width of the streets and the surrounding buildings, meaning that it is the width of the streets themselves which determines the surroundings of the quarter, according to a principle which underwent multiple formulations and revisions in 1784, 1859, 1902 and 1967, eventually conspiring to produce the current situation, so uniform despite its multi-faceted natural appearance[7]. This affects the aspect of the streets enormously, favouring the unusual form of the roof which takes the name of the noted architect Mansart (Figure V-1). The third and most modern example is the streets of New York. In 1916 the city promoted the first "district legislation" in the United States (the name refers to the imposition of district control of land use), imposing precise norms regarding the height of buildings constructed at the sides of streets, in order to guarantee light and air. They were thus submitted to specific criteria which safeguarded luminosity by acting on the surrounding buildings (at the end of the '40s, there was a story in circulation about a statue on Wall Street whose protuberances broke government rules; for this reason a symbolic fine of 5 Dollars a year was imposed, much derided by the

[6] A.F.J. Morris, *History of Urban Form*, Longman Scientific and Technical 2° ed., New York, 1979.
[7] "Paris Project" – A317, p. 41.

Figure V-2: In the case of the Seagram Building, completed in 1958 by Mies et al., the overall arangement of the building with its set back from the street determined an expansion of the space in the square, an effect not without repercussions upon successive legislation
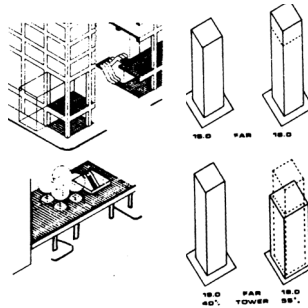
Figure V-3: "A Bird Flying within its cage"

newspapers of the time: "Venus – breast too high"). Upon a building reaching a determined height, it is required to be 'set back' behind a theoretical inclined plane in accordance with a defined 'setback' principle.Thus, high buildings are obliged to pull inwards in a sort of 'forced perspective', 'triumph of scale', conferring a monotonous appearance upon the city (there is no lack of those who jeer at this type of building, calling them 'wedding cakes'). The celebrated American designer of the 1930s, Hugh Ferris, developed a series of creative concepts on the artistic surroundings of the city of New York inspired by the compositive laws of this 'triumph of scale': concepts which necessarily seem somewhat ingenuous today. In fact, the system had shortcomings which compromised the efficiency of the ground use plan. The amendments of 1961 introduced improvements, triggered by the introduction of two new formulas: the 'Floor Area Ratio', abbreviated to FAR and previously known as 'Plot ratio', and the "law on district incentives", in order to move simultaneously towards a control of the volume and density of architectural bodies (the promoters of the law offered an increase of surface of up to 20% as reward and compensation to those who set about supplying new public space, by, for example, building lightly set-back dwellings in line with the directives in zones of high commercial and residential density, which fell under their ownership rights; the penalty/compensation for building an open gallery could instead take the form of a comparatively reduced increase in surface, in accordance with a procedure termed "zoning incentives"). All this received a warm welcome from planners, determining real liberation in planning production, while the cities gained in public squares and open spaces (Figure V-2). In any case, the imperfect nature of the '61 disposition, in which planning contradictions persist despite the improvements, should be underlined1. I intend here simply to illustrate how urban construction norms can confer control and direction to architectural design, incisively influencing the appearance of the city and becoming an important part of urban design. There are those who hold that "urban design is not so much the design of the buildings as much as the design of the whole city", identifying in the formation of the overall urban aspect a starting point and a focal point. This work has been so far neglected in China, and an exact systemization is still far off. In any case, the imperfect nature

of the '61 disposition, in which planning contradictions persist despite the improvements, should be underlined[8]. I intend here simply to illustrate how urban construction norms can confer control and direction to architectural design, incisively influencing the appearance of the city and becoming an important part of urban design. There are those who hold that urban design is not so much the design of the buildings as much as the design of the whole city, identifying in the formation of the overall urban aspect a starting point and a focal point. This work has been so far neglected in China, and an exact systemization is still far off.

5.3.2 Scientific management of administration, urban fabric construction and protection
Urban planning norms are not sufficient to guarantee ordered construction; the scientific development and management of urban space is equally necessary. The city of Amsterdam, mentioned above, is that which best distinguishes itself in the context of Dutch cities; until the 17th century, a unitary planning system equipped with laws on the acquisition of land, and precise norms on the management and control of building were in force there, and this ensured the perfecting of the city's structure in an important phase of its development, thus making it a prominent example of urban planning. In addition to the aforementioned factors, the economic-political structure and the geographical environment encouraged the cooperation of the inhabitants, each of whom, while cultivating their own interests, was for the main part willing to put the safety and blossoming of the urban complex first, and the imposition of spontaneous restrictions of personal liberty and the scrupulous observation of norms of collective interest on the part of the individual citizen thus initiated a harmonic process. This example clarifies how efficient city development work is an important aspect of construction to which due consideration should be guaranteed[9]. The wealth of the Federal government of the US in the period immediately after the Second World War made subsidiary funds for urban architecture feasible and it was thus possible to undertake numerous engineering projects, among which the excellent reconstruction of central Philadelphia[10]. Over the last twenty years, the American government's financial deficit has altered the situation, but despite the lack of government funding, the safeguarding of planned construction (which includes the management and protection of areas of historical interest) is never lacking and occasionally achieves notable results (the American city of Saint Paul stands out for the reconstruction work on the Lower town[11]; this efficiency of its urban and residential architecture won the fourth American biennial prize for urban planning). This attests to the possibility of developing creative strategies which can promote the development and management of urban space despite a lack of government resources. The proportion of construction development in the overall development framework of China is increasing and strengthening organised supervision and management of businesses, as well as coordination of construction on a municipal level, effectively assumes crucial importance for the present and future of Chinese urban

[8] New York City Department of City Planning: "Plans, Programs and Policies" 1980-1985; Jonathan Barnett: *Urban Design as Public Policy*, traduzione di Shu Da'en, *Kaifang de dushi sheji chengxu*; 3° ed., 1983 - *Shanglin Chubanshe*.
[9] Steen E. Rasmussen, *Towns and Buildings*, M.I.T. Press 1969.
[10] Edmund N. Bacon, *Design of cities*, Penguin Book 1967.
[11] The works were managed by a Sino-American architect: Weimin Lu.

architecture. Thus, bearing in mind domestic and foreign experience, developing criteria of political regulation and reinforcing the role of administration in the use of land requires the selection of the greatest talents, the investment in them of increasing committment, and unreserved participation in research in this sense.

5.4 Policy and legislation as major components in the Reform of China

The existing condition of policy and legislation on architecture and building in China is obviously deficient for extensive construction activities of the "urban take-off" today. There is a need to establish the relevant legislative systems and institutions, which is much more pressing and harder to achieve than in western developed countries and many other developing countries. The ancient western cities (especially the cities in West Europe) were fundamentally different from the ancient Chinese feudal cities under centralised power. The western European cities were run more independently from feudal powers. Hence, many western European cities had a rather long tradition of an urban legislative system, for which Amsterdam was a case in point. In some central colonial cities, especially the former British colonial cities including Hong Kong and Singapore, the colonists paid attention to public hygiene, road systems, water supply and sewage, and the management of building construction in order to protect their own interests. Those cities also had a long tradition of an urban legislative system. During the long history of the feudal society in China, a special urban management system was formed to maintain the "building code" of the time. It was a component in sustaining the hierarchical feudal system, but it had been destroyed along with the collapse of feudal structure. In the semi-colonial and semi-feudal period of China, there were some cities, which were forced to open to the west, and which were influenced by the modern western urban regulation to create certain modern urban architecture and management systems, which were backward in general. The cities in the hinterland lagged behind even more at that time. After 1949, large-scale urban architecture started in China. However, it was very difficult and complicated to establish a comprehensive policy and legislation system applicable to the development of Chinese urbanization, which should include: first, a basic law of urban planning that is compatible with each specialized law and regulation; second, technical legislation that is compatible with economic and administrative legislation; third, national urban legislation that is compatible with local legislation.[12] There are frequent conflicts and discord between professional administrative sections of urban development. For example, the responsibility of land management is still not clarified between the national governmental departments. In essence, this reflects the absence of in-depth investigation and research in the relevant scientific disciplines. This deficiency has had an impact on important policy making and caused confusion in construction practice. This problem ought to be solved as soon as possible. Otherwise the cost will be uncountable!

---

[12] Zhou Ganzhi, *The Task of Legislation in Urban Planning* in "the 7th Five Years' Plan" – The Establishment of a Urban Planning and Management Legislative System Centered upon "Urban Planning Law", in Urban Planning Communication, 1986.

5.5 "Top-down" in Management and "Bottom-up" in Development

Much of Chinese traditional urban planning and building management followed the "top-down" approach with its advantage for promoting a rigorous institution and order to urban architecture, which was widely evident in Chinese urban history. However, the local identity and the interregional differentiation of architecture also reflect the imbalance of the natural and economic conditions, the diverse heritage of traditional crafts and skills, and the practice and promotion of appropriate technologies. It is important to use the local materials, building experiences and human resources to establish and to develop the regional architectural system, i.e. in line with the local situations. Thereby, the foundation of architectural development should also be "bottom-up", in order for it to develop vigorously. To summarise these two directions, the centrality of the national urban planning and architectural scientific research, including the establishment of research institutions and accomplishment of research tasks, should be focused upon overall national issues. This could complement but should not replace the major tasks of regional research and the development of local research institutions. Hence, national and local architectural research should be combined together. The national and local government would rather support the development of regional science and technology. That is based on the essence and characteristics of architecture, and should be regarded as a national strategy or policy and a task of the reform. Architectural practice is related to every family, village and neighborhood, so that it is difficult for an individual person to deal with it dispassionately; the large-scale public projects with rather high expenditures could similarly be influenced by the personal interests of decision makers, rather than depending on the laws/statutes and the principles of relevant policies. This problem is inevitable at all times in all places; but the key point is to improve the scientificity of urban architecture and architecture, to strengthen the role of legislation, and to introduce the different types of public participation so that the design can follow the scientific rules and the relevant policies/laws. The more scientific and the more rigorous is the legislation, the more scientific is the design/planning itself, and the more democratized the policy making process will be; on the other hand, the more the democratization is improved, the more ensured and guaranteed the scientificity will be. Policy making based on this foundation will help to meet the requirement of scientificity. Therefore, such work should be promoted by architectural professionals.

Human settlements should not be without public order, which are the rules that each citizen must follow in his/her daily life. Building construction in a certain space should also obey public order, which means the necessary regulations and institutions of construction. The freedom of every human activity, including building activity, must only be a freedom within the conditions of regulations and institutions. The more reasonable the regulations and institutions are, the more correctly developed the social practices will be to form a rational order for protecting people's interests; the more definite the regulations and institutions are, the more clarified the "freedom" will be to ensure "equality before the law", whether for the user, the designer or the decision maker of the building. The metaphor "a bird flying within its cage" is appropriate here (Figure V-4). Perhaps someone will ask at this point: when we have too many restrictions on our design, does the additional constraint of legislation not mean the asphyxiating of design

creativity? A colleague once asked me this question at a conference. My answer was: although the legislation looks like a "constraint", it is quite indispensable. We can find similar enlightenment in Wen Yiduo's critiques on poetry. A classical poem should follow metre, which is also a kind of "constraint". But for Wen Yiduo's "Chuangge" (creative metrics) theory on new poems, it is important to accentuate the rule, the stress, the rhythm, "the symmetry of the paragraph", "the order of the sentence"… He thought that the poet must "dance with fetters". He quoted from Perret that "there are almost no poets admitting that they are constrained by the metre. They like this dancing with fetters, and force other poets to put on the fetters".[13] In the famous city cases we mentioned above, have not all the architects put on their "fetters"? Yet architecture "dances" in various ways with different expressive forces. Maybe it is because the designer has grasped the metre to overcome the constraint, and has reached the stage where the constraints have become a help rather than a hindrance!

---

[13] Wen Yiduo, *The Metrics of Poetry,* quoted from Wei Songnian, *Wen Yiduo and Poem: the Dialectics between Nationality and Globality,* and Wang Jinjin, *The Origin of Wen Yiduo's "Junqi" Theory*, in *The 40 Years' Research on Wen Yiduo*, Tsinghua University Press, 1988. He quoted from Perret that "there are almost no poets admitting that they are constrained by the metrics. They like this dancing with fetters, and push other poets to put on the fetters"

Chapter 6
A Theory on profession

The promotion of general architectural professional activities depends on the following conditions: first, a capable professional group, whose professional ability can be fully exerted with reasonable organization; second, public participation as well as correct guidance and policies by the decision maker.

6.1 The development of architects' practice

6.1 The development of the architectural profession

The professional scope and activity of the architect has changed along with the transformation of the requirements and attitudes to architecture throughout history. The architectural profession has been in existence for a long time in western history. The term "architect" drives from the Greek with the meaning of a "master builder". An architect managed and worked with skilful craftsmen at that time, and he had to know the craft of building and other skills, and be also well trained in the arts. From *De Architectura*, we can see that the requirements of an architect's professional skill in ancient Rome were rather comprehensive, and his responsibility was wide-ranging. Besides designing various buildings, his work also included the design/construction of cities, harbours, aqueducts, sundials, water clocks, waterwheels, construction instruments, and military facilities. Architects in the Renaissance normally studied "Three Arts" besides building crafts and technologies (e.g. Michelangelo was directly involved in the construction of the dome of St Peter's). They were classified as artists and respected in the same way as sculptors and painters. The statues of architects and artists were placed in the niches of the arcade of the Uffizi in Florence; the bust of Michelangelo was set up next to the stairway to the dome of St Peter's; there was a special hall in the Louvre to display the portraits of famous painters, architects and sculptors; even the landscape architect André Le Nôtre's statue was placed in a niche in the place in front of the Louvre. All these examples illustrate that the professional status of the architect was highly respected by society. It is logical that these architects were respected: first of all, they contributed to the great age of the Renaissance, which, as Engels said, was "an epoch that needed giants and produced giants – giants in thinking, enthusiasm and personality, in versatility and knowledgeability. The people who built the foundations of the modern capitalist state were by no means limited to the bourgeoisie"[1]. It was in that age that the architectural giants appeared. Second, they were all versatile and knowledgeable great masters.[2] The

---

[1] Friedrich Engels, *Dialectics of Nature – Introduction*, in *Selected Works of Marx & Engels,* Volume 3 (Chinese Version), p. 445, People's Press, 1972. Also see Chen Zhihua, The Foreign Architectural History, China Architecture and Building Press, 1979.

[2] Friedrich Engels, *Ibid.* p. 445 "At that moment, almost none of famous persons did not have long tours, could not speak four or five languages and was not brilliant in several fields" [...] "The heroes then had not become the slaves of the division of labour, whose every impact to constrain man and to make man specialized can be

versatility of Leonardo da Vinci is well-known, but his contribution to the development of urban planning/design theory is not commonly acknowledged. Albrecht Dürer was a painter, a woodcutter and an architectural aestheticist at the same time, and invented a system of fortification. Thirdly, they emphasized both practice and theory. Many of them started their professional careers as craftsmen, and became the designers of important projects afterwards due to their outstanding talents, and left enduring architectural works. At the same time, they also left their theoretical works: for example, Andrea Palladio's *I Quattro Libri dell'Architettura*, Jacopo Barozzi da Vignola's *Five Orders* and Leon Battista Alberti's *De re Aedificatoria*. Architectural theories flourished during the period and theory was supposed to guide architectural practice.[3] Fourthly, this spirit was reflected in their professional practice: while they were fighting with the doctrine of the church and the stupidity of the ruling clique in the city, they also struggled with the conservative parochialism of the guilds. It was the sublime qualities of an architect possessed by these giants at the time that encouraged the progress of architectural practice. Hence they became figures who were loved and esteemed by the people. Michelangelo was famed as "Son of the People"; Brunelleschi was selected as a captain regent of Florence in 1423 because of his achievement in building the dome of Florence Cathedral. The professional quality of the architect, established in the Renaissance, is still a significant and shining example for us today. The large-scale urbanization after the industrial revolution led to a rapid development of the building industry, and a new style of architectural profession arose to respond to this change. Nevertheless, as social requirements and economic development diversified, the attitudes, professional practice and business methods of the architect changed and the architect's role was greatly influenced by the division of labour. Some master architects continued to make their significant contributions. For example, Le Corbusier showed a special sensitivity to new inventions, a fruitful creativity and a willingness to explore widely in many fields, including industrial design (the design of cars and aeroplanes), architecture, painting, sculpture, and urban planning, by integrating theory and practice, combined with the spirit of a lifetime polemicist. At one level we could say that he was the true spiritual successor to the Renaissance giants in modern times (I certainly felt this spirit when I visited his "centennial exhibition" at the Centre Pompidou in Paris and the National Gallery in London). At the same time, other architects also exhibited their versatile creativity, e.g. the well-known Bauhaus School led by Gropius, and Eliel Saarinen's series of "formal explorations" for shaping environmental order, which covered industrial design, sculpture, painting, architecture, urban design and urban planning.[4]

---

often seen on their successors."

[3] *Op. cit.* p. 446. "their characteristics was that they were almost all involved in the social movement, living and acting in the actual debates, and standing on one or the other side of the polemic…, therefore it was the complete tenacity in their personality that let them become perfect persons".

[4] See *Design in America: Cranbrook Vision 1925-1950*. It is a book that recorded Eliel Saarinen's thinking on education in Cranbrook. The relevant works included architecture, interior design and furniture, metal craft, graphic design, fabric, porcelain, sculpture and painting, which were exhibited in the museums in America and Europe to high acclaims. The book was published by Abrams in Detroit and the Metropolitan Museum of New York City, 1983. Also see S. Kostof, *Architects* (which detailed studied the professional headstream), Oxford University Press, 1977.

6.1.2 The contemporary architectural profession

The content and characteristic of architectural profession is changing due to the political, economic and social transformations. The following transitions of architectural theory and practice is worth discussing. I would like to summarize them as follows. This brief analysis suffices to explain that the architect's profession has to face the transformations and the potential conflicts and crises in a changing society.

6.1.2.1 The professional domain of an architect

On the question of the professional domain of an architect, there is no certain answer. Here, two opinions, based on different points of departure, should be noted: on the one hand, due to the increasing division of labour and the development of different disciplines, "architects can only deal with very limited works", said a famous architect, I.M. Pei, "such as to design a beautiful and comfortable interior or exterior environment".[5] This architect was successful in the professional practice that he devoted himself to, and there are a certain number of architects whose practices belong to this category. On the other hand, as we discussed earlier, Doxiadis argued from a different point of view – his criticism was that the professional domain of an architect was too narrow to contribute to society on a global scale[6].

The work of architecture	Past	Today
Target group	Architects served a small group of rulers and rich people.	The appeal to serve the public, including low-income groups, is increasing in such a way that some architects have achieved a degree of success in this field.
Target area	Most architectural designs were concentrated in the cities (especially in the larger cities).	Small towns and villages have become new areas to explore.
Contents of design	The design objects were palaces, temples/churches, mansions, large public buildings, "high-class" buildings, and aesthetic buildings.	Along with social development and the requirements of production and life-styles, the architectural typologies have been hugely extended, so that range of design objects are much expanded as well as the design contents much deepened.
Range of design	Architectural design was mainly focused on individual buildings. It was only the important and complex buildings that were designed by architects, and the other buildings were constructed by craftsmen.	The architectural discipline not only emphasizes the research of the technical solutions, but also explores the political, economic and social issues. The architect not only deals with the tasks of technical complexity, but also actively discusses the new methodology to transform the architecture to face the public, which is one further complexity.
Professional domain	Only as architectural designer	Besides devoting himself/herself to basic design tasks, the architect should also act as the urban designer/planner and try to carry out comprehensive services (such as the construction agent or the contractor).
Professional organization	Most architects were employed by the public organizations or private enterprises, whose professional commissions were mainly local in nature.	There are many more professional opportunities for architects, including research, design and development. Some architectural enterprises have begun to develop from local to national or even cross-national companies.

[5] Paraphrased from Ieoh M. Pei, *The Modern Architecture at the Crossroad*, A video made in Hong Kong.
[6] Constantinos Doxiadis, *The Transformation of Architecture*, a speech at RIBA, 1963.

6.1.2.2 The demand for architects in socio-economic development

An architectural-economist was asked by UNESCO to predict the social requirements for different types of architectures (including housing, agricultural, industrial, commercial and service buildings). He duly outlined the problems, including the surplus of architects in the developed countries and the possible division and diversification of the profession of architect in the future. In my opinion, in terms of the growing tendency of the architectural profession to be multidisciplinary, which involves the extension from the traditional domain to non-traditional fields, if it can be "beneficial socially, feasible economically", the architectural profession must penetrate into the investment, production and management sectors, which directly or indirectly influence the man-made environment. An architect's work has also to relate to architectural education. For instance, the architectural professionals involved in the building market need to know more about the economy; and the involvement of civil organizations is needed to obtain more knowledge about sociology. I predict that the phenomenon of the surplus of architects in developed countries will appear in the developing countries in the future. We need the foresight to guide the development of the architectural profession on to the right track[7]. This conclusion is based on my own wide-range survey and statistical analysis under the premise of a market-based economy. However, I am aware that there are those who hold the opposite opinion that the architect still has a great deal to do within narrow fields; but I cannot see how this view could stand up[8].

6.1.2.3 Change in the architect's professional organization and its challenges

In western society, except when involved in the government sector, the architects' professional organization is normally private in nature. According to professional tasks involved and developmental requirements, the size of an architect office can vary from very small to very large. Due to socio-economic and technical development, the scale of construction grew tremendously after World War II, so that large (even giant) architectural organizations emerged as the times required (i.e. SOM in the US). At a time of socio-economic prosperity, architect offices at different scales could be successfully managed, dealing with different tasks in the market (while this does not mean there would be no competition); but when economic growth slows down, the competition becomes rather serious, and the large architect offices tend to turn to small projects with limited profits in which they had no interest before, so that small offices would be more and more excluded from the market by the big monopolies (even though the small architect offices would still have some space to survive).

The architectural profession in the third world countries faces this challenge. The large architectural/constructive corporation groups from the developed countries, supported by foreign investment, have occupied the most important architectural markets in the third world countries. They have limited the range of professional activities of the local architects in these countries, so that it is difficult for them to receive commissions for

---

[7] Ricardo Verges-Escuin, *The economic future of the architect* of UNESCO, 1980
[8] Raphael de la Hoz, a Spanish architect and the former president of UIA, the disproval in the discussion of the 15th UIA Congress in Cairo, 1985.

large projects, and they are apprehensive in the face of this threat.[9] At a conference of ARCASIA, an architect openly questioned this policy on the part of some governments: although there were talented architects in Asia, the important projects were usually given on commission to foreigners.

When there is serious competition in the market, the large architectural professional organizations become more systematic. They spare no effort to organize human resources (the detailed statistics including the weekly working schedule of a project, the relationship between the workload of each employee and the profit, and the calculation of profits), they pay attention to the improvement of the technical and artistic level of their works, in order to maintain the unique design skills needed for a special kind of architecture and their traditional predominance. They take note of the social requirements for new architectural typologies, exploit the new fields, join the competition, gather and adjust talents, collect information and data, use the computer aided design technology, adopt scientific comparison of project designs, improve working efficiency, and transform the professional organization. One should carefully consider the scientific management and guidance of this inevitable tendency of architectural professional development. Other problems discussed in the architectural discipline include enhancing the social status of the architect, further promoting the development of the architectural profession, and the relationship between architect and government in the western countries, where the private architect offices occupy the largest portion. In conclusion, there are permanent, gradually changing and potentially changing factors in the architectural profession. In our mutating society, an important problem at any moment is how the architectural profession adapts to social development. On the other hand, professional practice must react to changes in architectural theory and be aware of developments in the architectural profession.

6.1.3 Architects and Planners

In ancient times, architecture and urban planning belonged to one domain in both China and Europe. However, due to the complexity of modern cities in terms of their socio-economic development and the more detailed specialization in modern society, it is inevitable that architecture and urban planning became separated to a certain extent. I do not intend to talk too much on urban planning here, but will merely discuss the "physical planning" normally supervised by a planner with an architectural background. (Physical planning was criticized by some scholars, but I think that we should consider it as springing from circumstances, i.e. to overcome the lack of economic knowledge, which I will not discuss here). The transformation of traditional urban planning led to the evolution of planning as a discipline and the participation of specialists from other fields. However, these multidisciplinary works can be the basis (or precondition) of physical planning. A synthesis of planning proposals from other disciplines must in the long run be realized by means of spatial layout and physical construction. Since the urban planner with an architectural background possesses both the visual and logical thinking to enable him/her to organize the spatial environment and since he/she receives a basic training integrating human sciences and technical science, he/she is able to guide and execute urban planning.

---

[9] According to the speeches of many architects from the developing countries in the 1st ARCASIA Conference in the Philippines 1984.
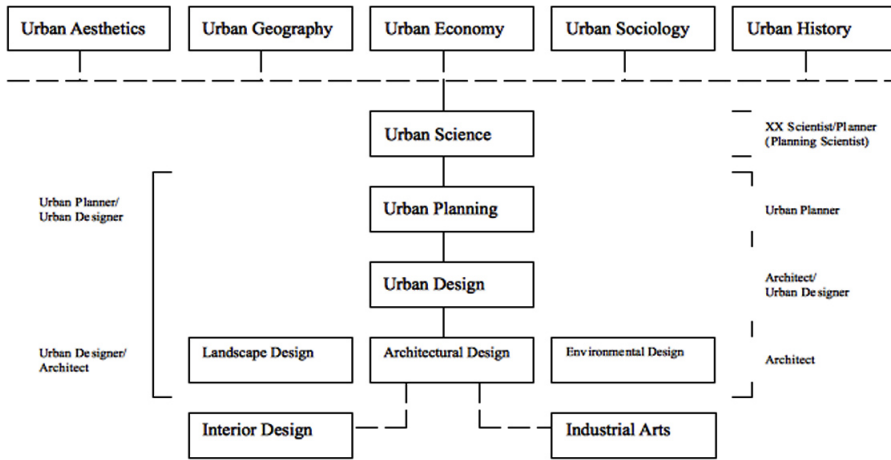
Figure VI-3: Urban Design as the domain of An Architect

Morton Hoppenfeld said: "Planners as architects of built environments or *vice versa*". This is an interesting sentence that precisely explains the relationship between architecture and urban planning and the role of the planner based on architectural training. In this way, professional training and college education are also gradually changed. This is a new tendency that emerged in western countries: urban planner > urban designer > architect, each discipline specialized in its field, which is illustrated by the following diagram (see figure VI-3). The analysis above can explain the relationship between architecture and urban planning, the integration and the emphasis of the professional domain of architect and planner, and the necessity for the architect designing the individual building to extend the professional domain and to widen the vision.[10] An architect should regard it as one of the duties of his profession. We will also discuss this issue in the chapter "A Theory on Art".

6.2 Career development in China

6.2.1 The role of architects in history

Architecture was held in high regard by the rulers of every dynasty in Chinese history. *Kaogongji* recorded various institutions on cities and architecture, in which the task of *Jiangren* (craftsman) included: 1) measuring land and establishing the norm; 2) building cities and states; 3) Opening channels..., which described the comprehensive profession of urban planning/construction and architectural design. In the Han Dynasty, when Xiao He supervised the construction of Weiyang Palace, his philosophy was "Emperor, as the son of the sky, owns the world as his home, which must be sublime and glorious in presenting his power". Its starting point was to serve the ruling class through architecture. The local

---

[10] J. Robertson, the Dean of School of Architecture, University of Pennsylvania, used to assert that "urban design is not a special branch of architecture or urban planning, but is and must be a thing related to both of them" . See the documents of the "Conference of the urban design educators", 1981.

governors wanted to build mansions and pavilions in order to present their "political achievements". The governments also paid attention to building management and always set up the institutions and the officers who were to take charge of the architecture and construction, among whom there were certainly officers with professional knowledge or technical managers. At least since the Tang Dynasty, it was the civil professional craftsmen who dealt with design and supervised construction. They were named *Duliaojiang* (master craftsmen). A Duliao was not limited to only one job, and *Damuzuo Duliao* (master carpenter) was the general director of design and construction supervision. As Liu Zongyuan (a famous author of the Tang Dynasty) wrote in *Zirenzhuan*, the *Damuzuo Duliao* was given the responsibility for the detailed drawing of structure and directed the material works, but did not directly handle labour. He was a technician separated from the craftsmen and was the master of various crafts, and can be seen as the rudimentary predecessor of an architect.

Nevertheless, a very prominent difference between Chinese and the western culture was that the *Dao* (the spiritual/cultural meaning) was always much more important than *Qi* (the physical presentation) in Chinese history. While the appreciation of *Diaochongxiaoji* (the trivial and insignificant skills of craftmanship) was widespread, e.g. in the legend of Lu Ban (the most famous craftsman of the 5th century B.C.), the social status of "the man of various crafts" was somewhat minor. In *Shiji* (Records of the Historian), there were biographies of knights and comedians but no special mention of anyone engaged in science or technology. The designer of the famous Zhaozhou Bridge, Li Chun, was never named in any books, but was only mentioned on stone inscriptions from different dynasties. Normally craftsmen were not educated enough to record their experience in writing. For instance, although Yu Hao was famous for his "ingenuity exceeding all compeers", his *Mujing* (Records on Woodworking) did not survive and even the date of his birth and death was not clearly recorded[11].

The situation was quite different in the case of the western architectural profession, while in Chinese history there was no one who could be properly seen as an architect. Several decades ago, Zhu Qiyin, the chairman of the Society for the Study of Chinese Architecture, tried his best to collect the materials for editing *Zhejianglu* (Records on Great Architects) on ancient Chinese architects, but his work suffered from paucity of materials.Of course, some relevant records were quite detailed. Yu Wen Kai of Tang Dynasty was well-known for his architectural and city-building achievements, since he was not only an outstanding urban planner and architect but also a high-ranking government official, well thought of by the emperor. And Li Mingzhong in the Song Dynasty was the *Jiangzuodajiang*, which was equivalent to the modern Minister of Construction, and an intelligent person who was "well familiar with every craft" and skilled in writing and painting, so that he would "receive the emperor's order" to edit/write the monumental Yingzaofashi. From the literature handed down, the in-depth understanding of urban architecture or architecture in ancient China was quite plentiful, but specialist writings in the field were few (while books like *Yuanye The Making of a Garden* were even rarer). It would have been impossible for the craftsmen in the dynasties to have worked without any

---

[11] The Research Institute of Natural Science History, Chinese Academy of Sciences, *The Ancient Architectural Science and Technology History of China*, Science Press, 1985.

"scriptures", which was proved by the discoveries made by the Society for the Study of Chinese Architecture during the short time of its existence. However, it is conceivable that there were a very large number of works which have gone missing – the scientific rediscovery and reconstruction of these literary relics, is an important task which should continue. After all, architectural craftsmen in the past seldom had high social status and a formal education, and the literati had no desire to deal with the relevant works. This was because China never experienced a period like the Renaissance and we never had any acknowledged profession of "architect" in our ancient society. This situation caused the conservatism that not only impeded the development of a relatively complete ancient Chinese architectural theory system and the evolution of building technology, but also affected the development of modern architecture and architectural sciences in China.

6.2.2 Challenging tasks ahead

The emergence of the modern architectural profession in China can be seen in the achievements of the students who studied abroad. Some Chinese architects educated in America, Japan and European countries founded their own architect studios after they came back to China, and gradually maintained their position despite serious competition from foreign architect studios in the Concessions. Their success initially depended on their talented designs. The Chinese architect Lv Yanzhi won the design competition of Dr. Sun Yat-sen's Mausoleum in Nanjing because of his outstanding design, which can be easily understood by comparing it with other proposals, including the designs of western architects. Secondly, the architects had to form certain social relationships to find a foothold in the society of that time, but it was still difficult for Chinese architects to receive commissions for large-scale projects; the architectural profession was not able to prosper before 1949 due to the continuous wars and crises. Thirdly, for professional survival and development, a professional organization of architects – the Architectural Society of China – was founded in 1927. Similar organizations in western European countries, however had been in existence since the first half of the 19th century; for example, the RIBA was founded in 1837. By comparison, the organization of architects in China appeared only 90 years later. This is another aspect that reflects the relative backwardness of the modern Chinese architectural profession. We must point out that the function of the architectural profession was not clear in the society of that time. In order to promote architectural education and the profession, the journal China Architecture was founded in 1932. In the same year, architect Fan Wenzhao also published a book named *The Tasks of An Architect*, for which Mr. Cai Yuanpei[12] – the most famous educator and

---

[12] Translated from Cai Yuanpei, *On Science and Technology*, Heibei Science and Technology Publishing House, 1985: Preface, *The Cognition of An Architect*, 28th October 1932 "The problem of dwelling, as important as clothing, food and travel, was well noticed by all our ancestors. From the cave to the mansion, though in the different progressive stages, the idea of shelter and dwelling was the same. Even the rather great and brilliant buildings, like Epang Palace in Qin Dynasty and Coliseum in ancient Rome, could be realized long times ago, thus the well-designed buildings should appear to meet the requirements of the complex and prosperous society of the time; and it should be the specialist like architect to guide and plan the building construction. While China was impacted by the foreign invasions and civil wars, the potential for development still exists within the society. Therefore the request for building is increasing annually. Mr. Fan Wenzhao is a diligent and outstanding expert on architecture. In order to clarify the meaning of architecture and the importance to commit the design task to architect, he wrote The Cognition of An Architect in a logical and clear style. A mere browsing has

scholar of early 20th century China – wrote the preface. This short preface should be seen as an insightful paper on architecture, since it clearly described two crucial issues:

1) The emphasis on the meaning of architecture: in primitive society, people were aware of the important role of housing, which was equal to clothing, food and travel. Great buildings like the Epang Palace and the Colosseum could be created in ancient times; the present social development should bring more requests for increasing amouts of architecture. Although China faced foreign invasions and civil wars in 1930s, the demand for architecture was still increasing annually;

2) The emphasis on the role of the architect: architecture needs to be planned and mastered by a specialist like an architect, but the meaning of architecture and the importance of choosing an architect were still not recognized by the public. He particularly emphasized that "The vicissitudes of a city is reflected in the quantity of its buildings; the quality of building depends on the design of the architect.." This clearly illustrates the relationship between architecture, the architectural profession and social development, as well as the requirement for urban planning. When I, as an architectural professional, read this approachable writing again after 50 years, I have to admire the foresight of Cai Yuanpei – a great Chinese modern thinker and an instigator of the New Culture Movement.

After the People's Republic of China was founded in 1949, the function of the architect began to be recognised by the country and the social status of the architect was also greatly enhanced. Some architects were elected as representatives to the People's Congress, some became the Ministers and Mayors, in which position they exerted their abilities. As for personal livelihood, there has been no problem of unemployment, since the design commissions are too many to deal with as the revitalization of our country and nation continues. However, some problems that have been existed for a long time are still waiting to be solved: the content of architecture and its importance for the construction of society have not been fully recognized, including by the relevant government departments; The relative confusion in the architectural profession (there is confusion in the difference between an architect and a civil engineer), and the lack of any unified scientific criteria to evaluate the professional qualification of an architect; The problem of the national and international recognition of the graduate degree in the architecture schools. Although other countries have approached these issues in different ways, professional standards have always been strictly upheld. This is an important step in improving the quality of the architectural profession. Therefore: we ought to continue to make society aware of architecture, and actively develop the architectural discipline. That means fully recognizing architecture – in its general and broad sense – as the leading discipline for the development of human settlements. This definition was also adopted by Hudoc in a report in 1986.[13] Actually, if we explained it by an existing popular parlance in China – "urban planning is the dragon's head" and "architectural design is the key", it should be not difficult to understand the leading role of the architect in the building profession. In order to fully, comprehensively and concretely deal with the environmental

enlightened me, and the book should be significant to enlighten society. The vicissitude of the city is presented by the amounts of buildings; the quality of building depends on the design of the architect. Anyone who is interested in the dwelling problem has to read this book. Hence, I wrote these short words as an introduction. Cai Yuanpei (Based on the transcript compiled with Cai Yuanpei's works).

[13] Hudoc report of 1986.

construction of human settlements, the architect should duly assume his professional responsibility. The international organization of architects, UIA, in its *Resolution on the Responsibility and the Right of An Architect*[14] in 1955 and its existing constitution, makes an appeal for the architect's social status: "confirm, or reconfirm at the necessary moment the role of the architect in the changing world and the expanding effect of the architect in the architectural and planning group", so that "the effect of architecture and urban planning on the social and cultural aspects should be admitted by the public media and the official or quasi-official institutes". Thirty years later, UIA passed its new constitution and set up the "Promoting Architectural Profession" working group in order to continuously strive to improve the social status of the architect. These appeals are not made at random. Even in the developed countries, due to the historical situation, while the architectural profession has been understood by society, architects are still attempting to improve their professional development; but because of late-arriving urbanization and urban development, architecture and the architect's professional domain are much less known in the developing countries. Therefore, it is more imperative and more difficult to improve the recognition of architecture in society. The Indian case, which I mentioned above, is quite representative (7700 civil engineers graduate from universities in India every year, but only 700 architects. Without enough recognition by society, the number of architects is insufficient). Meanwhile, even though there has been significant progress in the architectural profession in China recently, the age-old division of specialities at university and professional evaluation cause confusion between structural engineers, architects and MEP engineers; in the register of the National Natural Science Foundation of China, architecture belongs to "Material Science and Engineering Science" and is merely a semi-sub-issue of "Built Environment and Structure Engineering" in its total of 65 sub-issues, so that the funding it receives is rather limited, and can often be less than what would be potentially spent on one large construction project. The relevant research on architecture is decreasing, since there is limited funding or sponsorship. This case exemplifies the need to improve society's recognition of the architectural domain. According to the requirements of social development, architects and urban planners should recognize the task entrusted to them based on the existing conditions and perspectives of the architectural profession, and overcome the limitations brought about by traditional architectural training in order to expand their professional domain. The reform of the architectural profession should include an expansion in the scope of architecture.

The development of the architectural profession is also related to the professional morality of the architect in enforcing collaboration inside and outside the architectural domain. Social development depends not only on competition but also on collaboration. Whether competition or collaboration, the general presupposition is not to neglect professional morality.[15] The "maintenance of the high professional moral level through detailed

---

[14] The UIA conference in the Hague, *Resolution on the Responsibility and the Right of An Architect*, in "Architectural Journal", 1955.2.

[15] The UIA conference in the Hague; I would like to cite some words from the UIA *Resolution on the Responsibility and the Right of An Architect* in 1955, which could provide some illumination: "If there was no conflict between the commission of an architect and the social interest, the architect should serve the client [It explained that the architect should primarily work for the social interest, and not merely obey the client]."[...] "The personal activity and development of an architect must depend on his/her professional ability, thus any advertising propaganda should

regulations" is an issue that is strongly emphasized in the international architectural group. This spirit is also respected by other professional architectural associations and followed by all serious-minded architects. The professional moral norm, enacted by ARCASIA in 1984 and adopted by UIA in 1987, which has been universalized, belongs to this category of regulations. Although the division of works of architects could be different, the basic criteria should coordinate all their activities. In conclusion, the key point in exercising the function of architect, improving the society's recognition of the works of architect and urban planner and expanding their professional domain depends on the endeavours of the architects and planners themselves. In conclusion, the key point to exert the function of architect, to improve the societal recognition of the works of architect and urban planner and to expand their professional domain depends on the endeavors of architects and planners themselves.

6.3. Architectural praxis and public participation

6.3.1. Citizen participation

Architecture is a service aimed at the public and must therefore be familiar with the immediate needs of the public, whose right to comment on environmental impacts should certainly be recognised. Furthermore, architecture, from urban architecture to individual buildings, must necessarily take into account the opinions of citizens, whose participation could take a variety of forms, and must be integrated into normal procedures. The question of public participation naturally differs in the United States and the countries of Western Europe. In each country the meaning changes, and with it the connotations; the cultural level of the public changes, and with it the results. This is an issue which is still evolving within the theory and praxis of architecture and urban planning, and as such has been neglected so far.[16] In any case, architectural work requires the cultivation of the dynamic participation of the citizens. Local construction is, after all, an important aspect of the construction of the residential environment, and it is therefore opportune to appeal to the local residents' love for this, urging them to take an active part in local construction and to fight that which appears to be a threat to the equilibrium of the residential environment. This will create a positive force for the promotion of excellence in urban architecture strategies, examples of the various forms of which include.

During the post-war period in Japan, "Citizen's decrees" were formulated in some areas, with highly similar names and contents in each city. The basis and aim of these decrees was substantially the love of the citizens for their own land, their natural environment and its traditions, exhorting them to pursue comfort and harmony in urban architecture,

be avoided and he/she must strictly abstain expediency under any circumstances." [...] "In order to avoid any direct or indirect actions damaging to other architects, an architect must hold an objective attitude and goodwill when he/she criticizes others' designs, and ought to have the same attitude when he/she is criticized by others."[...] "An architect has to avoid plagiarism and any other actions that do not accord with the proper relations among artists."[...]"According to the international agreements and the local conventions and legal measures of his/her own country, the architect possesses a secure copyright of his/her works." [...] "An architect should unite all the colleagues who participate in the realization of his/her designs by his/her own morality and prestige."[...] "When an architect is directing the works of his/her young assistants, he/she should impart his/her experiences to the assistants."

[16] Isomura Eiichi, *Readings of Urban Problem*, (Chinese version); Heilongjiang People's Press 1988 .

as well as a markedly cultural type of beauty.[17] The "My Town Tokyo" movement which emerged in Tokyo in 1979 is another example, similar to that of the "Citizen's decrees" and aimed at reawakening the love of local citizens for their city. The movement was distinguished by its efficiency and is held in high esteem by international architectural planning circles.[18] Italy saw the birth of an academic association known as "Italia Nostra". This organisation for the protection of the national historical heritage has a multitude of extremely active members working for the safeguarding of historical and archaeological sites.[19] Thanks to the traditional attitude of 'democratization in political processes', the citizens of some Western countries are particularly active and involved in the debate on environmental construction, firmly opposing the creation of constructions harmful to the quality of the environment. The example of the success of the planned reconstruction of the central area of the city of Philadelphia was mentioned above: led, among others, by the architect E. Bacon, the authorities in charge of the local programme carried out the function of a locally focused organisation; the promoters of the project allowed the residents to develop their own plan; the residents were able to contribute their own suggestions to the formulation of the programme; thanks to public pressure it was possible to reduce to a minimum sources of misunderstandings and incomprehension between the inhabitants and the municipal authorities; the problem, common to both the residents and the planning project supervisors, thus reached a unanimous formulation and resolution. As well as involving various specialisations, so-called "democratic feedback[20]" in planning design presupposes public participation in various sectors. The construction of the Kennedy Library in the United States, designed in Cambridge in the '50s, was contested by local citizens, alarmed at the colossal dimensions of the new building which would have destroyed the harmony of the local landscape around the river Charles as well as that of the city itself. Public pressure thus forced a change of direction. At the end of the 1970s the reconstruction of a square in the city of Stockholm was planned; to protect the historical characteristics of the city, the local residents reacted with a sit-in, ultimately forcing the local authorities to give up their original plan. This movement stood out, among other things, for its ideas about the safeguarding of cultural-historical tradition and life and opposition to public damage, even though a margin of 'local selfishness' and an eye to personal gain can partially be identified.[21] It is particularly when under the control of a "market economy" that the realisation of projects of public interest, including the requisition of land, sometimes finds itself facing insurmountable unknown factors which impose innumerable obstacles to the implementation of the programme, making its realisation extremely complex.

6.3.2. The diffusion of architectural culture

Respecting citizens, inter-reacting with them, serving them and understanding their values are, along with the task of diffusing architectural culture amongst them, some of

---

[17] Isomura Eiichi, *op. cit.*

[18] The movement "My town Tokyo" was promoted in 1979 by Suzuki, the Mayor of Tokyo.

[19] Wu Liangyong: *Protecting the old city of Beijing is a mission of the times*, in The essay on urban planning and design, Yanshan Publishing House 1986.

[20] Edmund Bacon, *Design of Cities*, Penguin Books 1980.

[21] Isomura Eiichi, *Readings of Urban Problem* (Chinese version); Heilongjiang People's Press 1988.

the principal duties of the architect in the interest of the development of architecture itself. I once met an architect, extremely well-known abroad, who confided in me that he found himself writing occasionally about architecture for a newspaper in a moment in which, having recently retired, he had not yet decided how to deal with the transformation of his life. Although he would never have initially suspected the developments following this initiative, he soon found himself carried away by an intense dedication to the work, which tangibly inspired improvements in the surrounding environment and made him into an established columnist on architecture. This made me think of Liang Sicheng and his article *Notes of a Clumsy Artisan*, which appeared in the '60s in The People's Daily[22] and was much appreciated by the prime minister Zhou Enlai, who encouraged him to continue writing in order to further increase the public's knowledge of architecture, a task which successive political developments interrupted. Today, essays by authors such as Zhang Kaiji or Chen Congzhou which appear quite frequently in the Peking and Shanghai evening papers are efficient tools for the transmission of architectural culture, communicating profound contents in simple terms and with passages of criticism integrated with critical passages in a simple and elegant combination of surprising efficiency. The importance of this work should not be underestimated in any way. And was much appreciated by the prime minister Zhou Enlai, who encouraged him to continue writing in order to further increase the public's knowledge of architecture, a task which successive political developments interrupted. Today, essays by authors such as Zhang Kaiji or Chen Congzhou which appear quite frequently in the Beijing and Shanghai evening papers are efficient tools for the transmission of architectural culture, communicating profound contents in simple terms and with passages of criticism integrated with critical passages in a simple and elegant combination of surprising efficiency. The importance of this work should not be underestimated in any way.

As shown above, local construction requires the involvement of local citizens who possess a practical knowledge of architecture based on their own experiences. Architecture remains, however, a science and an art which touches upon the economy as it does literature; the contradictory and complex nature of its sophisticated and learned content do not in fact represent an 'innate knowledge', and therefore an increase in the general level of architectural culture is absolutely necessary. For this reason, some foreign publishers (such as Penguin Books) take the distribution of architectural monographs and books dealing with the technical and populist aspects of the subject very seriously – this is the case of several precious tomes on my bookshelves, including *The Citizen's Guide to Planning* and *The Citizen's Guide to Zoning*. The clarity of explanation in this type of work examines complex issues with simplicity, and they are of great interest as specialist literature. In recent years, the task of divulgating architectural culture has received attention, as, for example, in periodicals of great public impact such as Jianshebao (Construction Review) or Jianzhu zhishi (Architectural Knowledge). Furthermore, in some Western countries, some cities have put their urban planning project on permanent or temporary display inside the town hall or a museum in order to promote it and test public opinion.

---

[22] Liang Sicheng, *The essays of Liang Sicheng. The role of urban architecture in socio-economic development* vol. IV, Architecture and Building Press, 1986.

Architecture belongs to all citizens. Promoting a rise in the general level of public architectural knowledge fundamentally favours the work itself, as does environmental commitment. Despite the fact that construction praxis naturally forms part of the competences of professionals in the field, the promotion of public participation and the service to the citizen remain indispensable elements of the formulation of 'A General Theory of Architecture'.

6.3.3 Architectural work and decision-making

Normally, specialist digressions on this theme tend to be rather scarce, despite it being an important issue which is directly connected to the development of architecture. Clothes, food, housing and transport are fundamental common needs in the life of citizens, requiring large expenditure of capital and materials, and it is indispensable that the administrative functions at each level display solicitude towards public life and the issue of construction. The norms in each sector, from the most comprehensive (like those oriented towards the technical development of construction, policy and building strategy of each city) to isolated political directives centred, for example, upon a particular building project, exercise a variable but extremely important influence upon the development of architecture, the quality of the environment and the appearance of the city. It is for this reason that various historical thinkers and politicians closely examined urban architecture work. The construction of a residential environment for the human race is intimately linked to the creation of an ideal society, and many historical personages, from imperial chancellors to local governors, have contributed to the formulation of theories or the concrete implementation of regulated construction, as well as to the codification and promotion of architectural science. In 1983, on the occasion of the first session of the mayor's training seminar, I made frequent mention of the 'honest functionaries' of Chinese history and their achievements in urban construction[23], upon which I do not wish to dwell further here. They might be defined specialists of the profession, whose successes litter historical accounts and, above all, the local chronicles, so generous in their details. One has only to think of the management of the frontier city founded in the Han era by Chao Cuo, a notable example with its meticulous attention to the city ecosystem, from the choice of location to the street plan, the design of the houses and the disposition of the furniture, harmonically assembled in a compact theory of planning and realisation in accordance with construction criteria whose goal was that of aiming for 'the cohabitation of the people, and the creation of a lasting collective residence'[24]. Architecture remains in any case a science. Occasionally, the professionals of the day prove to be lacking in

---

[23] Wu Liangyong, *The successes of the 'honest functionaries' in China's history are partly discussed*; The essay of Urban Plannin and Design, Yanshan Publishing House 1986.

[24] The characters in the original text are splendid and allow us to grasp the guiding principles of the illuminated urban architecture and planning work of Chao Cuo, as can, for example, be seen in the following passages: (With the aim of an efficient urban organisation) "…rationally arrange communications at the largest fluvial and terrestrial nodes…" , "…test the flavour of its springs and inspect the fertility of its seeds…", "review the growth of the flora", "dispose the layout of constructions with vivacity, unreservedly giving ample space to habitations…", "manage construction with respect to proportions, creating passages across the cultivated fields, taking care of the direction and the route; as for the internal arrangement of the houses, create one central and two secondary rooms, constantly based around at the needs of the family even in its disposition of utensils and furniture" (Annali Han, biography of Chao Cuo).

authentic skills, even in relation to the science of the times, and cases of normative errors have been rather common. It is, for example, inappropriate to select a site for construction which is subject to flooding, compromising life and property and dramatically increasing waste. There are innumerable examples of similar situations which were interpreted as random accidents within the ordinary process of terrestrial affairs and, as such, ignored.

If it is true that in ancient times architecture already required specific scientific norms, technological development is today so complex, construction times so short and the increase in consumption so rapid that the need for such norms is even more urgent and a 'democratic and scientific approach to policy regulation' indispensible (an issue discussed in more depth in the chapter on "Theory of Legislation" and upon which I shall not dwell further here). To return to urban architecture, the following aspects of political development regard particularly closely the development of the work of the profession: 1. The attribution of the deserved importance to policies and research into the strategies, feasibility and themes of architecture, which certainly implies long-term fermentation processes and maturation; 2. The need for constant reference to specialists and their involvement in order to attain a heterogeneous style of participation in normative research; 3. The need for heterogeneous participation to be extended to the public. These three issues should be seen as one single point. In the case of an individual architectural project, the proposal of the theme (subject to research into feasibility of construction), the selection of talents and the choice of project are crucial. Sometimes the choice and selection of specialised personnel can offer an efficient remedy to eventual errors contained in previous political amendments. Consider the eloquent example of the Monument to the Vietnam War designed for Washington in the United States; this war was fundamentally a mistake, and the construction of such a monument in a location as important as that between the Washington Monument and the Lincoln Memorial was a political mistake. Even in a situation of this type, however, thanks to the careful scrutiny of a 'committee for the critical selection of the project', the choice fell upon a student of Chinese origin, Lin Ying, whose plan distinguished itself by a series of brilliant ideas: she cut a slope into the site, obtaining a concave space, and then erected a long, slightly snaking wall, into whose black granite surface were carved the names of the victims. The tone of the site thus appeared forcefully weighed down and permeated with an implicit sense of condemnation of the war, but also of comfort for the living and of the salvation from destruction of the surrounding environment. The armed forces were bitterly opposed, but their protests were defeated thanks to the insistence of the committee and the support of the public.

This illustrates the function of a high-level jury in the choice of the project. A further example comes from an oral tale told by Yang Tingbao: when in the 1930s he submitted the project for the open-air auditorium in front of the Sun Yatsen mausoleum in Nanking for governmental scrutiny, the then president of the nationalist government Lin Sen suggested an puzzling addition: the motif of the dragon spitting water. Obviously the architect had no choice but to accept. The virtuous designer thus resolved to add fountains with the form of animal heads spouting water on the wall of the pool in front of the stage and the seats for the audience, recalling a classical Western technique and majestically dominating the situation. Politicians should participate in suggesting themes or raising

issues, but the figure of the architect remains crucial for the appropriate realisation of a design. In my work *Chengshi mei de chuangzao* (The creation of urban beauty) I mentioned the encouragement of prime minister Zhou Enlai to architects to test themselves against production itself, freeing themselves from "receiving and complying with the intentions of political authorities", and I therefore feel that it would be superfluous to repeat myself here[25].

The development of architecture and the progress of planning praxis are linked to a multitude of factors; the work of the architect and the participation of the citizens are inextricably linked to the activity of political regulation of those in charge, in an osmosis of conjoined functions. According to the author of "Yuanye" (The Making of Gardens), the quality of design of a garden is composed of "three parts the craftsman and seven parts the owner", justifying the importance of architectural culture even on the part of the 'owner' (in contemporary language this term was used to describe the client or the decision-maker). Architects, devoted to architecture, must certainly dedicate themselves scrupulously and unreservedly to raising the level of the science and to the service of the public, tenaciously promoting a more democratic and scientific decision-making process.

---

[25] Wu Liangyong, *The essays on Urban planning and Design*, Yanshan Publishing House 1986.

Chapter 7
A Theory on education

7.1 Architectural education in the West

Architectural training in the early periods took the form of apprenticeship, which changed after the Renaissance. Buontalenti founded the first architectural academy in Florence in 1536. Palladio divided ancient architecture into five orders in the courses he gave to educate his students. In 1671, the Royal College of Architecture was founded in Paris. It was revived in 1795 after the French Revolution and changed to the Beaux-arts, in which the invention of the atelier system hugely influenced its successors. But the main focus of architectural education at that time was the requirements of royal buildings and the emphasis was on the art of architecture.[1] Architectural education has also been transformed by social changes. I will not discuss the whole story here but just exemplify some cases as points of reference.

7.1.1 Conflicts between the old and new schools

Due to changing viewpoints in architecture and art, two tendencies – the conservative and the progressive – have always existed in architectural education. The conflicts between the old and the new schools were quite drastic. For instance, there were conflicts between the *Ecole Polytechnique* and *Académie des Beaux-arts* in 19th century France regarding the progress and development of architectural materials and technologies; the former concentrated on the application of science to human life and emphasized the development of natural sciences and technology. The divergence between the two schools hinged on the direction of architectural training and the relationship between the engineer and the architect. The former accentuated engineering technology and the development of new materials, and positively influenced the development of early new architecture[2]. Later, the development of various schools and the vitality of critical and reflective thinking, including the conflicts between the Bauhaus and the traditional Beaux-arts education, and the more recent conflicts between postmodernism and modernism, propelled the exploration of architectural theory and practice, and have had a significant influence upon the development of architectural education. After World War II, many excellent scholars were concentrated in some famous schools, e.g. the urban planner Patrick Abercrombie at the University of Liverpool, Walter Gropius at Harvard University, Eliel Saarinen at the Cranbrook Academy of Art and Mies at I.I.T. Under the guidance of these masters, the better architectural schools by and large led the trend, and their graduates would significantly boost the development of the architectural profession.

7.1.2 Integration of theory and practice

As well as the diversification in the methods of architectural education, the integration of theory and practice has also been an important issue. For example, in England, technical

---

[1] Spiro Kostof, *Architects*, Oxford University Press, 1977.
[2] Sigfried Giedion, *Space, Time and Architecture: The Growth of a New Tradition*, The Harvard Press, 1949.

schools, art schools, independent professional schools and universities emerged in the early periods to train the professionals. Yet due to the division between architectural education and professional practice in the western developed countries, it is relatively common to believe that modern architectural education has failed, and to appeal for more attention to be paid to the crisis in education;[3] and when the speed of socio-economic development slowed down, the surplus of and when the rate of socio-economic development slowed down, the surplus of professionals produced a new crisis in the profession, which in turn had a powerful effect on architectural education. *The Brighton Manifesto* of the UIA made a crucial point: "design was over-emphasized in architectural education. The actual buildability should be strengthened..."[4]. The developing countries have also been involved in the discussion of the crisis in architectural education; for them the major problem is professional thinking and the fact that the content of education cannot entirely correspond to the content of practice and actual social requirements. A large number of architectural students went abroad after graduation, and so do not serve their native countries, or only went into high society and had nothing to do with public architecture in their own country. The problem of who architectural education is meant to serve is a serious matter for debate.[5]

7.1.3 Emergence of Urban Design

In a sense, urban design was introduced into architectural education by Camillo Sitte in the late 19th century. He was the first to develop urban design theories that understood the basic formal relationships in urban morphology, which is still respected today[6]. E. Saarinen also tried to invigorate education on urban design in the 1930s and 1940s.[7] After the 1960s, the approach to education in urban design developed further. More architectural schools in Britain and America opened majors or courses on urban design (up to the 1980s around 30 architectural schools or departments in North America set up urban design specialties or courses). Although there have been various explorations and achievements in urban design education, so far it is still incomplete with few fully developed or perfect examples. However, its importance was increasingly perceived, as was shown in the symposium on urban design education in 1981[8] and also in the UIA conference in Brighton 1987. The

---

[3] *Education in Crisis*, in "RIBA Journal", 1983.12, and the appeals on the crisis of architectural education from different points of views are increasing recently, which have to be analyzed respectively.

[4] *The Resolution of the UIA Brighton Conference*, 1987, also see Wu Liangyong, *Building and City – Transforming the Society for the Future*, in "Architectural Journal", 1987.11.

[5] Refer to the report on education of the Architectural Education Council, the 14th UIA Conference, Paris 1978, and the report on education of the 2nd ARCASIA Conference, Kuala Lumpur 1986

[6] Camillo Sitte, *City Planning According to Artistic Principles*, 1889, translated into English in 1945, Random House, New York

[7] Eliel Saarinen, *The City: Its Growth, Its Decay, Its Future*, Reinhold, N.Y. 1943; the Chinese translation by Gu Qiyuan, China Construction Industry Publishing House, 1986. He called for that "the spirit of 'urban design' must be introduced into every design project in order to be studied by each student, ... in any city, town and village, every building must be an inseparable part of its physical and spiritual environment, and shall be studied and designed based on this principle..., architectural education must be engaged by this spirit. Urban design is not a subject only studied by the few, but a subject which should not ignored by any architect." The town's and the city's "neatness is related to the quality of professional cultivation to a large extent".

[8] Selected Works of *The Symposium on Urban Design Education* 1981, School of Urban Design, Purchase, New York, 1981.

Urban Design Group (UDG) of Britain appealed that "education on urban design should be started from the first year of university".[9]

7.1.4 Environmentalism in education

The Civic Art pursued by urban renewal in the 18th and 19th centuries, and the later Urban Beautiful movement, was more or less influenced by the Beaux-arts in order to emphasize the grandiose patterns of the Grand Plans; then, P. Geddes, the founder of the modern urban planning, E. Howard, the exponent of the Garden City Movement, P. Olmstead, the founder of modern landscape architecture, and other pioneers of modern city planning created new domains with different aspects in order to achieve greater recognition of the urban/rural living environment, and to promote the development of urban science and environmental design, which are still being developed as times changes[10].

Influenced by those insights, people gained a new outlook in the field of architecture, which meant dealing with the different problems of architecture by different approaches on the macro, meso and micro levels (the meso-level includes the individual building, the building cluster, the vegetation and the design of the spatial environment). Consequently, the relevant disciplinary system has also been developed in an innovative way. This development had an enormous impact on architectural education. The various systems and institutions of contemporary education taking place in Western schools of architecture all contribute to multi-faceted explorations under this general trend. While they are at different stages of development, they have revealed the necessity for, and importance of, research into architectural education from the point of view of the general theory of architecture.

7.2 Architectural education in China

Ancient Chinese architecture boasts glorious successes and yet, despite the great numbers of 'illustrious artisans' mentioned above, there was in the past no authentic professional educational route: the training of an architect mainly ran parallel to the period of apprenticeship. Furthermore, as Chinese history never experienced anything like the Western Renaissance, architecture ended up developing analogously to the other sciences and is still far from transforming, progressing and converging into a single coherent scientific system. This situation faithfully reflects the state of protracted educational immobility in architecture, among the principal factors responsible for the historical backwardness of Chinese architecture. In China, the advent of modern architectural education, which more or less coincided with the recent development of the construction industry, was inspired by foreign studies, and the contributions made to it by the first Chinese students returning from overseas academies should be recognised. National Central University (preceded in 1927 by the Gongzhuan of Suzhou), Dongbei University and the University of Beiping (founded in 1928) boast the earliest modern architectural faculties in China, which appeared more than a hundred years later than the *Beaux-arts*

---

[9] According to *The Symposium on Architectural Education* at Magdalen College, Oxford 1958, "RIBA Journal", 1958.4.

[10] Wu Liangyong, *A General Discussion on Architectural Education*, in "Architectural Journal", 1986.11.

in Paris (from which the American educational system of the time took its cues) and were followed by progressive institutions in some schools and a series of architecture departments, but the consolidation of a mature system was impeded by the continued interference of war and political vicissitudes. As regards urban environmental education, the architectural faculty of the Saint John University in Shanghai (the progenitor of Tongji University College of Architecture and Planning) carried out research into the planning of the city of Shanghai until after the Second World War, guided – among others – by Professor Richard Paulik, a pupil of Gropius at Bauhaus. In 1947, Tsinghua University, on the initiative of Professor Liang Sicheng, established a programme of research into cities and towns to tackle post-war housing issues based on the theories of the physical environment, although the substantive work did not start until later. This serves to illustrate China's tardiness in the field of modern architectural education, notwithstanding the notable contributions achieved in the development of architectural design in that period by students returning from abroad as much as by professionals trained within the country. Nevertheless, the low numbers of architects meant that the specialisations of architecture had not all been well developed.

With the foundation of New China, architectural education has made considerable headway in its development: the talents, the avant-garde and the strategists of architecture, active today within the nation in various sectors, are none other than the figures who were trained in this period. However, a multitude of factors have contributed to this specialisation not being recognised as the equal of civil engineering or hydrology design, and its full maturation has in effect suffered from the limits traditionally imposed on the concept of architecture and the isolation from colleagues abroad, worsened by 'ultra-left-wing' political and ideological interference. This does not mean that Chinese architectural education is completely without innovation: in 1958, for example, a singular triple combination of teaching, research and production (temporarily suspended during the 'decade of disorder' between '66 and '76) was introduced; foreign academics were very appreciative of the final year degree project I set up, in which research of planning and design is fully integrated with practical projects. This is an idea which should be seen as a Chinese success and one which should certainly be further cultivated in the future. Analogous ideas have appeared within the Western architectural education system: the initiative began with academics like F.M. Lea who, in April of 1958, on the occasion of a symposium on architectural education in Oxford, England, called for the amalgamation of university education, development and research[11]; many years have passed, however, without this formula having developed an adequate practical counterpart. It is undeniable that China's success owes much to its particular social conditions; this suffices to show that there is a lot to be achieved in developing Chinese architectural education in new and different ways.

Over the last decade, urban architecture has flowered in every part of China. While over the last decade, urban construction has flowered in every part of China. While the old schools of architecture dedicate themselves with intensity and dynamism to the cause of national prosperity, new ones continually appear to general enthusiasm, and the

---

[11] In 1958 the *Conference on Architectural Education* took place at Magdalen College, Oxford; "RIBA Journal", April 1958.

training of masters, the improvement of didactic quality, the strengthening of research and productive praxis remain a crucial challenge. I personally believe in the need for a series of comprehensive strategies aimed at the diffusion and perfecting of architectural education:[12]

1) A staggering of the education system and the training of talents on various levels is needed, which uses universities, graduate schools, specialist colleges, preparatory colleges, further education colleges and night schools, apprenticeship in traditional arts and crafts to encourage continuity of training and the teaching and study of traditional technical and artistic approaches. Each of these aspects serves an urgent need: they cannot be substituted by one another. Overall, in consideration of the current phase of national development, it is indispensable to undertake the integral and unreserved strengthening of the academic level of architectural specialisation. In fact, it is still necessary to emphasise the perfecting of university instruction in all of China. Schools with the prerequisites to develop on a different level, and when a city boasts the presence of a highly qualified architect, or a school, research unit, planning department or other structure containing brilliant scientific pioneers, or a heterogeneous group of high-level researchers, the artistic or scientific achievements of these figures can be subordinated to the collective interest, pushing the city, the school, the research unit or the planning department towards qualitatively greater development. Furthermore, in this age of overwhelming technological advances, it is necessary to set to work to offer posterity an adequate training framework.

2) An effective conjunction of educational structures, research structures and production praxis is needed. As noted above, China has already shown creativity in this sector, and it is unwise to concentrate on one aspect and neglect another. We should proceed towards a well-coordinated process of academic teaching, scientific research and practical production, since the training of highly qualified professionals is the *raison d'être*, the core aim of the education system. This is a firm undertaking that admits to no simplification. It is also necessary to actively support the work of furthering scientific research, as any form of unilaterality could provide the basis for the creation of new obstacles to the future development of Chinese architecture.

3) Practice and professional training should take into account the regionalist principle. As architectural work reflects regional attributes (as discussed above) it is important that regional character is given due consideration in architectural education as well. The local architecture institutes (or the schools) should assume a positive function in the development of local urban and regional constructions, not hesitating to transform themselves, whenever the prerequisites are present, into academic centres of regionalism. The highest possible social recognition should be given to those who have contributed positively to the realisation and study of local architecture, which could among other things encourage the formation of schools of regional architecture. Our concept of 'school', however, cannot limit itself to stylistic elements, and must rather embrace a composite integrated *whole* of perspectives, academic structures, theoretical and executive praxis, strategies of construction development and normative approaches thereby playing an effective social role. Hence an effective promotion of urban and rural architecture is the final criteria of judgement.

[12] Wu Liangyong, *Jianzhu jiaoyu fanyi*, in "Jianzhu xuebao" n. 11, 1986.

4) We must also give the necessary attention to the mission of training and interaction with wider society. The architect is at the service of society, and must therefore know it; architecture, like education, must be able to count on social support and public participation and this means that the architect cannot avoid the task of diffusing architectural knowledge, offering the whole of society a specialist education and contributing to the cause of collective wellbeing.

5) Finally, it is necessary to redefine the development of design in a strict sense to the planning and realisation of a human habitat (without neglecting the development of a series of aspects related to specialisation), a subject discussed in the preceding passages.

7.3 Several proposals

7.3.1. Elimination of prejudice and bias in judging talents

The formulation of a theory of architecture presupposes an extension of one's horizons even in the field of training talents. In traditional architectural training, the technical training of designers is seen as the priority. In the didactic system architectural design is the core of the syllabus, and the formative nuclei; a long consolidated praxis testifies to the extreme efficiency of this type of approach in the formation of high-level talents, which should nevertheless be further examined and developed.

However, whether dealing with concrete construction praxis or theory, the contents of modern architecture no longer coincide simply with design in a strict sense (while not denying the crucial strategic function of an optimal definition of urban and architectural design), but rather include a multitude of more or less organised professional variants; the route taken by each, notwithstanding possible obstacles and dead-ends, is destined in any case to positively or negatively influence the overall result and the involvement of creative talent in each sector is therefore indispensable.

From a practical point of view, in addition to architectural design in a strict sense, there is a well-nourished group of alternative disciplines ready to welcome talent: urban planning, urban design, urban research, landscape design, interior design and administrative management of architecture (administration of architecture, regulated construction, urban development plan, construction industry, etc.). It is fair to hope for ever more gifted professionals in each part of the field, but one thing that my long experience in the educational field has taught me is that there may occasionally be students who, despite not gaining particularly high marks in the architectural design disciplines while students, upon entering the world of work reveal themselves to be brilliant and innovative in just those sectors outside design itself; therefore, let us reflect upon the following:

1) It is important to promote traditional architecture as a corollary of the main teachings. It is possible to coherently amalgamate the exercise of planning with the surrounding peripheral disciplines, offering students a fundamental understanding of architectural sciences and laying thorough and solid foundations for the development of artistic skill in construction.

2) As the architectural sciences involve engineering, literature, technology and the arts, it is necessary to understand ordinary human needs, enter into contact with society and stimulate with students a more comprehensive idea of, and approach to, the study

of architecture. To put it simply, there should be a correct margin of 'flexibility'. As architecture is also the dominant science in planning, design and construction, a student is encouraged through scholastic training to aim for the discerning and original management of physical forms and spatial resources. Perhaps for this reason there are graduates of architecture who, rather than dedicating themselves to working in planning, prefer to dedicate themselves to urban administration, construction finance and the construction industry in order to better follow their own inclinations, and being sensitive to the appearance of new social necessities enthusiastically devote themselves into their study.

3) As regards advanced architectural training in the strict sense, and considering the existence of architecture experts dedicated to aspects of construction other than planning, why not proceed – conditions permitting – to a strengthening of parallel disciplines, offering these figures, from their beginnings in academia, solid bases upon which to build their future professional choices (assuming the impossibility of offering a complete school education in the entirety of those social sciences in some way connected with architecture, a superfluous and scarcely realistic view)?

4) In order to implement the ideas listed above, two possible approaches may be adopted: the first is an increased number of seminars in the undergraduate education phase, allowing students multidisciplinary training to expand their cognitive resources; alternatively, an increase in specialist programmes after the first three years (or thereabouts) of the five-year syllabus have been completed. In the second place, during specialisation, the targeted introduction of new courses, encouraging the insertion of monographic study in the body of the thesis and promoting a dualistic and interdisciplinary development of architectural disciplines.

5) Furthermore, the training offered by universities and polytechnics should maintain an effective contact with the social needs and the development of the architectural sciences, scrupulously managing the question of diffusing its specialist scientific contents. Consider, for example, the richness of China's historical and cultural heritage: the conservation of the larger urban centres of the past, the protection of architectural heritage, research in the field and the restoration of ancient buildings are serious responsibilities, which require specialised research bodies and the training of specialised personnel. Or consider the specialisation in building heritage, to which the previous university system concedes not the smallest space: in the United States, the economic potential of this discipline and its undisputed influence (for good and for bad) upon architecture and urban growth are recognised and several universities have dedicated specialised research centres to it. The new courses share the framework of economic administration, construction and urban planning disciplines, which aim to channel them towards a rational and efficient trajectory of urban development. This is still, however, an experimental specialisation, which will be tested in the education of graduate students over time before it is further propagated. In undertaking the formulation of a theory of architecture, the scientific framework of the discipline still reveals numerous aspects deserving of further development; circumscribing, however, reflections upon education, what is fundamental in broadening students' concept of architecture to act as a frame for teaching, without going overboard in the institution of specialisations: excessive zeal or volubility in the number of specialisations, disciplinary demarcations or nomenclature (above all in university training) brings no benefit to the

cognitive maturing of students and the consolidation of professional foundations. It would also be wise to abstain from testing out underdeveloped and incomplete specialisations upon students when the teaching body does not yet have the necessary preparation. In the light of these considerations, the accent is placed upon preparatory university education based on refined, complex and solid foundations, recognising the right of those schools in a condition to further their own careful but unique exploration of social needs in the interest of the development of the profession, and of the science of architecture.

7.3.2 Scale and quality of architectural education

Between the beginning of the 1950s and the end of the 1970s there were only seven universities in the entire, immense surface area of China, with its 1,100,000,000 inhabitants, offering a specialisation in architecture. According to studies carried out at the beginning of the 1980s, in the average 100,000 people there were only one or two architects, which is decidedly few: in the same period the international average was around 17, though some advanced countries (like Great Britain) counted 40 or more. Holland, abundantly outsized in terms of land and population density by several Chinese provinces – many of which entirely without architecture institutes – sees more than 400 architects graduate each year, and such glaring differences cannot help but come to our attention. Numerous professionals involved in architectural education, myself included, have been vocal in asking for an increase in the number of faculties, in the hope that at least one be instituted for each province. Even though this hope has not yet been fully realised, recent years have undeniably seen some progress, including the increase in the number of architectural institutes to more than fifty, and some of these have also broadened their remit, offering, among other things, specialisations in urban planning and landscape, and interior design. Although the phenomenon is undeniably gratifying (some departments, despite being founded only recently, have already distinguished themselves by their results), there is no lack of occasional reasons for perplexity. We need to emphasise, enrich and improve the quality of teaching, create a highly qualified teaching body and develop efficient didactic strategies. I personally feel that this is a somewhat complex job which requires long-term commitment and diligence. To quote the calligrapher Su Dongpo (1037-1101), "Studying letters costs paper; studying medicine costs men": if the learning of writing meant the sacrifice of paper and ink, a lack of discernment, competence and ethical nobility in the learning of medicine can mean the sacrifice of human lives, an extremely serious consequence. Training an excellent architect is not simple, and though there are cases of young architects who have established themselves with surprising precocity, these are few and far between. In normal circumstances the accumulation of experience gradually matured through successes and defeats is indispensable. On the other hand, a defect in construction can be a grave threat to society, the economy and urban life as much as to life itself: some planning errors are extremely difficult to correct, and in the job of regulating urban development errors are possible which are simply irreversible. Teaching limits itself to offering students an ordinary understanding of urban planning and design as well as the management of space in a wide sense: for a deeper understanding, continued experience in practical difficulties and obstacles is needed. The training of capable professionals is a challenge which should not be undertaken lightly: a range of educational choices can

certainly coincide with the multitude of human types; in the formation of character, of ethics or intellectual resources, high standards to be sought through the tenacious efforts of both the educator and the student are, however, universally required.

7.3.3 The exercise of training foundations and the stimulation of intellectual resources

It is not academic training alone which determines the success of a prominent architect: social training and practical experience also contribute, and school must provide the solid foundations necessary for sustaining subsequent professional development. Many years of didactic experience have allowed me to observe how it is often the gaps in a student's education developed during their schooling which determine successive 'malformations', and I have sometimes surprised myself by imagining the even larger role which various established students would have been able to take immediately after graduating had they also had a comprehensive preparation in those areas in which they were, in fact, weak. Granted the difficulty of unconditional excellence throughout school, integral formative development on the part of the student is in any event indispensable in this phase.

Scholastic education is oriented towards giving students the determined intellectual platform they need, and when dealing with future architects, it would be wise to know how to provide every type of cognitive foundation:

1) The architect-to-be must be provided with a steady, solid foundation as well as the necessary will and abilities to improve, update and expand his or her knowledge autonomously in the future.

2) The fundamental capacity of critical selection of architectural orientation must be scrupulously encouraged; an analysis of the debate between the various fields must be imposed upon young students who are struggling to take a position, forcing them to question unilateral directions. The process of gradual growth and the repeated experience of scientific convolutedness are normal phenomena as well as a potential nutrient for talent. It is in any case important to direct students' attention, from school onward, to the various possible scientific issues in order to predispose them to progress autonomously in the continuous exploration of more fitting alternatives.

3) The consolidation of methodology of study and the theoretical approach must be carefully cultivated; methodology is, after all, an extremely efficient science in the development of theoretical dynamics and individual operation. This development is a lifelong task, but if we manage to autonomously develop a habit of gradually organising our own knowledge and our own scientific vision (for the most part immature, incomplete or partially incorrect) throughout our schooling, it will be possible to screen, perfect, further and progressively expand our own cognitive system (reinforcing at the same time the organisation of the theoretic profile, an issue discussed in the chapter dedicated to the "Theory of methodology", in particular in the section dealing with the cognitive system in architectural education). The benefits of such a system consist of pushing knowledge towards completeness, facilitating its use and reducing unilateralism. The requirements of a vast and comprehensive cultural education consist of knowing how to integrate one's own 'vertical' knowledge of previous history with a 'horizontal' knowledge of the relationships between factors, in knowing how to penetrate the essence of a determined object from its general foundations, or, vice versa, knowing how to reach its domains

from its individual components. All this confirms the suggestion of an extension of the borders of architecture, strengthening the theoretical approach of 'fullness' and 'simplicity' advised by the ancients and reformulated by Liang Sicheng with the terms 'fullness' and 'substantiality'[13]: from this, scientific progress will almost certainly spring. Dealing with architecture does not consist of sitting around pontificating; the architect is called upon to inter-react with social reality, developing personal theories on the basis of praxis, and in this way will find him – or herself having to reconcile the training of the engineer, the economic intuition of the sociologist and the analytical virtues of the humanist with his or her own organisational approach. All these talents are indispensable in consideration of the modern complexity of the construction business, which requires participation in team work on many levels including going into private professional practice, and must therefore be studied and further developed.

4) The sublimation of ideological qualities and the concept of the profession.

Due to its importance, this issue will be taken up in the final section of this book.

As we have seen, our scholastic education lays the foundations, but one never stops studying; a vast quantity of new information appears daily, so much as to require constant effort to keep abreast. Assuming the ingenuousness of the 'possibility of grasping' everything from the formative phase on, the issue becomes the students' ability to 'seize opportunities', to make them capable of studying and developing their professional capacities and the concrete use of theoretical content.

The above digressions all concentrate upon the development of this type of 'scientific intuition', upon taking a correct approach to study and building a solid foundation. This combination of scientific intuition and theoretical foundation is the formula which will give the student an 'Open, Sesame!' to knowledge, along with which will come the intellectual freedom that a student will enjoy; he or she may then set themselves more daring objectives and begin to aim towards new heights.

In education, the role of the master is crucial – how can we otherwise explain the fact that the illustrious disciple often derives from the eminent teacher? But still greater is the influence exercised by these masters on the age itself. The American architect F. L. Wright, as well as being celebrated for his formidable architectural creativity, also distinguished himself for his eccentric self-esteem, so highly developed as to occasionally seem like disdainful arrogance towards the world. He held, however, a reverent respect for his 'maestro', L. Sullivan, to whose memory he dedicated one of his writings in his last years. In this he re-evoked his own past as assistant, the efficient and symbiotic collaboration with that master whose 'right hand' he was. Rather a picturesque admission, which in no way tarnishes the dignity of these two masters of two different generations, but if anything, provides a point for reflection. The surprising efficiency demonstrated before 1949 of National Central University in the training of architects cannot be separated from the laborious educational commitment of the champions of contemporary architecture (according to Taiwanese colleagues, National Central University graduates have made inestimable contributions to the local education system). Certainly, there is no profession where it is possible to arrive at omniscience as, after all, nobody is perfect, and we should

---

[13] Liang Sicheng, *Tan 'bo' er 'jing'*, in *Liang Sicheng wenji* vol. IV, China Construction Industry Publishing House, 1986.

therefore avoid being excessively harsh when judging human beings, whether they are schoolmasters or great maestri of architecture. Eventual gaps can in any case be filled by the efficiency of the collective (study, research or work) unit. The didactic success of a teacher is not determined simply by his or her preparation, but is rather created by a mixture of factors, not least among which is the behaviour of the students; only from the excellence of a similar educational unit can able talents emerge through new conquests for teaching, for production and for scientific research.

7.3.4 The persistence of imbalances in the pursuit of the international advanced standard

For some years, various idealists have nurtured the romantic hope of a metamorphosis of China from a poor and backward country into a prosperous and powerful nation, competitive enough in the various domains of science to quickly outpace the canons of international advancement, and our young students cast dreamy gazes at the highest seats of world knowledge. This is an understandable aspiration and, circumstances permitting, they should be encouraged to further their studies, even in the interests of long term national development. It is, however, opportune to underline how architecture differs in various ways from the purely natural or applied sciences: these base themselves upon internationally recognised universal criteria, and it is conformity with these criteria which determine the pursuit of the international standard. The development of architecture, on the other hand, depends on the progress of society and the vigour of the economy. There are many who maintain that it is difficult to achieve high standards when dealing with highly complex new structures in conditions of material poverty, and there are also those who, ignoring all others, ingenuously identify the international canon with the presence of works attributable to the 'grand masters', and only then declare themselves convinced. In reality, architecture is a special discipline, directed at society, at the solution of human habitat issues and the development of an optimal living and work environment. It serves the progress of the economy, reflects that of the culture and at the same time is a technological and artistic creation. This means that it is audacious, to put it mildly, to impose abstract or absolute criteria, suggesting mechanisms which are analogous with those of developed countries. In assessing their efficiency it would instead be opportune to observe the contributions and effective results from the point of view of the resolution of national and local problems in consideration of real contingencies. Precious potential is effectively hidden in this, the ability to inspire or contribute to the development of valid alternatives to the choices of the West which are equally efficient despite their diverse necessities. With the intent of underlining this I have had an extended discussion under the Chapter 'a theory of culture', illustrated by the achievements of H. Fathy in Egypt or C. Correa in India. This said, I have also insisted upon the inherent identity which is subject to the pursuit of the international canon and the resolution of real national problems. This premise requires the sober attention not only of young Chinese architects but also of those involved in the wider sense in the work of teaching, executing and managing architecture. If in this frenetic flux of urbanisation our work manages to produce improvements in a built environment called upon to host over 1,100,000,000 people – around a fifth of the entire human race; if we manage to offer future generations not an inheritance of insurmountable uncertainties, but the basis for a happy and comfortable future then we,

workers in architecture of the present generation, can claim to have made a substantial contribution. It is hopeful that the efforts of Chinese students, both within and outside the country, converge around this daring prospect, and they dedicate themselves unreservedly to their own studies, their own research and their own work.

Chapter 8
A Theory on Art

Of prime importance is the fact that, in creating their living environment, human beings base what they build on the basis of their own prerequisites, and begin by examining these and determining how to organise their lives, how to control and safeguard the economy, what strategies to adopt in using and improving technology; yet while engaged on these vital concerns, it is equally important that they formally attend to the 'physical environment' around them. Among the multiple responsibilities of the architect is the creation of a human habitat that is capable of providing the perfect organisation of physical space and a superlative artistic image; this premise implies unequalled creative potential on his part. The art of construction has inspired a vast number of essays containing a wealth of speculation centred, for the most part, on isolated constructions or small building complexes. Far from calling into question the importance of this individual art, upon which much research still remains to be carried out, there is an urgent need here to suggest an approach to the problem of environmental artistic production, beginning with the question of the urban settlement, still too often neglected despite growing interests.[1] The urban settlement represents in fact the 'work of art *par excellence*' of the human race – its most comprehensive realisation. It exercises upon the human environment an influence of much greater significance than an ordinary isolated construction or any other work of art, and a thorough investigation of its implications is therefore certainly more difficult.

8.1. The 'work of art *par excellence*': the urban settlements

Urban settlements are an immense artistic vehicle; tangible and corporeal, copious in quantity, vast in its dimensions, multiform in its typologies, and enduring in time; it can also boast of an abstract component. In an architectural environment there is in fact a beauty whose concepts transcend concrete appearances.

L. Mumford expresses it in thus: "The city is made of the geographical tissues and segments within the systematic organisational process of the economy; it is the theatrical arena of social actions, the symbol of beauty concentrated in a single body; it is the platform of the economy shared with the ordinary family, but also the stage for grand actions and human cultural progresses. Encouraging art, it is itself art; encouraging action,

---

[1] This goes mainly for the situation in China; Western architectural literature contains a certain number of extremely interesting works where the themes of architecture and architectural art are dealt with from the point of view of the city. Besides the bibliographical sources mentioned here, I recommend the following titles; generally speaking, however, research in this sense is not yet complete and requires further work. S.E. Rasmussen: "Towns and Buildings", first Danish edition 1949, first English edition 1951; Cambridge 1969, *MIT Press*. P.D. Spreiregen: "Urban Design: The Architecture of Towns and Cities", N.Y. 1965, *McGraw – Hill Book Company*. D. Gosling: "Concepts of Urban Design", St. Martin's Press, 1984.

it is itself a marvellous theatrical arena"[2]. The influence of the architectural context on man is thus enormous, and the mark left by pleasing constructions and the artistic space marked out by them will undoubtedly be enduring, if not everlasting. On the other hand, construction differs from drama, painting and the novel in the grave implications of any sub-standard formal development; while the others, if so regarded, can simply be sent off the stage, out of the exhibition or not distributed, this is not the case with architectural work which, once built, exists as a tangible integration of the collective heritage and, as it is intolerable that it should be off-handedly destroyed and reconstructed, the public has no choice but to accept it.

In the city there are ancient constructions, but new constructions and structures appear uninterruptedly with the passing of the months and years. Those which are new today will be artistic heritage in the years to come and, given lustre by the action of time, some will shine forth as symbols with a precise historical value. The city survives the untiring alternation of old and new, presenting its exterior as a singular conciliation of ancient and modern whose form is substantially the product of the superimposition of ages, places and styles which reflect historical culture and the epochal transition of the area in which it grew.

In the city there are mostly ordinary things, like houses, shops, streets, trees and buildings of every type; these are the indispensable elements of the urban agglomeration which determine its tone and general quality. The group of extraordinary components include singular or monumental works, as well as the streets and squares traced out by them, priceless 'ornaments' of the urban conglomerate, sumptuous 'safes' containing its identity and guarding its very essence. In the city, this great vehicle, we celebrate the marriage of man's artistic production and the artistic production of nature, whose 'works' – fields, trees, rocks, hills, rivers and oceans – are harmoniously integrated with the artificial 'works', which are to pay them homage through contrasts in a process of sublime, reciprocal exaltation. From an aesthetic point of view, therefore, the city and the other urban settlements are so rich and multiform as to earn the definition – anything but excessive, and perfectly summarising its characteristics – of 'work of art *par excellence*'. In reflecting upon the architectural art, it would be wise to bear this in mind, in order not to find oneself looking at the single tree in the forest, being a victim of one's own cognitive limits, ignorant of the real scale, importance and essence of the objects, unknowing jailers of our own imagination and creativity.

8.1.1 The comprehensive beauty of environmental art

A city consists of constructions, paintings, sculptures, gardens and monuments, elements of every type which as a whole could create a sublime artistic environment, almost like the pieces of a mosaic fitted into an extremely solid and compact body.

To pursue an ideal of individual completeness for the separate artistic components of the city would be anything but simple. Consider those architectural bodies, dominant both in size and number, as intended to flaunt a certain autonomy by offering themselves up as isolated bodies. And yet, once organised within a larger complex, the morphology of the individual construction joins the integration of the overall organisation, commanding

---

[2] Lewis Mumford, *The Culture of Cities*, 1938.

further reflection on the comprehensive nature of constructions and complexes. Human attention is naturally attracted to the whole, despite the fact that some of the principal constructions of a city tend to capture attention by virtue of advantages of topography or dimensions (as in the case of ports, airports and railway stations, or museums built within large green spaces), there by distinguishing themselves by their markedly individual character and imposing the uniqueness of their form on the observer, without however managing to completely isolate themselves from the whole. Architectural beauty thus has a comprehensive character determined by an assembly of compounded single bodies (the styles and contents change from time to time, depending on the location and conditions). The multiple thematic and formal implications of the single urban construction thus converge in a coherent and ordered system, and their numerical abundance and prominence of scale tend to embrace and enthral us, who must shy from neglecting the integrative functions of nature, parks, statues, paintings and works of art in general. The surroundings of urban central squares, green spaces and larger buildings, exalted by the presence of minor architectural elements such as a relief sculpture, a fountain, a flowerbed, or even a bench, a streetlight or a railing, combine to model the essence of the city. When this also implies a long succession of additions, it is important in every project to proceed to a harmonious coordination of the individual forms, composing them in a single body and removing any discord. From a similar whole a pervasive beauty will certainly spring, but the results will be even more valuable when we succeed in extending the parameters and creating a myriad of physical forms each with its own expressivity, coherent disposition and the essential beauty of a synthetic type; the pinnacle of urban art lies in just this. In the main quarters of historical cities of great cultural value like Venice or Amsterdam, the effect of greater formal harmony is punctually given by the whole; an analogous harmony distinguished the numerous metropolises and rural villages of ancient China, an atavistic legacy of the economic, political and social system of the feudal age.

8.1.2 The dynamic beauty of environmental art

The creation of a painting, a sculpture or a construction requires time (think of the centuries-long process of building the Basilica of St Peter); although there are orientative temporal demarcations, even the process of building a road, a square or an architectural complex reveals itself to be necessarily subject to dynamism, and may declare itself completed, suspended or in slow transformation within the prescribed times. Generally, though, as long as there is social progress, ferment and human presence, a principle of protracted evolution operates.

In the first place, the nature of urban construction is vital: despite their apparent staticity, urban constructions host the pulsing vibration of every variety of life and need which, through their dynamism, involve the surrounding structures. Each of us possesses our own parameters of enjoyment of the city, whether these are topographic preferences (the entrances and exits of roads, the corners of squares), seasonal (the flowering of trees the changes of the landscape) or temporal (the various historical phases, the festivities, the moments of the day); preferences varying according to personal interests (society, the economy, culture or the arts) and confirming the dynamic and multiform nature of urban beauty and the centrality of its most vivacious element: mankind. Human perspectives,

thought, knowledge and feelings are in continuous evolution, human activity constantly developing, and each day brings something new, and, as immobile as the surrounding scenery can seem, change remains intrinsic in man.

Secondly, urban construction has an expansive nature; the construction of the environment is subject to progressive processes of development and completion, and in virtue of this expansive nature it is possible to gradually correct and perfect original imperfections in later phases. In virtue of this expansive nature, the environment marked out by an excellent architectural complex finds itself exposed to the risk of deterioration (justifying periodic appeals for the safeguarding and conservation of historical remains), and this expansive nature means the architect must consider the work of urban planning a scientific calculation of eventual successive developments, forcing him or her to plan for the possible expansion and adaptability of architectural complexes. This expansive nature ultimately requires the architect – or planner – to assume the role of 'orchestra director' and develop strategies for the control and direction of construction processes. Despite being based upon individual construction, the architectural art of the city thus reveals a multiplicity of implications, as well as an unsuspected richness of resources and content, imposing a further expansion of cognitive horizons upon mankind. Construction and planning professionals should know how to grasp and exploit the dynamic connotations of the distinctive urban environment of the age, following the principles of planned construction, showing citizens the developments of a future city and satisfying hopes for a radiant tomorrow.

8.1.3 The particular beauty of environmental art

How is it that the layout of certain cities leaves an indelible mark upon those who experience it? In the production of the physical environment it is important to reflect upon how to exploit every possibility – from the general configuration of mountains and rivers to historical remains, to urban functions and architectural forms, basing production upon the development of each characteristic. A beautiful city always tends to shine with a 'unique' sort of beauty. As hinted, the city is the product of a synthesis of artificial construction and the natural environment, a synthetic system aimed at the utilisation and optimisation of natural space. The more concentrated the urban architecture and the denser the human presence, the more pressing is the need for natural spaces and the threat of environmental crisis, and the protection and rational use of nature itself is also therefore extremely important. Within the limits of the possible, we must protect the original outlines without neglecting the hills or watercourses included in the urban perimeter, treating even the strangely-shaped rock, the twisting stream or the centuries-old tree trunk with care. The nature surrounding urban space should be considered a 'precious loan', to be cared for with eventual restitution in mind. The observer, swept away by the proliferation of buildings, before the occasional appearance of such ordinary natural interludes feels almost as though he or she has, by luck, stumbled across a priceless glimpse of the Nanshan. Even though nature within urban spaces often already belongs to 'humanised' natural heritage, it is in any case indispensable to abstain from damaging it, seeking rather a beauty that though "… moulded by human arts, is inspired by celestial revolutions". The particular beauty of the urban environment is also determined by the

reception, the development and the conscientious safeguarding of various of its pre-existing architectural characteristics. Some historic cities distinguish themselves, in fact, for beauty deeply imbued with traditional heritage; the architects involved in the work of planning should observe and analyse until they have knowingly mastered the dynamics, in order to use them when planning. On the other hand, these same characteristics reveal themselves to be subject to gradual 'blunting' over the course of the construction progress, and therefore particularly exposed to the risk of extinction. As for planners, although they are principally dedicated to the construction of a particular building, in a wider sense they must not limit themselves to the structure in question, in as much as they are required at the same time to 'plan the city'. The 'mosaic' progress of the urban fabric requires meticulousness and patience in the laying of the pieces, especially when dealing with constructions of crucial importance, which can have profound effects upon the style and characteristics of the city, underlining inherited traces and introducing new ones or, vice versa, if clumsily imposed, irreparably damaging the equilibrium. It is with sober awareness of these implications, therefore, that the planner must manage environmental art in such a way as to harmoniously reconcile the rapport between artifice and nature and between history and modernity, attaining to a concept of art that is at once both 'resolutive' and 'innovative' and in which identity as much as variety are freely expressed.

8.1.4 The composite beauty of environmental art

According to a phrase of Mencius (Mencius, *Jinxin xia*): "That which is rich is beautiful"; the full or varied disposition of its contents also contributes to determining urban beauty. Human settlements can be central or peripheral, urban centres can be large or small and each supplied with its own facilities and systems, while life within the cities hums with a myriad of possible contents – more multiform in the larger city with its omni-comprehensive fabric. On the architectural surface of the city luxury and frugality, minuteness and vastness, refinedness and coarseness, ancient and modern, localism and exoticism, centres and suburbs, commerce and culture, all alternate, determining the multiform richness of its environment, hostile to any rigidity or monotony. The city is also characterised by its composite human presence, the vast variety of backgrounds, cultures, ethics and experiences; each individual possesses his or her own aesthetic conception of the art of urban design which contravenes any univocal law, imposing a conciliation of elegance and simplicity, of 'epic metre' and 'popular ditty'.

The architect is certainly beholden to set himself ambitious aims in seeking an artistic ideal of urban beauty, but the attainment of this cannot be anything but gradual and necessarily a compromise between refinedness and vulgarity. The widespread public taste for 'Pop Arts' should not be denied, but rather exploited to increase the tone and vivacity of the urban atmosphere. The architect must certainly undertake infinite calculations in order to erect excellent buildings which testify to the level of modern architectural culture, perfecting the appearance of the city and forcing him- or herself to fight and abolish the realisation of those ill-conceived projects which threaten overall harmony, this in spite of the fact that the potential alternation of good and bad within the urban fabric can in a certain sense contribute to feeding the 'composite character' of its beauty (Figure VIII-1). With the above considerations, I have tried to suggest a generic analysis of the principles

Figure VIII-1: Regionalization and hierarchy of environmental art

earthscape | regional landscape | city landscape | district landscape | communityt landscape

historical site | memorial site | transport hub | green space | waterfront | public center | industrial area | residential area

which regulate environmental art, but these are only a few examples of the myriad aspects left unexamined. The important thing is to force oneself to understand the dynamics, to recycle them in the praxis of creation and to progressively refine them so as to raise the artistic quality of the living and working environment. A general theory of architecture must also underline the urgency of a broadening of perspectives in the development and the execution of the constructive arts; in terms of space, this means submitting the art of the urban habitat in a wide sense and that of the individual construction in the narrower sense to careful supervision; in terms of time this means, rather, identifying in the environment itself a dynamic process in perpetual transformation and mobility, and in continuous planning. After all, that which we propose to create is an environment destined for man, and each single material construction exists in relation to a requirement of man: the object is so that man may use it, he is the requirement of its existence, its prosperity and its transformations. The residential environment must therefore adapt itself to human emotions and conform to an artistic creative principle which represents its departure and arrival point. Bringing together artistic intuition, sense and methodology in a type of planning which is at once 'spatial', 'temporal' and 'human' may give access to a limitless creative universe.

8.2. Necessity *vs* Freedom, Science *vs* Art

8.2.1 Through necessity to freedom

How magnificent works of art, urban and rural settlements need to be built exquisitely through painstaking efforts. We often hear of encouraging or stimulating "exerting creativity" from university education to design practice. There is nothing wrong with this thesis itself, but any architectural creation cannot exist without a foundation; rather, it is under severe "rigorous fettering conditions"[3]. Architects should regard these rigorous fettering conditions as a necessity to be considered and researched.

Any architecture is always the production of a certain temporal and spatial environment, always following a certain pragmatic purpose of life, always restrained by its circumstances, always constrained by a certain economic and technical condition, and less or more subject to intervention by the requirements of users and decision makers... These are a series of "preconditions" or even problems, that the designer can and should never avoid facing (especially the functional and economic conditions). On the contrary, they have to be fully studied and analysed. A design with a unique style is usually established on the basis of ingeniously solved multiple difficulties.

An individual building is relatively simple and has a more concrete programme, so that the research on design "preconditions" is relatively simple; but the larger the scale of construction, the more complicated the programme, the longer the construction period, and the larger the investment; the research on design "preconditions" should be more detailed and cautious and the "necessary" problems should be more clearly foreseen. I have to point out in particular that this "precondition" or "necessity" must be scientifically analysed in order to distinguish the real "necessity" from false ones. Why? It is because

---

[3] Professor Liang Sicheng's delineation.

the conditions or programs of some current designs have not undergone serious research and structuring, in which certain principles are combined with the subjective wills of decision makers and even designers. I do not mean that the will of a decision maker is always unnecessary, but that the will of the decision maker has to be seriously analysed, and correct scientific opinions should be retained as the direction, but unscientific parts should be modified through scientific argumentation. In the process of programming, the architectural professionals ought to draw the appropriate conclusion by means of serious research and surveys as well as the analysis of feasibility, and the decision makers should also respect the results of scientific study. Therefore, the works of design could be really rational and would get rid of the constraint of unnecessary "necessity". Only by fulfilling the precondition of scientific necessity, including the necessity of the aforesaid artistic principles, would an architect gain real freedom of creativity so as to genuinely design the form. Eliel Saarinen wrote vividly on the relationship between freedom and necessity; I would like to quote two passages as the conclusion of this topic: It is an easy task to let one's imagination run wild and to produce such forms as never before existed. But it is a difficult thing – and one which calls for much concern – to find just those forms that are expressive of the problem at hand. Accordingly, the value of art does not depend on one's rich imagination. This value of art depends on how one's rich imagination is mastered. "In der Beschränkung zeigt sich erst der Meister" says Goethe. Freely translated, we might put it thus: "To be a master means to master one's imagination". Imagination is not a free play of ideas, thoughts, and forms – yet it must have freedom of movement along its own course. It must be made free from rules and doctrines, except from those which constitute fundamental principles. Fundamental principles, however, fetter imagination only when the artist's creative ego is not in agreement with these fundamental principles. In the case where such an agreement exists, then through the strength of this agreement the artist must have the right to wander freely through the territory of his art, looking for new forms, for new modes of expression, and for new ideas in the development and enrichment of his art. In such conditions, imagination must be flexible for any modulation of expression.[4] Here Saarinen's comment "obeying the basic principle" to "stroll and roam in its artistic field" perfectly coincides with the meaning of poet Wen Yiduo's "dancing with fetters". This means the real freedom of creation must depend on the recognition and the constraint of necessity and the strict avoidance of subjective randomness. It is the theme of this subject.

8.2.2 Science and art: "split at the base" or "meet at the top"

The relationship between science and art should be also correctly recognized. Architecture belongs to both science and art, which is unquestionable. Certainly, it is understood that each individual puts different emphasis in his/her interest or research. For a discipline like architecture, the development of each sub-issue is the fortune of architecture. However, is there any relationship between art and science/technology? The French writer Flaubert used to predict that "as they move forward, art will be made more scientific while science

---

[4] Quoted from Eliel Saarinen, *Search for form: A fundamental approach to art*, pp304-5. Original publication of 1948 reissued by Kennikat Press, London in 1969; The translation into Chinese was by Gu Qiyuan based on the original 1948 edition, and published by China Architectural and Building Press

will become more artistic, at which they split at the base and meet at the top again"[5]. Actually this tendency objectively exists, and many scholars merely continue in this direction by using the intersection between architecture and natural or social sciences and the methodology of modern science. For instance, it is possible to develop the theory and design tools of architectural art via the multidisciplinary development (the development of lighting, illumination and acoustics in architectural physics provides more possibilities for creation of environmental art; and the exploration of architectural theory, including the artistic theory of architecture, depends on the development of behavioural science[6]), and to discuss more systematically architectural design and urban design from the viewpoint of totality through systematic thought in scientific methodology (the relevant researches include Alexander's *Pattern Language* and Rob Krier's *Urban Space*[7]).

On the other hand, the development of architectural science and technology gradually involves the conscious introduction of the rule of aesthetics into its content in order to discover the multiple ways in which it can be used. From the viewpoint of the General theory of architecture, we observe the developmental tendency of architecture based on the nature of architecture and consider that this idea should be predominant in our theoretical research and design practice. However, I must make it clear that although these works help to develop theories on architectural creation, to discover and expand the methods and approaches of design, and to properly use the achievements of scientific and technical development, the artistic creation of architecture still needs to satisfy function and representative form. The latter depends on the basic process created by the aesthetic talent of the designer, the inspiration of artistic creation, the artistic conception as the starting point of design, formal thinking and superior design skills aiming at the unification of the numerous contents and the perfect form and finalization of an outstanding work of design. A representative example is the Mexico National Museum of Anthropology, which is one of the outstanding cases of modern architectural design. The design successfully solved display, lighting, explication and other basic functional problems of a museum, and what is most exciting and impressive is its unification of design content and form. Mexican culture was reflected in its creation of formal aesthetics. The past and the present, time and space, nature and humanity of Mexican culture was interwoven in this limited but seemingly unlimited space and presented to visitors. The creation of architectural form and spatial layout, the beauty of folk culture produced by sculptors and craftsmen and the scenic landscape design of the garden were all together integrated into the interior exhibition and the scene out of the windows. The waterfall from the top of a magnificent bronze column symbolized the flowing of time in a significant way. This is indeed a monumental architecture, of which the architectural form takes on special significance. Good architectural design possesses intense artistic impression, which derives from its expressive force. This has been explained more clearly in the words of L. Mumford[8]. If we consider it as the relationship between art and science in

[5] Quoted from Xiao Junhe, *My New Research on the Mystery of Beauty.*

[6] J. Long, *To Create Architectural Theory: The Task of Behavioral Science in Environmental Design*, VNR Company N.Y., 1987

[7] Rob Krier, *Urban Space*, (English Translation) Academy Editions London, 1979

[8] The speech of L. Mumford at Columbia University, 1951; quoted from Isomura Eiichi, *Readings of Urban Problem*, Heilongjiang People's Press, 1988. This is gives only a glimpse into Mumford's thinking on "Art and

the much broader sense, we could see it as the spirit and foundation of urban construction and building as well as the architectural creation of artistic form. Thus we can say: how wonderful it is that science and art "split at the base" and "meet at the top again"! The broader the base is, the more exquisite the logical thought of science and the formal thought of art would be, the higher the level of 'at the top' would be and much greater would be the expression and impression of architectural culture.

8.3. Architectural creation based on Urban Design

8.3.1. To seek "integrity of development" from the "crisis of disorder"

We have discussed the beauty of the wholeness and the beauty of the specificity of urban/rural settlements as a magnificent work of art, and have illustrated that they were the general qualities of both Chinese and western cities, among which were the urban design modes and aesthetic principles of outstanding cases in some historical cities. Yet this complete urban design system was destroyed in the modern city after the industrial revolution, along with the economic and technological transformations, social changes and the emergence of the metropolis. In terms of the complication of the urban condition, the dispersal of construction, and the transformation of urban morphology from uniformity to diversity, the city has lost its intrinsic physical order. Some named this phenomenon the "crisis of disorder".[9] Some metaphorised it into "collage city"[10] according to the discordance of urban morphologies in different developmental stages of the city. They are both incisive, visual summaries. Should the modern city be in such chaos as not to obtain integrity, and thus have to abandon the principle of integration? That is like the ideas in J. Barnett's *The Elusive City*[11]. Or it is possible to continue to innovatively develop the principle of integration under these new conditions, as in C. Alexander's novel assertion "to create a growing whole in a city"[12] in his A New Theory of Urban Design. I will not discuss these in detail respectively, but from the point of view of the general theory of architecture, it will be impossible in general to create the absolute and unified beauty of integrity as existed in the elite areas of the ancient cities in the eastern or western world (the monumental city in the art of urban design in the time of Chinese feudal society or the Renaissance, which maintained the whole city in a certain form of absolute integrity, even if it could not be completely realized during the several centuries

Technology". "Architecture, on one hand includes the technical problem, and on the other hand, also involves the domain of 'representation', which means the methodology conveying the meaning of architecture to the appreciators and the visitors. Through its structural form, even the designer himself could be touched and it is endowed a certain function: feel elegant emotion once entre the palace; feel godliness once entre the church; feel academic atmosphere once entre the university; feel businesslike and efficient in the office. […] The architecture I am talking here is the permanent cultural stage setting…". "If the constructions in the city could not be sightly and exciting, the meaningless of constructions would never survive even though the technical forces were hugely applied […]

[9] J. Robertson, *Current Crisis of Disorder*, a paper for the *Symposium of Urban Design Education* in 1981

[10] Colin Rowe et al, *Collage City*, MIT Press, 1984

[11] Jonathan Barnett, *The Elusive City*, Harper and Row, N.Y., 1986

[12] Christopher Alexander et al, *A New Theory of Urban Design*, Oxford University Press, 1987; its thesis aimed to rediscover the principle of organic integrity, and to create a growing whole in a city.

of the Renaissance[13]). It is However still possible to engender a relatively unified, integral and identified composition in some parts of the city, which means forming diversity with certain rules, on the whole by a partial, relative integrity. That should be our aim.

8.3.1.1 A new design conception for the historical preservation areas

For the existing historical urban areas with not only cultural value but also integral beauty, we ought to try our best to preserve these areas. Preservation for historical areas does not only mean the protection of the cultural heritage buildings or sculptures themselves (the "objects") or the scientific restoration of demolished or damaged areas, but also means conserving even exterior areas with unsophisticated "empty" spaces, and environments with integral beauty, so that the "townscape heritage" of the city will not be easily destroyed. While the historical cultural environment belongs to the historical heritage, it is still the place where people reside now. Therefore, not only should architectural scholars, historians and craftsmen be appointed to the works of restoration and maintenance (which is not a simple task but a specialty of science and art and a component of the architecture in development) in the historical urban areas, but also architects and urban planners should be required to adapt these areas to modern life, to endow them with a new modern atmosphere within their historical and cultural environment and to maintain the original urban structure and fabric by using the new environmental concepts of design and by introducing the necessary content. This kind of planning and design is usually difficult. The creation of a well-done piece of work requires a designer with a wide range of cultural knowledge and creative research, a relatively long period of exploration and the cooperation between different stakeholders.

8.3.1.2 Traditional urban context in newly developed areas

On the other hand, there could be more freedom to create the new style of our times and to explore the new urban mode in the areas newly constructed within the historical urban areas; but if we are not to lose sight of the basic concepts of the new architecture of our times, we have to depend on the different historical, geographical and cultural contexts of different cities in order to develop their traditional identities on different levels and in diverse ways. That means combining the new design with the old cultural groundwork. In this way, in our urban construction we would avoid a mechanical and passive "collage", and instead achieve a positive "tessellation" design by means of a conscious creation by the designer based on objective conditions.

8.3.2 To preserve and develop existing urban identity in the "identity crisis"

Today, the cities of the world are facing a so-called "identity crisis".[14] The traditional urban identities were eroded or were destroyed by a great number of self-expressed "strangers" – vast dimensions, discordant shapes and clashing colours. And due to the lack of integrity, the new developed areas had no identity at all. Machine-made and self-serving architectural designs fill up our cities today. Each individual building possessed its own

[13] Jonathan Barnett, *The Elusive City*, Harper and Row, N.Y., 1986
[14] "Identity crisis" is raised in the discussion on the issue "The Asian Urban Identity" on the 1st ARCASIA Conference in Manila, 1984.

style and respected its own individuality, but the city as a whole lost its individuality and identity, and physical disorder prevailed. In architectural creation, the design of the form should accord with the local conditions and combine with its context to exert its intrinsic expression. It should not be a transcendent, unchangeable and ossified form, which can be applied anywhere. That is not a new critique. However, in actual terms of the widespread architectural ideas of the international style in the past and under the impact of certain current fashionable architectural theories, the production of architectural form was neither a serious expression of its intrinsic content nor a creation in accordance with its surrounding natural and artificial context. A fashionable and transcendent preconceived form which depends on the personal interest or taste of the architect appeared to become dominant. It also seemed that the designer could design anything if his presentation was "convincing enough". If the ossification of some identities of traditional Chinese architecture, which were copied everywhere without analysis, is a demonstration of *apriorism*, the fact that a certain architectural form was sold as a fashionable style it should be seen as another *a priori* demonstration. Those problems have been seriously addressed by some western and Asian architects. The efforts of third world architects, emotionally influenced by the liberation from the colonial cultures, to combine architectural culture with local identity, folk atmosphere and the spirit of a new age are certainly worthy of respect. This opinion has been discussed in the chapter "A Theory on Culture". The problem of urban identity has been gradually recognized in China. In recent decades, we were proud of our huge amounts of construction. However, after the nationwide wave of building, people suddenly found architecture "in the south is the same as in the north" and "in the city is the same as outside the city", and became more and more dissatisfied with, and critical of, the boring and uniform architectural styles. Although different people's perceptions of this problem do not concur and the relevant treatments might not be appropriate, there is a consensus that the "identity crisis" is now evident in China. The development of urban identity is a challenging task. First, we have to recognize accurately and understand the identity of each city; secondly, we need comprehensive scientific research and artistic in-depth scrutiny of the issues including how to discover, protect, inherit and develop the identities of some cities and how to achieve creative designs.

8.3.3 To search for physical form through the whole process of urban planning and development

Architects participate in the multiple activities of the construction of the built environment, in which his/her main task is to generate a proper living environment for human beings. An architect, with his/her broad knowledge background, should be involved in the work of urban planning and able to create forms using his/her professional culture and design skills, even though the task of an architect is not limited to the creation of the physical forms.

In the creation of the forms of the built environment, building design is only one of its components. The artistic design of the environment runs through the whole process of urban planning, and penetrates into every aspect of planning work including site choice, land use, the traffic system, spatial layout, the environmental carrying capacity, the distribution of construction projects, the use of natural resources and the preservation

of cultural heritage. Different relevant treatments need to be inputted by considering the different phases of works, the extent of problems and their detailed contents.

We also ought to remember that the search for environmental art is not always a unilateral process. It is a dialectic process that goes deeper and becomes more concrete as it is repeated through the feedback loop between design, the practical results and the emerging new conditions (Figure VIII-2).

8.3.4 'Urban design' is without doubt part of the domain of architecture

The contradictions and complexity of modern reality require that, in the process of planning a building, the architect is able to take into consideration the multitude of implications described above. This is unrealistic for any single architect. What is required is that more and more architects and scientists carry out comprehensive parallel research into the city or the area in question, developing guidelines upon which to base urban development, architectural design and landscape design.

Presenting a map of the Master Plan is not enough to guarantee the harmonious functioning of the urban system, and it would be much better to provide an 'urban plan' which functions as a guideline. In some cities, wholly original organisational strategies with uniform criteria are adopted: consider the 'Urban design plan' in San Francisco, the 'Midtown Cultural District Plan' in Boston, the 'Osaka Amenity Plan' in Osaka or the 'Urban design' undertaken in Yokohama, all normative, technical, methodological, theoretical or tactical approaches, all unanimously orientated towards the development of a single coherent guideline which can provide the city with a fundamentally uniform system in the following terms:

Protecting and supporting the particular typology, the artistic compositions, mechanisms and material qualities; Ensuring the protection of historical heritage, promoting its temporal continuity; Protecting and enlarging natural patrimony, encouraging its spatial expansion.

Further research into human needs, proceeding within the limits of the possibility to: satisfy the multiple demands and little by little developing the characteristics of suburban areas to provide amenity to the population; proposing an analysis of the creative precepts of architectural art aimed at the development of new expressive techniques (Architectural image); encouraging research into the strategic options of urban development.

The implementation of this 'urban design' consists of specific procedures which are, first, to carry out an examination and revision phase, culminating in ratification - by unanimous acceptance of the planning norms; in the following phase these norms are uniformly inserted in the construction praxis, and thus submitted to further examination and revision upon the expiry of a precise deadline; submitting 'urban design' to a similar test period of praxis has an extremely positive function in the qualitative improvement of the living environment.

In various publications we have seen the recovery of an old musical metaphor: the identification of the architectural arts with the 'materialisation of music', the architect as the 'orchestra director', the urban map as the 'score'. There are naturally some 'wrong notes' in this analogy, as there certainly is in the bold likening of the components of urban design to 'musical notes'. In fact, the architect today enjoys an ample margin of freedom,

and is not forced to scrupulously follow the score as much as to harmoniously adapt to the 'theme' of the song and identify it in the current physiognomy and the natural-historical dimensions of the urban environment and exploit the project to give vent to his or her own creative resources. Piazza San Marco is an illustrious example, unanimously recognised as such by Chinese and foreign planners. It is the product of a thousand years of progressive transformation, over the course of which successive generations of planners have continuously recovered and developed the planning principles imposed by their predecessors, so we can still today see there, as in all other recognised examples, a multitude of theoretical and philosophical principles for further recovery and creative development.

Overall, from the point of view of a theory of architecture, artistic research in this sense cannot be limited to individual production, nor declare itself satisfied in the execution of a handful of technical principles relative to the planning of architectural complexes, but should rather choose the art of the settlement as its perspective, and develop its artistic construction from urban design. This last should incontestably fall under the domain of architecture, a belief shared by old Eliel Saarinen, according to whom "urban design is a sector which no architect is allowed to neglect". The architect must therefore force him – or herself to cultivate and exercise a personal 'sense of urban design'. Various talented architects in professional praxis have in many ways diverted their attention from architectural design to the analysis of urban design and research into the problems of the city, confirming the possibility of and need for an expansion of the borders of the architectural arts. It should here be clarified that the components of urban design are varied, ranging from cultural, economic and social research into the city or region to prognostics on its future development, touching upon any possible model of urban growth as well as the complex series of administrative processes of the metropolis. The digression offered here, however, must limit itself to emphasising models of urban development, pausing briefly to examine the concept of the city and architecture.

The relationship between the artistic creation of proposed building and its surrounding environment: accordant or expressional? On the expressional aspects, will it be restrained, moderate, or extreme? How to choose the means to express? Which kind of style will be demanded? All these conditions should be well coordinated. To search for form should depend on the presuppositions including the integrity of the city, the characteristic and the contents of the buildings, the location and the circumstance of the site and other factors (which include both positive and negative conditions).
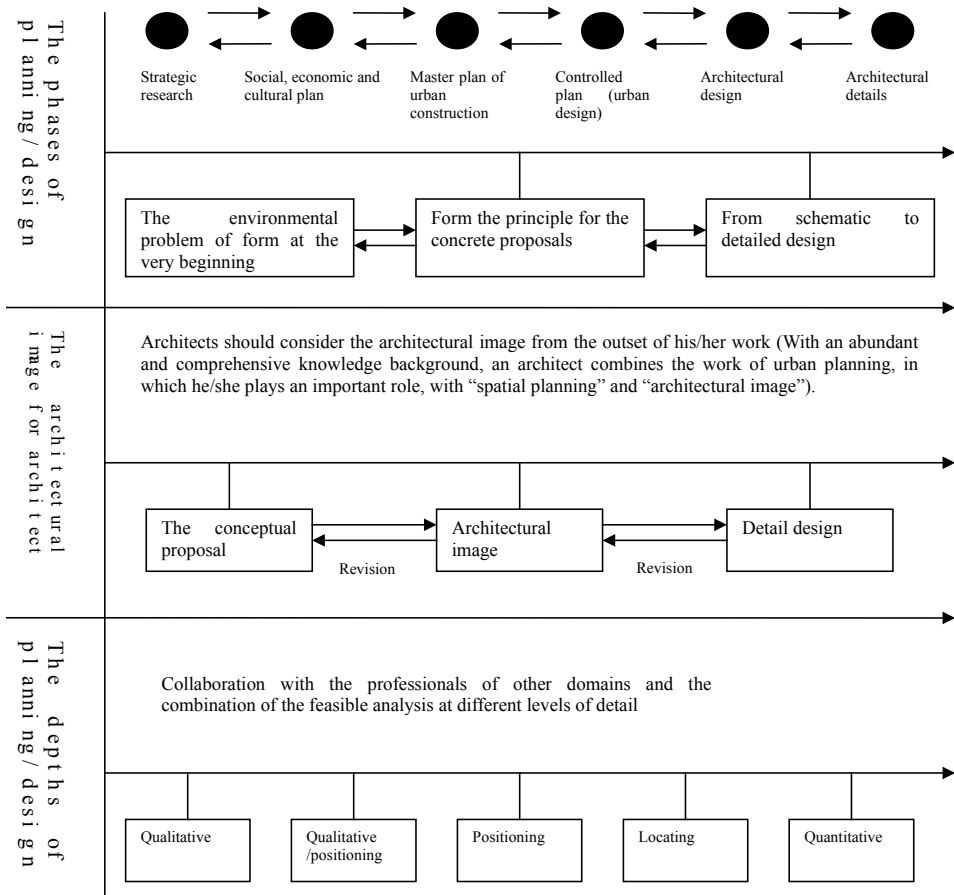
Figure VIII-2: An exploration of the "architectural image" and the role of an architect

The creation of the architectural form should consider and reflect the temporal, local and contextual requirements. These special requirements are established on the following conditions:

The position of urban geographic environment in the region – the natural geographic conditions;

The urban context – the historical and cultural backgrounds;

The urban pattern;

The local architectural style;

The identity of a certain area.

Chapter 9
A Theory on methodology

The theoretical basis and the applicable approach of the general theory of architecture will be discussed in this chapter (other relevant issues are also included to support the arguments). Due to limitations in the length of text and the existing understanding of the issues, I will concentrate on two aspects, namely the "systematic thinking" and the "trans-disciplinary approach". Also, in order to unify the topics of the chapters in this book, this chapter was named "a theory on methodology", from which I hope it will be possible to develop further research.

9.1 Development of systematic thinking in architecture

9.1 The "systematic thinking" and "trans-disciplinary approach" in *De Architectura*

Since architecture is a synthetic science involving both basic theory and practice from very ancient times, its simple systematic thinking has been under development for a considerably long time, and can also be found in the oldest architectural literature in history – *De Architectura* (Ten Books of Architecture) by Vitruvius. Here, I would like to cite some interesting points (which are all from the first book of "The Education of an Architect").[1] These citations represent the fundamental methodological ideas in *De Architectura* of Vitruvius. The delineation of sectors of architecture in *De Architectura* can be summarized in the following diagram: like the composition of any other academic system, the theoretical framework on architecture in *De Architectura*, though it reflects the historical limitations of its time, presents a simple systematic way of thinking. This book had a significant influence upon the subsequent generations of practitioners. For example, important works of architectural literature, e.g. Alberti's *De re Aedificatoria* (On Architecture), published in 1485, was hugely influenced by Vitruvius's work in its

---

[1] Vitruvius, *De Architectura*; text quoted from translation by Morris Hicky Morgan of the 1914 edition of Vitruvius: *The Ten Books on Architecture,* Harvard University Press page 1, 10 and 11. The Chinese translation was by Gao Lütai, China Architectural and Building Press, 1985. "The architect should be equipped with knowledge of many branches of study and various kinds of learning, for it is by his judgment that all work done by the other arts is put to test. (This suggests that in ancient times it was already recognized that architecture was multi-disciplinary by nature). But perhaps to the inexperienced it will seem a marvel that human nature can comprehend such a great number of studies and keep them in the memory. Still, the observation that all studies have a common bond of union and intercourse with one another, will lead to the belief that this can easily be realized. For a liberal education forms, as it were, a single body made up of these members. Those, therefore, who from their tender years receive instruction in the various forms of learning, recognize the same stamp on all the arts, and an intercourse between all studies, and so they more readily comprehend them all. (This shows that ancient architecture already recognized the organic nature of the knowledge structure, the relationships between the disciplines, and their inter-disciplinarity.). For an architect ought not to be and cannot be such a philologist as was Aristarchus, although he must not be illiterate; nor a musician like Aristoxenus, though not absolutely ignorant of music … For, in the midst of all this great variety of subjects, an individual cannot attain to perfection in each, because it is scarcely in his power to take in and comprehend the general theories of them. (This shows that ancient architecture already recognized the wide-ranging nature of the knowledge required, and the necessity to extract general theories that were relevant to architecture and the formation of systematic thought.)"
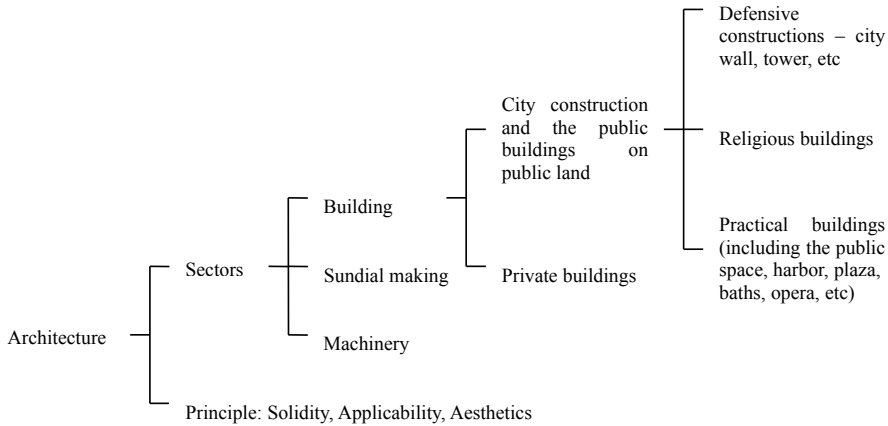
The diagram of the delineation of architecture in Vitruvius's *De Architectura*

structure and its content, and was also an outstanding treatise of classical architecture.

9.1.2 The birth of *Beaux-arts de Paris*

Beaux-arts saw the birth of formal architectural education and was a driving force in the history of architectural education; but the separation of theoretical research and design practice was without a doubt a step backwards for the integral recognition of architecture. The development of modern natural sciences, the philosophical impact of Cartesian and Newtonian ideas and the emphasis on analytical methodology encouraged the great detailed division between disciplines, which was a progressive tendency. Yet it also resulted in the narrowing down of the conception of architecture. The emergence of modern architecture, which opposed the copying and imitation of traditional forms, emphasized that form follows function and tried to redefine architecture on the basis of modern science and advanced technology, which engendered its own creation; until the 1930s, some new changes happening in the development of the sciences led to further developments in two directions: the macro and the micro. The new academic *ethos* also influenced architecture and urban planning:

On the one hand, it was the development of specialization, by which the divisions of science became more detailed and led to diversification in its theories. The advantage of this development was to further promote theoretical research, but it also brought a unilateralism in theoretical thinking which concentrated on only one aspect and ignored others or even "pursued the extreme presentation as its end". Although there was a great deal of authentic knowledge in these theories, the fetishism of complexity and speciality made architecture totally confused and chaotic. To face this condition, Eliel Saarinen reemphasized the "common sense" problem when he tutored his students. He often ironically said: "Common sense is the sense of the less common now". Thus another requirement emerged which was a new synthesis at a higher level: not only to reveal the intra-relationship of an object but also the interrelationship between objects; not only to see the individual but also the whole; not only to research the static state but also the

dynamic flow…, which meant developing practical thinking to the complicated systems level so as to create a framework that was more complete. In the architectural and urban planning domain, "Ekistics" (the planning theory of human settlements) can be seen as a representation of the use of modern systems theory and scientific methodology.[2]

9.2 Modern systematic thinking and the trans-disciplinary approach

9.2.1 Systematic thinking in Ekistics

As we discussed above, the development of science from 1930s demanded a new synthesis on a higher level, so as to form an integral and complete theoretical framework; for example, Nicolas Bourbaki proposed a structuralist methodology for mathematics in order to discover the rules of all mathematical knowledge; Saunders MacLane and Samuel Eilenberg tried to use category theory and functional theory as the foundation for unifying mathematics; Einstein's research into a unified field theory of gravitation and electromagnetism, etc. Influenced by this wave of ideas, C.A. Doxiadis, a Greek architect, established "Ekistics" within the field of urban planning. It is a science where the research object is every form of human settlement including the building, the village, the town and the city. It focused on the interrelationship between humans and the environment, and emphasized study of human settlements as a whole by carrying out a comprehensive, systematic and synthetic research of political, social, cultural, technical and other aspects. I will not cover all aspects of Ekistics in this book, but will introduce briefly its systematic outlook and scientific approach, which will be helpful for the discussion of the general theory of architecture.

9.2.1.1 Use of systems theories

Doxiadis asserted that "In order to build a balanced world for human beings, we must use a systematic approach to deal with all problems and avoid an unilateral vision which only considers some certain factors or a special target. The only way for us is to constantly establish the new orders to get rid of the chaotic situation that we are in."[3] It means that he tried to see human settlements "with a systematic approach from different viewpoints, which means viewing all knowledge of human settlement from the angles of economists, sociologists, politicians, administrators, technicians and artists". In detail, he tried to include every discipline concerning human settlements, which had been previously researched separately, into the framework of "Ekistics" so as to overcome the segmentation and the confusion of the relevant disciplines.

9.2.1.2 The systematic research framework of Ekistics

Doxiadis wanted to establish a framework that was helpful for the synthetic systematic analysis of settlement research. This framework, from his point of view, had to agree

---

[2] Zhang Xiaoming, *The Research on Doxiadis and Ekistics*, Master degree thesis of Tsinghua University in 1985, supervised by Wu Liangyong; the relevant texts in this chapter are quoted from this dissertation and other relevant literatures.

[3] Constantinos A. Doxiadis, *Order in Our Thinking: the Need for a Total Approach to the Anthropocosmos*, in *Architecture Year Book*, p. 136, 1974.

with the following requirements: 1) It can precisely define the entire human life system cycle, in which every part can fit its exact position within the framework; 2) The relationships between every part of the human life system can be all represented, so that we can understand the operation and transformation of the whole system; 3) To institute an approach for evaluating and measuring every part of the human life system and the interrelationship between them, in order to clarify the relative importance of the component parts.

Accordingly, Doxiadis proposed a framework on human settlements in the 1960s, which was named the "Grid of Ekistics". In this grid, the vertical axes indicated the human life system, i.e. human settlements, including five factors: nature, human beings, society, building and communication networks; the horizontal axes were 15 units of human settlements (individual, room, dwelling, residential cluster, small neighbourhood, neighbourhood, small town, city, big city, metropolis, urban agglomeration, megalopolis, city-region, city-continent and global city).[4] After the 1970s, he developed a larger "Matrix of Ekistics". Within the five elements of its vertical axes, each element was sub-divided into several factors. There were a total of 258 factors in these five elements, so that 258x258 (66,600) relationships were produced. The horizontal axes included 15 units of settlements and 10 temporal variables, which came to a total of 1500 items. Thus, the complete matrix made up by the vertical and horizontal factors formed 100,000,000 nodes.[5] The matrix emphasized the interrelationship and inter-influence between all factors, and tried to include all the components of the human world.

Apart from this systematic theoretical framework, Doxiadis's Ekistics also included a hierarchical structure of human settlements (which I have mentioned in the chapter "A Theory on Settlements") as well as the idea of dynamic development, which we will not introduce here. Although we will not discuss the methodology of Ekistics, the logical and precise thinking of Doxiadis's matrix of Ekistics can promote the production of new ideas. However, if we do not have a focus of research, it would be impossible to analyse the 100,000,000 nodes separately within the limited time-space and under the existing conditions. Doxiadis's Ekistics thus only worked as a theory or an academic framework.

Besides the magnificent framework of Ekistics, in the relatively small scales of research, i.e. the disciplines related to urban design education, there were other attempts in the form of a matrix, in which the research aims were much more concentrated. In this matrix, the "hardware" of the city, including traffic, infrastructure, land use, housing, real estate, suburbs, recreation, tourism, metropolitan area, and region, was grouped under one aspect; and the urban system, urban sociology, urban geography, urban history, urban economy, psychology, architecture, landscape architecture, traffic engineering, urban regulations, real estate development, politics, and public management were grouped in the other; only the group "A" (on urban morphology) of the "community and environmental knowledge"

---

[4] He thought that *Grid of Ekistics* "can help us to categorize all our knowledge on settlement through a unified approach."

[5] Doxiadis said: "Although this number sounds horrible, this system is very useful, through which we can orderly record every existing and emerging things in the human system for whatever considering them as a whole or separately reviewing a certain part of them." [...] "In this matrix we may precisely mark the research object, whatever it is a small town, a city, a natural environment or a society." "If we locate a special issue in a matrix, we will analyze where we are and where it is going to be developed."

Mono-disciplinarity	Independent specialization	The early disciplines in architectural education
Multi-disciplinarity	Developing from disciplinary isolation to gradual integration but without harmonization	The effort to reform the courses and the methodologies on architectural education in universities
	Improvement of disciplinary integration	Cross-disciplinary study and research being gradually implemented in scientific research and graduate education

derived from these two aspects. This would have given rise to 81 items; if we counted group "B" (on organization), "C" (on technology) and "D" (on systems), it would involve a gigantic framework. This illustrates the fact that those large frameworks would still be too complicated to understand if we did not concentrate on a specific object or aim. Hence, we need to search for a feasible approach within the hyper-mega system.

9.2.2 Towards a trans-disciplinary approach

If we understand the development of methodology in modern science through the transformation of disciplines, this will help to enlighten us on the development of the architectural system.

9.2.2.1 The development from mono-disciplinarity to multi-disciplinarity

This is a general developmental tendency of modern disciplines. There are many different ways to illustrate this.

9.2.2.2 Inter-disciplinarity

The expansion and enrichment of various disciplinary domains brought about the development of marginal disciplines. In the research on urban planning, the integration of disciplines and urban studies with different knowledge backgrounds promoted the formation of marginal disciplines including urban geography, urban sociology and urban (architectural) economy; the theory and methodology of research on humans and the environment was developed from the behavioural sciences; on cultural issues, the development of architectural and urban culture derived from the research on history, geography, philosophy and comparative culture; meanwhile, the interpenetration between urban and architectural arts, painting, sculpture, craft arts and landscape architecture has expanded the foundation and the development of the "environmental arts".

9.2.2.3 Trans-disciplinarity research[6]

The city and architecture are comprehensive domains. If our research is only based on inter-disciplinarity, it would have an extraordinarily large number of possibilities – the

[6] Enrich Jantsch, *Inter-and Transdisciplinary University: A Systems Approach to Education and Innovation*, Dec. 1971. *Trans-disciplinarity,* A. Cuthebert, Chapt. 2, MSc Thesis, *Urban Design Education*, Heriot-Watt University, 1980.

number will be stupendous, e.g. Doxiadis's matrix with five elements respectively in both horizontal and vertical axes (nature – human – society – building – network and economy – politics – social-science – technical-profession – culture/art) had 3,355,431 possible intersectional nodes, but his enlarged matrix had 100,000,000 nodes. Although these intersections possessed the theoretical value to promote the emergence of new ideas, it is impossible to research generally within the limited time-space and resources/conditions. Thereby, we ought to develop the surrounding disciplines of architecture with the core issues and emphases; and the interdisciplinary research between architecture/urbanism and other relevant disciplines has reached a certain level in recent years. If we can start from "architecture" to extend our research in certain directions or look for the intersections within the relevant disciplines in order to reflect the "architectural themes", our knowledge domain would be no doubt expanded, by which the research would be much more concentrated and easier than the any exploration of the countless intersections between disciplines. For example, taking architecture as the starting point to absorb knowledge from anthropology, psychology, sociology, economy, history, geography, ecology and aesthetics will promote the development of architecture on to a higher level. This theoretical framework could be called "Trans-disciplinarity". It means synthetically digesting the relevant knowledge of the disciplines surrounding architecture, and the related methodology could be called "itrans-disciplinary synthetic methodology". Certainly, "knowledge is boundless". The effort of recognition of architecture will never end, which, in my opinion, should just be considered as one possible direction.

9.2.3. Methodological basis for a general theory of architecture

From the methodological point of view, in drawing up a 'general theory of architecture' one should attempt an approach to human settlement systems using the methods of Transdisciplinary Research, i.e.: 1) Making use of the theoretical, methodological and technological outputs of modern science; 2) Knowing how to make use of the methodology of relations between the whole and the parts of complex systems, thus encouraging the development of a highly systematic overall approach from the starting point of this composite scientific framework; 3) Within the holistic framework, mobilise one's own 'genius' in the resolution of complex problems, transforming – through 'systematic decomposition' – the complex into the ordinary and progressively identifying key constituents. This said, let us proceed to a comparative analysis of the three following methodological approaches: the first consists of an expansion towards the exterior of the borders of architecture, aiming to strengthen the reflection upon unknown factors within an interdisciplinary type of research, a strategy with which numerous foreign academics have already found success – think of K. Lynch's research into the urban image and the contributions of I.L. McHarg to city ecology – and to which Chinese students of various scientific backgrounds are also tenaciously devoting themselves.

The second foresees a movement towards architecture from neighbouring disciplines; consider the landscape research carried out by Chinese and foreign geographers, or the involvement of the geographical disciplines in fields like planning or construction, and, therefore, of the involvement of the cultural and geographic-historical in fields like urban design or construction, the multidisciplinary research into the culture of the Grand Canal,

the Yangtze River or the Silk Road, as well as the widespread sensibility of the sciences towards the protection of the great historical cultural cities and the various developments in the field of the city and of architecture, etc. The third, the 'trans-disciplinary-scientific approach' shows a propensity to expand outwards while conserving the original nucleus, and the study of the human settlements therefore demands a comprehensive vision capable of grasping the multiple implications of environmental construction and offering a framework in keeping with a 'general theory of architecture'. The above analysis is only a careful and cautious schematic reconstruction of the disciplinary structure outside architecture: to quote a noted phrase of Einstein, "We could use a great circle to represent our knowledge and in any case, outside the circle there could not but be a multitude of empty spaces interpretable, in my opinion, as ignorance; the points of contact between the circle and the outside spaces increase proportionally with the dimensions of its surface and the length of its circumference. This suffices to understand the real scale of unknowns."

From the point of view of a 'general theory' of architecture or the 'science' of human settlements, the inside and the outside of this circle appear full of empty or suspended areas awaiting examination. Perhaps man has not thus far realised their importance, and yet this knowledge would perhaps manage to inspire a planned expansion of scientific vision, with research aiming at progressive organisation. As regards the concrete arrangement of a solid framework and the clear identification of sub-systems, we must await further work. In the methodological aspect of the general theory, we can also identify the content of the 'science of sciences'[7] of architectural knowledge, which is indispensible not only to those researchers involved in research into the architectural sciences in the stricter sense, but also those dealing with construction management, as well as those responsible for decision-making in construction and development policies. It is also in a condition to promote research arising from the developmental needs of architecture. There is also another aspect which requires further clarification: the synthesis of the universal character of systems and research into the particular.

Global transformations and the growth of architecture impose upon the subject an expansion of his or her field of vision, triggering ever more comprehensive architectural research beginning from the entirety of the system under examination. This does not however authorise the adoption of the merely 'macroscopic' aspect of architectural theory. It is equally important to strengthen research in a 'microscopic' sense and, together with the other sciences, undertake analytical studies to further deepen our structural knowledge of the whole without neglecting the individual functions, promoting the understanding and description of macroscopic phenomena and their internal dynamics, substantiating and refining the parameters of research from ordinary experience to the phases of organisation, from the determining of quality to the conjoined analysis of qualitative-quantitative determinationi[8]. The 'solidifying' of a flexible science like architecture is certainly a good thing, and it is therefore legitimate to maintain the existence of a necessary and complementary relationship between research into the universal and that

---

[7] The term *Kexuexue* – the science of sciences – appeared in Great Britian during the Second World War in the terminology of Bernal, Blackett et al, who applied it in the search for rules of scientific development, defined in "the Science of Sciences".

[8] Li Xiaoming, *Weiguan yanjiu moshi yu xitong zhengtixing*, in "Guangming Ribao", 1987.
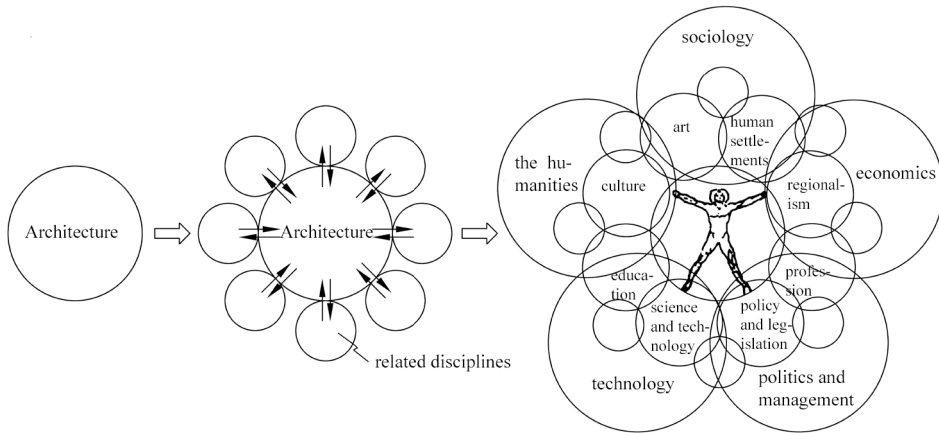
Figure IX-1. Studies on the contribute by McHarg and Lynch.

into the particular. It is in this sense that the supporting principle which I have repeatedly pronounced in the past, and which states that 'architecture must be developed both in width and in depth' should be understood.

9.3. The Application of 'A General Theory of Architecture'

The development of "the general theory of architecture" not only depends on theoretical exploration but also needs to be examined and improved in practice. Therefore, I will discuss some existing crucial issues in the architectural practice from this point of view.

9.3.1 Architecture, urban planning and urban design

9.3.1.1 "Programming" – systems engineering

We have covered this issue in "A Theory on Art". Our conventional architectural design approach and working procedure are: receiving the program (usually provided by the client) → the finalization of program through the architect's revision → report to the relevant governmental administration as a project → permission of land use → architectural design according to the program → several revisions → permission and finalization of the design → construction → delivery to user. If the building is not appropriate to actual use, the client will change it himself and will not necessarily ask the original designer and constructor.

The negative results are usually: inappropriate design, partial reconstruction, waste of investment, and damage to the original integral design. People have been accustomed to this process, which is actually not very scientific. One of the important deficiencies is that the stakeholders, whether they are clients, political leaders, or some architects, did not pay attention to the "programming". Thus the worst scenario was that the program was defined hurriedly without the users' real understanding of the use requirements, the decision-makers' thorough studies on the project and the architects' active revisions. I used to visit several Chinese cities for urban research or join the jury of design and

planning competitions, in which many projects were failed usually because of the crucial mistakes in design programs (i.e. an inappropriate site, project or design concept).

By using an inappropriate "program", it would have been very difficult to create an effective design. Even though the jury could give several compensatory suggestions, it would have been impossible to make the crucial corrections. In general, the "programming" is an intensified process of design knowledge on methodology. A program is not only established on the general knowledge of design, but also based on the reaction and evaluation of several completed design projects, in which the summary of experiences and lessons could be the foundation of the program for creating similar projects in the future. This process should be constantly repeated.

Programming includes the problem statement and analysis, which itself is a form of scientific research. It is particularly necessary for the large projects. It is also comprehensive systems engineering. For instance, in the research into urban architecture for the 11th Asian Games in Beijing, we used the theory of systems engineering, based on the combination of historical research of Olympic projects and Beijing's existing urban conditions, to carry out a systematic analysis, impact analysis and feasibility analysis and to look for the best means of creating Beijing Asian Games constructions, in which we proposed a reasonable approach in order to obtain better economic and social effects. In accordance with scientific theories and a great amount of data analyses, our conclusions provided scientific support to the decision making[9]. We must uphold this approach for large-scale projects:

(1) Dynamic development

When we introduce the conception of Ekistics into architecture, it will be very important to emphasize the time factor for the architectural design in general, especially in large-scale building projects. Human settlements are a living organism including humans and society and they are also a dynamic system undergoing constant growth and transformation. Thus, we are dealing with not only a stable 3-dimensional but a dynamic 4-dimensional space. We have to deal with architectural problems from the viewpoint of dynamic development. For large projects, we should establish the design idea and a working approach based on the concept of the "building process" (conventionally we only regard such projects as the "enlarged" "one-off" architectural designs of "big buildings" or "big yards" without taking into consideration the "building process" factor). Yet the enlargement of the scale of design object must necessarily introduce the effect of the time factor in building and thus complicate the design work. A large-scale project is not the design of one individual building but consists of several components. It usually cannot be completed in an instant but by a continuous, phase by phase, and even intermittent building process. In urban planning, it requires a close integration between the master plan and the zoning plan; the consideration of investment-production relationships and the budget of local government or investors in economic terms; the examination of its impact on the formation and development of the urban environment in its architectural layout in order to resolve the potential proliferation problems in different phases by

[9] Zhao Dazhuang, *The Research on the Development and Planning of Beijing Olympic Project*, PhD dissertation of Tsinghua University, supervised by Wu Liangyong, 1985.

means of synthetic management and planning. I have discussed the proliferation issue on the development of cities and building clusters from the point of view of aesthetics in the chapter "A Theory on Art". Whether it consists of a cluster of buildings or a city/town, it is always in constant transformation. We can use an integrated concept to direct its first phase of construction, but this master plan should not be an unchangeable final blueprint. Actually, after the first phase of development, unpredictable new conditions brought about in practice usually cause revisions and extensions in the second phase of development, and the third phase should be adjusted on the basis of the outcomes of the second phase of development and so on. Even if the original master plan has been generally carried out, there will still be new developments. The process will be a continuous cycle. All of this indicates that the planning and development of buildings and building clusters need both an integrated planning control and improvements or adjustments according to the changing situation, so as to incessantly coordinate the urban environment and to provide the political, economic, social, cultural and aesthetic requirements of people's lives. E. Bacon gave us a rather succinct model of the working process as a reference.

(2) The economic time-space

The expansion of the physical layout can be easily accepted by architects. But they seldom care about the economic issue of the building clusters or the research on the benefits produced by investments in different phases. Without economic knowledge, architectural design can easily be taken to two obviously unacceptable extremes: wasting money or being dominated by an absolute economic view. There are two different investment approaches to building clusters: in the first, an architect creates a large and complete design, which will engender profits only after it is finally constructed. In the second, the approach includes integrated planning, the construction is carried out phase by phase and the investment step by step, so that the profits are constantly generated during the process of development. It is evident that these two approaches are very different in their ideas in terms of management. In the second approach, the scale of construction and the amount of investment of each phase depend on particular requirements, usually with a shorter period of development and more potential profits, so that the project can be gradually extended and will eventually yield a benefit. However, due to the state investment structures adopted in the past, generally every Work Unit[10] adopted the first approach. Since the entire investment was covered by the state, it was better to develop buildings with more land occupation, a larger scale and a higher design standard – the excess budget could be requested from the state, which was reflected in the so-called "fishing project" in which the project started with a low budget and needed repeated supplements to take it to completion. In this case the developer/user certainly would not be happy with the

---

[10] Work Unit: in Maoist period's China production, employment and housing services workers formed an organization together, tending to unity. The lives of the workers, of all levels, would take place within the whole of the Work Unit that, therefore, tended to be complex urban projects unit. In this way the city was conceived as consisting of macrocells minimizing social and urban problems of public and private transport. This of course was a theoretical model, but close enough to the reality of the achievements, especially in the case of the largest manufacturing industries. Hence the widespread use of transport by bicycle – a cheap vehicle suitable for short distances – predicted the model. This also corresponded to the vision of a society not organized for classes, but for Work Unit, in fact. (TN/Editor's note)
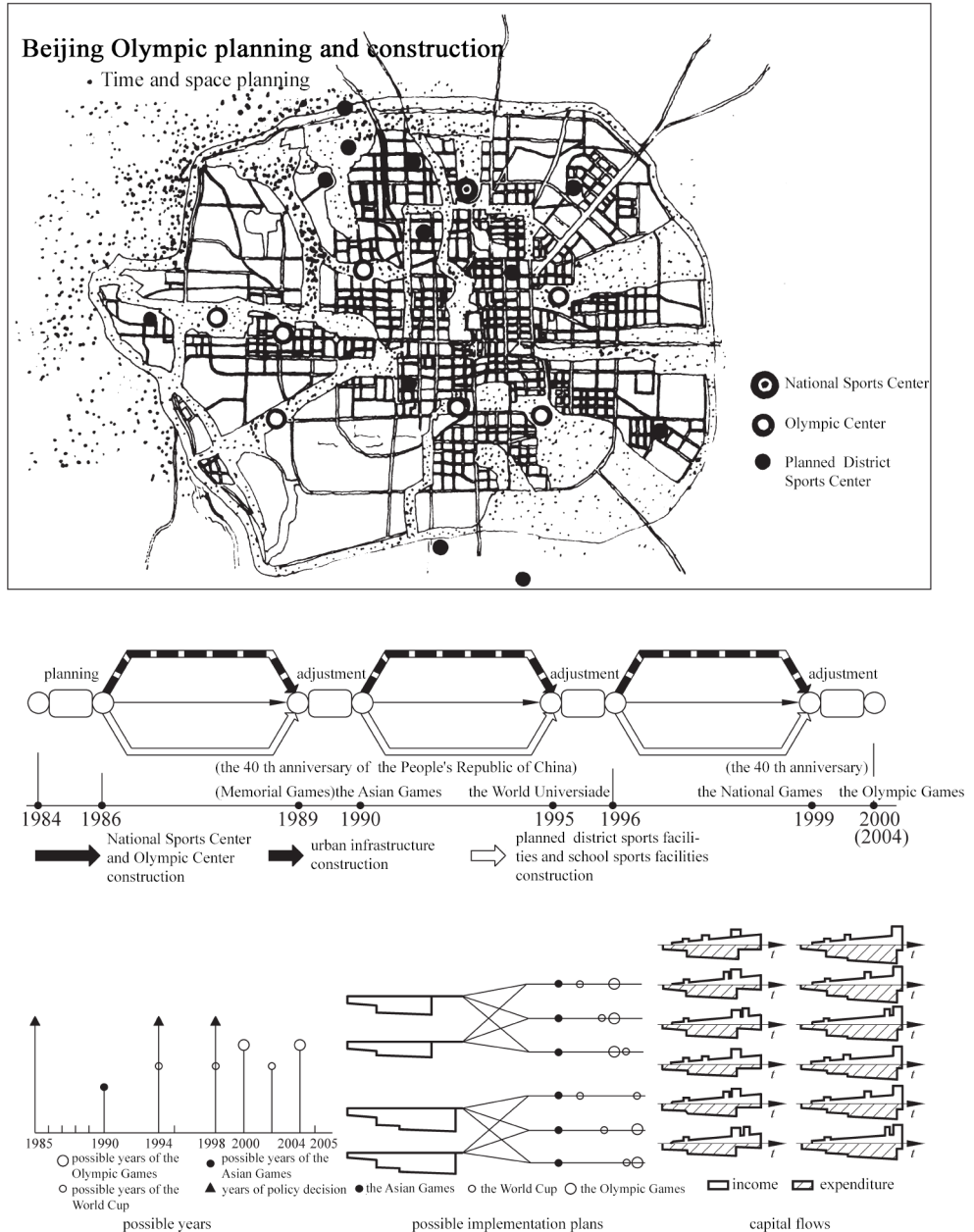
Figure IX-2: The research for the Beijing Asian Games development (Source: Zhao Dazhuang, Tsinghua University, The Research on the Development and Planning of Beijing Olympic)Projects

difficulties and the waste of building management caused in the process. To transfer the investment approach from the first method to the second, we will need changes in planning institution, investment management and the thoughts of the architect. This transformation is often difficult but necessary for the development of architecture. We have discussed the research on the urban architecture for the Asian Games In Beijing, in which we added the concept of "economic time-space" (the integrated research of architectural time-space and the vision of economic time-space by using some concepts from economic control) except for the "time schedule" and "spatial planning". The theoretical integrated plan included the distribution of the investment for the Asian Games on each project, the benefits accrued, and the budget saving by postponing some projects, as well as the land use, design standard and financial resources, with the aim of achieving the best effects through the least investment (Figure IX-2).

The result of this research was affirmed by the state[11]. This illustrates the fact that this kind of research is quite practical and has great potential for future development. Particularly in the design of building clusters and the city, the macroscopic optimization and analysis of an integrated budget on large-scale projects should be intensified. I do not wish to review in any comprehensive way the problems of methodologies in architectural/urban design. But in terms of the deficiency of relevant knowledge and the lack of dynamic developmental and economic ideas in design, some impractical works have emerged in practice.

Many design/planning schemes are only beautiful as architectural images, and we do not know how to create them, what steps are necessary and how much investment is needed. Designers rarely ask those questions. Here, I would like to ask my colleagues of design/planning to rethink: how many of those beautiful drawings and models of designs have actually been put into effect? Even if they were realized, what have been their effects? Also, these "beautiful architectural images" are vulnerable at many practical stages of construction. We have seen a large number of uncompleted projects – the old building has been demolished, the groundwork has been finished, even several floors have been constructed, but the project has been stopped for 1-2 years or even 10-20 years! Although there were always practical reasons for the stoppages, shouldn't we, from the viewpoint of planning and design, pay more attention to design decisions in order to perfect the theory and to improve the institution?

9.3.1.2 Trans-disciplinary synthetic design research and the creative design decisions

Trans-disciplinary thinking is not only helpful for the establishment of a basic framework of the general theory of architecture, but can also be used to analyse special topics in architecture. I will try to explain this via the "new courtyard-type house research" carried out by my students and myself, which is a tentative project supported by the Beijing municipality. The Chinese courtyard housing is a hot topic of architectural research. However, the courtyard houses in Beijing have become mixed-yards full of illegal shelters and in practice, without any "courtyards" in recent years, especially since the earthquake of 1976. Some of them even have deteriorated to a state that they are almost unliveable in. How to redevelop this type of courtyard house in old city areas was a

---

[11] Zhao Dazhuang, *op. cit*.
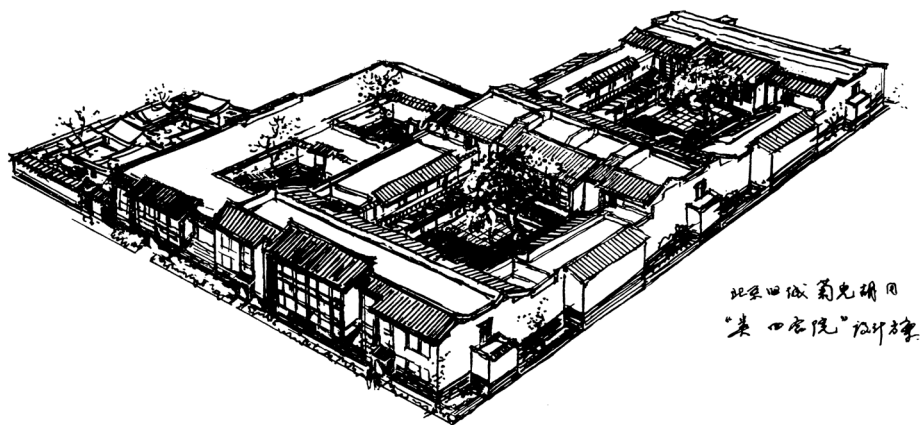
Figure IX-3: "Courtyard-type House" design (Beijing Ju'er Hutong)

long-term problem. Our research on a new type of courtyard housing has tackled the following issues: 1) The conservation of the historical old city of Beijing and especially the issue of integrating traditional areas into the modern urban fabric (which is the issue of historical city conservation); 2) The rehabilitation of the deteriorated housing areas in the old city of Beijing (which is the issue of housing rehabilitation); 3) To explore the new courtyard dwelling with both traditional and innovative identities by combining the privacy of a modern dwelling unit and the neighborhood of traditional courtyard house (which is the issue of the design of housing typology); 4) The exploration of housing reform, including the organization of housing cooperation by citizens and the public supporting self-construction (which is the issue of the reform of housing institutions); 5) The engineering, technical and economic problems in the urban renewal of the old city of Beijing, including the heating problem, the improvement of infrastructure and the conservation and reuse of old houses (which is the issue of architectural technology and urban infrastructure); 6) The collaboration of the municipal management, the researcher and the participating public.

Those issues have been investigated for a long time, but the ideal solution could not be found in the separate research projects on one or two of them. In terms of the comprehensiveness of architecture and the complexity of these problems, the specific research in these areas must be synthetic. The progress and the future creation of "new courtyard-type house research" is the result of the integration of old city conservation and new courtyard house design and the use of the methodology of trans-disciplinary synthetic research. However, since our work is still in progress, it is possible that new problems will emerge in the future (Figure IX-3).

Apart from the programming, trans-disciplinary synthetic research can be also helpful for exploring decision making in design. The conception behind it is: by multiple investigations, including dialogues with the user of the architecture, the project manager, specialists, consultants, statisticians and designers of different specializations, the

architect will collect and centralize various information. Moreover, under the coordination of the chief architect (project manager), different sub-systems should be organized for multidisciplinary research, which means each design group will participate in the discussion of design concepts and carry out a comprehensive evaluation. All these will be conducive to the creative decision of the architect.[12]

9.3.1.3 A working framework

Here, I would like to introduce a working framework that is described in the *Urban Projects Manual.*[13] It is a working framework for the planning/design projects with limited investment in third world low-income countries (such as China). The design works will be divided into the following steps: (1) study of feasibility; (2) detailed research; (3) choice of scheme; (4) design development; (5) project realization. Each step will include following: A) population prediction; B) site analysis; C) site development; D) project administration and management; E) financial means. The systematic procedure of this working framework allows us to emphasize the scientific methodology of planning and construction. Certainly, I do not mean that every project has to follow this framework or that it is a perfect approach. Actually, it is just one of the ways in which a scientific methodology can be implemented. In general, to introduce systematic thought and trans-disciplinary synthetic research methodology into the architectural domain will be extremely helpful in improving design theories and the working methodology.

9.3.2 Cognitive system and education in architecture

I have already discussed the generalities in a 'theory of education'; the question which we must investigate further here is the cognitive system. The system of knowledge in architectural education is particularly resistant to multitudinous categorisations, as it is also to narrow-minded disciplinary autosufficiency, chaos or to abstrusity which, reinforced by all kinds of superfluous detail, hide perspectives and horizons from students like a cloak. On the other hand, neither are the didactic systems and the rigid supervision of an inflexible engineering-type model school suited the nature of architectural science, tending instead to restrain creativity and initiative in teaching.

Vitruvius' opinion in relation to the issues raised above has already been invoked, and it is more important than ever today to know how to skilfully turn to systematic theories and comprehensive methodologies, thus gaining precision in thought. In the educational sciences this implies above all a happy and aware assemblage of courses with a solid theoretical base, so as to offer students the following: the gradual development of a theorical framework and the systematic strengthening of fundamental skills, flanked by progressive refinement, over the course of professional practice, of critical intuition and the ability for autonomous study; mastering the domain of synthetic knowledge, orientating the student's abilities and expressive resources towards the solution of problems via

---

[12] S. J. Kirk et al, *Creative Design Decision: A Systematic Approach to Problem Solving in Architecture*, VNB Company, N. Y., 1988.

[13] G. Dix (edited by), *Urban Projects Manual*, The Urban Planning Manual of Liverpool I, Liverpool University Press, 1983.

synthetic analysis and examination, resources to be cultivated during architectural design and urban planning and design courses.

The above aims being achieved, we should then intervene thus on the cognitive system: 1) Make architectural design, urban design and urban planning the core curricular subjects; 2) Arrive directly or indirectly at an organic synthesis of the peripheral disciplines and the main courses; 3) From a methodological point of view, make efforts to encourage perception of the universal over perception of the particular and ensure that global knowledge prevails over partial knowledge, that the determination of quality prevails over the determination of quantity, that synthetic reflections prevails over isolated reflections, and that synthesis, generally speaking, prevails over detail[14]; 4) Cultivate symbolic thought and logical thought throughout with equal attention; 5) Encourage students to seek peripheral knowledge in which they have a personal interest through diverse routes, whilst satisfying fundamental tra prove the quality and effect of decision-making[15].

Before finishing this chapter, I would like to conclude:

First, the object of architectural design – architecture – is not only a material production of human society, but also the outcome of human spiritual activity. Every architectural entity is the unification of the material and the spiritual. From this point of view, we can see that any mechanical materialism, which only emphasizes the material but ignores the reaction of the spirit to the material, or any idealistic attitude that only admits the spiritual effect but refuses the materiality are both unilateral in methodology. Their deficiency cannot be overcome by themselves. Some dilemmas on architectural thinking (including various schools) are evident examples. Second, the comprehensiveness of architecture calls for a comprehensive methodology. The complexity of architectural practice is without a doubt obvious, and we also have to analyse and solve the problems on research and design from a comprehensive point of view. Even for pure natural scientific or engineering/technical problems, whether they are categorized into absolute scientific/technical issues or the issues on architectural spatial layout and form, their final solutions must be comprehensive. Third, the object of architectural research is an open system. Although this system can be divided into various sub-systems, the numbers, types and compositions of the sub-systems are constantly changing and the relationships between sub-systems are also constantly adjusted. Thus, when we are using the trans- disciplinary synthetic methodology to understand, analyse, design and realize a project, a dynamic and changeable viewpoint is also indispensable.

[14] Le Minsheng, *On architecture Education from the viewpoint of the knowledge structure of architecture*, in Architecture education and Practice, 1988. Published by *Shenzhen University*.

[15] J. B. McLonghlin, *Urban and Regional Planning: A System Approach*, 1970.

Chapter 10
Construction of 'A General Theory of Architecture'

10.1 Development of architecture from a wider social perspective

10.1.1 The human habitat: still a key issue today

The human habitat should certainly be understood as being among the most significant of human problems, even more so in a country like China, a fact that architects there have for some time been aware, and since the 1930s various people have carried out comprehensive research on this topic[1]. I recall that during the Second World War, even in the midst of hostilities, the eyes of the world looked to the future, to post-war tasks such as the solution of housing problems, the planned reconstruction of the cities and the effective safeguarding of the historical heritage. Once hostilities were over, architects immersed themselves in the reconstruction with renewed vigour and enthusiasm, and the commitment of human resources and the scale of the work itself can reasonably be described as being without historical precedence. New cities, new constructions and new schools of thought of every type emerged. In 1948, the United Nations sanctified the "Right of every human being to housing" in the 25th article of the Declaration of Human Rights, in which the voice and the hopes of the age may clearly be heard. On this point, I would like to pause briefly upon the return of Liang Sicheng from the United States in 1947, when for the first time he spoke from the podium of the newly created architecture faculty of Tsinghua University, invoking "… the right of the citizen to his or her own residence", an appeal significantly similar to that contained in the 1948 article mentioned above, and written not long before. If we collect and examine more closely opinions of the time on the subject of post-war residential architecture, we can form an idea of the unanimous hopes of Chinese architects as they contemplated the progress that was to come. With the passage of 20 or 30 years, the most long-sighted gradually realised the existence of even more serious issues which aroused general perplexity, among which were the 'population explosion' (the world population has already passed the critical threshold of 5,000,000,000), 'urban expansion' (according to estimates of the TCTR, in underdeveloped countries, immigration to cities involves around 1,000,000 people per week) and the 'environmental crisis'. A macroscopic extension of our thinking on the question of construction is therefore necessary in the light of its direct implications for the future of the planet. There is, on the other hand, proof of commitment and solicitude on these fronts; the widespread sensibility of the world to these themes can be seen in the series of international movements which have appeared in recent years:

1963, the Delos conference and the proclamation of the 'Delos Declaration';
1972, the strategic plan of the Stockholm conference on the human environment;
1974, the strategic world population action plan;

[1] Catherine Bauer had already made a comprehensive report in the 1930s as part of her research in "Modern Housing".

1976, the resolutions of the Vancouver conference on the human habitat;
1980, the future of the population and the city, the declaration of Rome;
1984, population and development, the City of Mexico declaration;
1985, the Barcelona conference on metropolises;
1986, the City of Mexico conference on small and medium-sized cities;
1987, the year of residence called by the United Nations (IYSH Habitat-UNCHS), known in full as "The Year of Housing for the Homeless";
Further evidence of this widespread sensibility can easily be found in the themes of the Plenary Congress of the UIA:

1978, national and architectural development;
1981, "Man - architecture - the environment";
1983, the present and future missions of the architect;
1987, buildings and cities – architecture of the world to come;
1990 (in preparation), culture and technology.
1978, national and architectural development;
1981, "man - architecture - the environment";
1983, the present and future missions of the architect;
1987, buildings and cities – architecture of the world to come;
1990 (in preparation), culture and technology.

If we compare the UIA conference on "Post-War Residence" in the Hague in 1955 with that held in Moscow in 1978 on "Urban Reconstruction" and with the recently held conference in Brighton in 1987, "Buildings and Cities – the architecture of the world to come", there clearly emerges so much of the unconditioned faith and determined fervour which animated the representatives of the various nations in the 1950s: I myself participated, and cherish fresh, intimate memories. After much strenuous labour, therefore, here is the new century surprising us with unexpected new sources of apprehension. Recovering the relationship between the two epochs, this should not be seen as a symptom of regression but rather as testimony to the development of world construction and the process of further conscious investigation from the simple to the complex elements of human experience. Man has realised how solutions to uncertainties cannot be limited to mere technical study – even if, in its concreteness, this component is fundamental in the praxis of the architect, but research into future strategies cannot limit itself exclusively to its domains in as much as the problems of housing and the city do not have exclusively technical and normative causes but also economic, political and social ones.
The problems of dwellings and the city are not limited to developing countries: although the situation in developed countries is different, it represents a constant which differs only in nature and content and which should not be ignored[2]. This implies the need for a broadening of one's point of observation, in order to manage the problems in perspective and at the same time probe them in depth.

[2] The situation is rather heterogeneous in developed countries: consider the history of French architecture, mainly residential, over the last thirty years, which diverges from that of the United States not only from a quantitative point of view but also in the participation of eminent architects in the work of housing construction.

10.1.2 A progressive expansion of the traditional concept of architecture

As a further demonstration of the inadequacy of traditional concepts of architecture to deal with the onerous imperatives previously mentioned, observe how much commitment has already emerged on various fronts in the development within the individual disciplines of all kinds of theories aiming at moving beyond the borders of traditional architecture or of integrating and renewing its contents. Examples include: *Modern Architecture, Contemporary Architecture, Organic Architecture, Total Architecture, Value Architecture, Urban Architecture, Ecological Architecture, Community Architecture, Human Architecture, Integrate Architecture, Rational Architecture, Regional Architecture, etc.* Theories that, though divergent in their assumptions and goals, all aim at the development of an alternative route and at the expansion of the discipline's contents. How shall we interpret the appearance of so many various approaches? I feel there is one probable explanation: the desire of each sector to contribute in its own way to the broadening and deepening of architecture. It is reasonable to suspect that through this process it will necessarily find itself subject to spontaneous adjustments and reformulation; the construction of 'A General Theory of Architecture' is exactly that of offering a basis for and an orientation to the debate among those working in the field.

1) This general theory of architecture does not set out to be a negation of traditional architecture (a point which has been repeatedly insisted upon), but is rather dedicated to developing the richness of its contents, without disdaining those principles and general norms of proven efficiency found in other disciplinary contexts.

2) On the other hand, it is not a simple summary of the traditional system but rather a scientific framework in progressive development aimed at promoting holistic thought, insisting upon the 'creation of an optimal living environment' and inspired by a 'trans-disciplinary scientific model which draws sustenance from diverse sectors'.

3) From a theoretical point of view it deals with the transformation of an already large and highly complex system, a process of dynamic emancipation; in practical terms it would in any case be wise to try to manage its evolution gradually, without indulging in premature enthusiasm, and beginning with an analysis of the most urgent and fundamental issues.

4) It is highly relevant and timely to submit 'A General Theory of Architecture' to the attention of a country like China. In the first place, if we assume the growing inadequacy of traditional concepts of architecture to face the considerable challenges of the modern world, the problem manifests itself in China in all of its seriousness. The current development of Chinese architecture displays chaotic progress which drags along with it every type of organisational, normative and systematic contradictions and imperfections, with inappropriate uses of the funds destined for construction and shocking waste, due to an intrinsic lack of principles and an organic theoretical plan in the work of planning. This leads to a relapse into the classic problems of traditional architecture, as for example in the case of the art of construction which, obstinately deprived of deserved consideration and respect, continues to lack opportune scientific regulamentation and assessment. This situation requires the most sober consideration. In reality, aspects like the weighty themes of architecture, possible urban development strategies and the formulation, ratification and implementation of planned construction programmes all exercise a direct influence upon the final urban residential fabric, the comfort and beauty of the

working environment and the more or less elevated artistic value of architectural style. As the architect must actively participate in research in this sense and has a potentially decisive role in the strategic development phase, a general theory of architecture can help provide a wider vision and refine individual management attitudes. Teachers are given the task of heterogeneously imposing preliminary training upon students; administrators attain a refinement of the administrative plan and a perfecting of normative formulation guidelines; researchers proceed with the definition of aims and the expansion of the fields of research; and practitioners enlarge the conception of their own task and develop an integrated concept for it.

10.2 The departure and arrival point of 'A General Theory of Architecture'

The 'General Theory of Architecture' is actually circumscribed by the domains of theory and academic speculation, and further work is needed for an integral systemisation of its scientific basis. As for its departure and arrival points, my thoughts are the following:

10.2.1. From an 'architectural universe' to an 'infinite space' – the human dimension in architecture

Students of architecture all appear to possess their own particular 'architectural universe' (extremely diverse in its expressive choices; many students are attracted by a multiform and varicoloured concept of 'space', those dedicated to research into gardens tend to be exposed to the charisma of the 'poetic idyll', others allow themselves to become infatuated by the ideas of a determined school, and so on), approaching which they experience a sort of 'illumination'. Even though I feel that there is nothing wrong in all of this, to fully grasp the 'way of architecture' it is however still necessary to emancipate oneself from the confines of this comparatively restricted 'architectural universe' and accept the expanse of a rather less confined universe, the 'infinite space' situated amidst the whirl of urban architecture. As one walks out of the confined cave into the 'infinite space', the importance of the 'pervasive and lasting' mission of the architect becomes more evident.

Over time a habit of erecting constructions created in accordance with autonomous compositive criteria or projects inspired by individual construction has developed, and in this we should recognise a fundamental, perhaps the essential, element of architecture, the implications of which are worthy of further, deeper inspection. Yet the fundamental typology of human dwellings coincides with the conglomerations, families, lineages and communities contributing to the composition of human society, and this complex composite of grand and humble societies necessitates equally heterogeneous forms of conglomeration, to be defined in harmony with life's multiple and diverse social activities and requirements, the satisfaction of which requires material assistance, necessarily determining the appearance of every type of interior and exterior, from the room to the building, to the block, to the borough, to the city, to the region, but also from the building to the street, to the square, to the garden, to the park, and so on, saying, 'Seen from far away, the city appears to be a concentration of built forms; seen from close up, it reveals itself to be a pulsing human throng. At the fall of night, men and women return to their
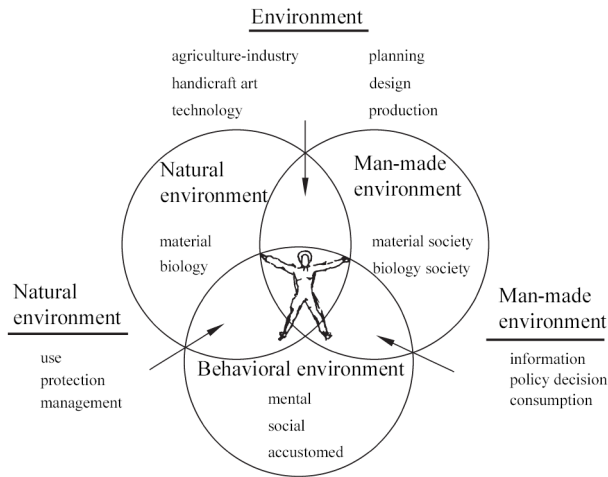
Figure X-1: The relationships among natural environment, man-made environment and behavior environment (Source: A. R. Cuthbert ed. *Designing Cities: Critical Readings in Urban Design.* Blackwell Publishing. 2003.1.)

respective 'dwellings', ready to pick up their work at the break of day. Through these activities they develop their respective 'individualities', justifying the definition of city as a "… conglomeration of men of individual characters…".[3]

In researching architecture, inside every type of large or small material space – from interiors to buildings, to blocks, to the city – it is necessary to understand man, understand his needs, probe his thoughts, activities, the psychological subtleties which determine his moods, grasp how, although man is always the same, his needs, sometimes for noise, contact and mobility, at other times for quiet, retreat and stasis, change with his circumstances. This means that the material assistance placed at his service must satisfy a multitude of needs and "… though indistinctly fused, each carry out its own role". The concepts, habits and behaviour developed by man over the course of his long history are extremely complex as well as exceptionally multiform phenomena. The architect must study and understand man, but base his research on the relationship between man and the environment, thus forcing himself to satisfy realistically the various needs of life, production and activity of a heterogeneous human society. Already at the beginning of the last century (1905), P. Geddes, one of the main pioneers of modern planning, developed the "Folk, Work, Place" scheme, as well as the norms for psycho-physical human development. In his celebrated "Notation of Life" he managed to incisively show "…the spiral progress from the simple to the complex of the human spiritual and material dimension…" (the norms of the uninterrupted spiral progress of human development from real simple life to simple spiritual life and, successively, from the enrichment of

[3]Isomura Eiichi, author of *Chengshi wenti shidian* (Readings of the Urban Problem), in his revised introduction of 1980 picks up some of the affermations of 1963's Delos Conference, cf. "Chengshi wenti baikequanshu", *Heilongjiang Renmi.*

spiritual life to the enrichment of material life). He summarised from a contemporary philosophical, sociological and biological perspective, the complex aspects of organisms and society which had appeared over the course of urban space-time development, demonstrating the intrinsic interdependence which gives life to the relationship between man and the environment[4], and there exist many other equally suggestive theories (Figure X-1). The general theory of architecture moves along this route, which, beginning from the question of the settlement, explores numerous cultural, economic and social factors which contribute to forming the various types of conglomerates, illustrating also how they manage to influence and modify the environment. It is also able to sustain research into the fundamental criteria of environmental design and urban development, bringing qualitative improvements to the planning and design projects. The above aims to suggest a 'humanistic approach' to architecture.

10.2.2 Architecture belongs to the regions – the geographical dimension in architecture

In criticising an idea which is thought to be too audacious, we use the disparaging term 'castles in the air'. In reality, not only towers, but also the most rudimental of constructions need a practical implementation and land upon which to sit. The architect should, with total naturalness, be brought to believe that everything belongs to the great Earth almost as though it was a vegetable, from the general plan of the project to its formal execution. Wright's "Theory of Organic Architecture" is exemplary in this regard. In facing the problems of architecture and the city, the architect gifted with realism will be called upon first of all to cultivate, in step with the foundations of the construction, his or her knowledge of his or her country, region and city. The method of numerous architects consists of a gradual preliminary analysis of the geographical circuit of their city and the surrounding areas so as to ascertain the climatic, geological, geographic, environmental and natural conditions, and the architect must force himself to probe the historical background and the prospective future of the region, without neglecting the anthropological dimension and architectural culture, all elements which reflect indistinctly and imperceptibly upon the plan and the morphology of the architecture of the city.

Consequential to technological progress and the development of forces of production, man's dependency upon the land has in many ways been reduced, but in the process of realisation, architectural production and the construction of cities still require the assemblage of materials, transport of products and circulation of goods, to reduce to the minimum the use of natural resources and limit damage to the environment, not least that caused to nature by urban architecture itself. In understanding and developing our architectural artistic heritage there is also the question of harmony with the regional context and the perpetuation of its characteristics. The concept of 'region' is therefore rich in its implications. Through further exploration into the various geographical factors, architectural production can produce new formal conquests and multiply its own expressive modalities – a principle already accepted in the planning theories and the stylistic formulation of some architects. Neglecting this will necessarily cause architecture to lose its relationship with the earth, and transform itself into a 'tree without roots'. The above aims to suggest a 'geographical' approach to architecture.

[4] Patrick Geddes, *Cities in Evolution*, Williams and Norgate, 1949.

10.2.3 Fostering cultural self-esteem – the cultural dimension in architecture

Regional architecture is as rich in implications of a spatial nature as it is in those of a temporal one. It effectively represents, within the city, a compendium of the history of local civilisation, through which the transformations of the social, economic and political past, the apogee and decline, the progress of technology, the prosperity and the decadence of the culture or the victories and defeats of the city may be traced. As, from an architect's point of view, there is nothing bold in accepting the equation 'city = architecture = culture', identifying in architecture not simply a product of the historical passages but also the body itself of the modern city, from which new civilisation constantly shines forth.

Urban culture is a formidable force: 'the contribution and the role of the city lie in its ability to protect, diffuse and develop the culture of society'. A proven summary of history reconfirmed by modernity, in all the great metropolises there is a glorious cultural and historical tradition, and in the development of architecture and the city, the concrete and manifest traces of the formation of urban culture should thus be appreciated.

The current advance of the whole of China along the path of modernisation must face the enormous progressive transformations in society and the economy, the untiring alternation of old and new, and occasions for osmosis and conflict between the cultures of the East and the West. The order and values of the past are being dismantled, the new is in ferment and everything takes place so rapidly that it is difficult to examine the individual stages. The problems of modernisation and cultural inheritance seems at this point to have reached their peak - where it is punctually the first to reveal an uncontainable charge, an unstoppable force. The architect will be called upon to be farsighted, to have wide cultural horizons, to harmoniously mix heritage and creativity, to coherently reconcile the tendency towards uniformity of architectural culture with the natural contribution of ethnic and regional identity, to the formation of the urban fabric and with the existence of architectural environments constructed according to heterogeneous stylistic choices, allowing all this to converge in the realisation of an optimal residential and work environment. Reconsidering the story of the evolution of the city and of architecture and promoting sober comparative research into the cultures of the East and West, as well as the phases of development of the architecture of the countries or cities in question, will allow us to update our understanding of the necessity of history, visualise our own strengths and our own weaknesses, identify contemporary conquests and mistakes and undertake our own research into present and prospective futures with renewed awareness. The above aims to suggest a 'cultural approach' to architecture.

10.2.4 Strengthening system productivity – the economic dimension in architecture

Architecture and urban architecture are among the most imposing of human creations. In the current age of dramatic urbanisation (above all in China and the rest of the Third World) the massive proportions of urban and residential constructions, the amount of land involved and the speed of development rhythms could almost be described as being without historical precedent. For scale of engineering it earns comparison with the construction of the Great Wall of Ten Thousand Li; for its intimate relationship with economic development and human life and for its effects on the future, it could be compared with the Dujiang Yan damn, the Ling canal or the construction of the Grand

Canal, whose course links the North and the South of China. It is undeniable that we are dealing with stupefying works which have been legitimized by history, but while the latest enjoy undisputed prestige, mankind's understanding of the vast scale of modern constructions and their future implications – not always positive – are less immediate. Within such intense construction activity, a continuous development of scientific strategy is needed, which means realistically adhering to the possible conditions and proceeding to a maximal systematic intensification of the forces of production in every sector.

Realistically adhering to the possible conditions implies a more rational use of human and material resources, adapting the scale of construction to the national strengths, a fair distribution of the material resources themselves, an equilibrium between these resources and financial resources, and profound reflection upon the constraints of agriculture upon the scales of construction. It is equally necessary to examine the imbalances between the regions and to avoid repeating old errors such as impatience for results, excessive ambition, and the attraction of extravagance or monolithic uniformity. A more rational use of human and material resources involves the reutilisation of old buildings. China is a poor country, in which healthy traditions such as repairing the old, recycling waste and scrupulous economy are the rule: patching a damaged piece of clothing allows it to be worn for many more years, and yet today a questionable irresponsibility in the knocking down of old buildings seems unexpectedly to be spreading. Consider the case of Beijing's 'old city', where – according to estimates from the beginning of the 1980s – following the Liberation a total surface area of 4,000,000 square metres of old constructions was demolished, while a total of 14/15,000,000 were rebuilt. Demolition is still underway at a rate of around 160,000 square metres each year. In other cities, similar rates of demolition and construction have been discoverd[5]. This despite the fact that old dwellings actually represent a priceless treasure: first of all there is their material richness, as, although old, simple repair will suffice to preserve them; in the second place there is their historical, and in some cases authentic artistic, heritage. For those great centres of history and culture whose charm transcends time and space, the demolition of these treasures is cultural damage. The Aula Magna of Tsinghua University, the first construction completed after the founding of the institute in 1911, is itself a representative product – as well as an extremely resistant structure - of the recent history of Chinese architecture. Notwithstanding its numerous qualities, in the 1950s its was proposed that it be demolished, a project that persisted throughout the Cultural Revolution and survived the Tanshan earthquake, to be finally rejected after the end of the Cultural Revolution on the initiative of the new President of the University. The structure thus underwent some restoration work and is still today an important piece of architectural heritage of the university. This suffices to illustrate how, even though the new tends always to overcome the old in the case of urban dwellings, the safeguarding of old houses, their rebuilding and restoration, as well as the construction and expansion of new structures, should be subject to coherent planning, and during the construction process the project should attain a relative organicity. From the point of view of a general theory of architecture, the re-use of the old and the construction of the new both deserve to be recognised as integral

---

[5] Wu Liangyong, *Cong Xiou de jiucheng ji gujianzhu baohu kan Beijing de jiucheng gaizao ji youguan wenti,* in *Chengshi guihua sheji lunwenji*, Yanshan Chubanshe.

elements of the construction of the living environment.

As regards the strengthening of system productivity in every sector, although it is certainly fair to aspire to the most advanced technologies, in consideration of the imbalance between the regions it is equally urgent that we proceed to technological development on various levels. For each sector, by which I mean planning, design, construction, administration, management, etc., in each of which maximum efficiency is sought; the simultaneous attainment of so many aims requires sweeping reforms, a perfecting of the planning system and the punctual implementation of the afore-mentioned scientific successes in order to harmoniously coordinate, from top to bottom, the myriad labours involved in the construction industry (with particular attention to the coordination of regions and cities), while still offering them appropriate expressive autonomy.

Far from being a purely financial concept, 'economic benefit' must be able to reconcile, within the limits of the possible, social profit and environmental profit in terms of a saving in human and environmental resources, reducing to the minimum the devastation of the ecosystem and urgently soliciting the work of restoration and compensation.

The effective implementation of these proposals would not only allow architecture to rise to the level of a supporting pillar of the national economy (giving work to one or two tenths of the total number of workers and supplying a tenth part of the GNP to the entire country), it would also permit it to become a social undertaking able to positively improve the quality of the environment, promote the progress of society and enrich culture. This perspective should be seen as the fundamental content of the present Theory.

Let us at this point read again some still inspirational passages of Engels: "In the final analysis it seems that economic conditions are able to set limits to the development of history. The development of politics, law, philosophy, religion, literature, art, etc. has economic development at its base; at the same time these disciplines influence one another, exercising an influence on the economic bases. As men produce their history themselves, this determination has not until today represented the fruit of a unanimous programme or will, nor is this history to be seen as circumscribed to a specific society. And yet their intentions are intercommunicating; this means that in such a society, the diffuse perception of a necessity which is supplemented by and expressed as casualness prevails. This necessity that has made its way through all kinds of casualness in the final analysis a necessity of economics".[6]

A review of the history of the reconstruction in China shows as yet insufficient knowledge of the economic issues. Objectively, it is extremely important to sound out the unknowns and update one's knowledge of economic issues in architecture. I return to this aspect here despite eventual accusations of prolixity, having insufficiently examined them in the passages above. The above aims to suggest an 'economic approach' to architecture.

10.2.5 Environmental amenity – the artistic dimension in architecture

Previous theories have limited themselves to examining the preliminary phases of a multitude of problems, offering a comprehensive overview of the complexity of the

---

[6] Friedrich Engels, *Zhifu Boerjiwusi - 25 gennaio 1894 (Letter to Starkenburg - January 25, 1894)*, in "Max-Engels xuanji", vol. IV, p. 506, Renmin Chubanshe,1972.

problems of architecture and the city. From a different perspective this also proves their vitality. The areas inhabited by man are in uninterrupted development, whereas the problems never appear alone. There is, however, reason to believe that with growing awareness these can make use of a composite knowledge of imagination and creativity in the development of a science aimed at the planning, design, administration and management of a wholly congenial environment (in all its various aspects). Everything, from the formulation of urban development strategies to the various provisions for the coordination of construction, must converge in the material execution, creating an environment for human life and work. Spatial organisation and formal production must also aim to please, attract and cheer man, to fully satisfy his spiritual and objective needs. For many years, since originating in England, the pursuit of a comfortable and attractive urban environment has been widespread, and it has animated academic thought, driven to identify the realisation of a habitational context based upon health and culture with the 'central objective' of urban planning and architecture work. It has animated normative formulation (consider the Civic Amenities Act enacted in 1967 in Britain), and it has also animated planning projects (such as the development in Osaka of the Amenity plan) upon which integrated architecture, landscape and ecosystem protection projects converge. These initiatives all share the same aims: aspiration towards general urban beauty, an ambitious proposition to pursue over time and not without a generous expense of energy. Life is perpetual development, and if man's construction upon the environment is incessant, the search for beauty in it is equally so, and the function of the architect is decisive in the elaboration of themes, in the organisation of contents and in the assembly of artistic formulations and forms. The above aims to suggest an 'artistic approach' to architecture. This study, beginning with a preliminary digression on traditional architecture and successively moving through a multitude of theories on the settlement, the region, culture, science, technology, legislation, the profession, education, art and the method – with sporadic intervals of reflection (only very few) on architectural and urban questions – ends thus by returning to the theme of beauty. Not coincidentally, in ancient Greece, the philosopher Aristotle stated the following: "Men come together in the city to live; they remain there in order to live the good life"[7]; "The construction of a city aims to ensure the happiness and safety of its inhabitants".[8] The fundamental nucleus of architecture is still that of the 'oneness which pervades everything', but the present digression concerns a general enlargement of our understanding, illustrating the possibility of expanding its borders and the effective richness of its contents, which still await further investigation.

10.3 The accomplishment of an architect

10. 3.1 Philosophical, scientific, artistic and cultural accomplishments

The above analysis allows us to understand how architectural specialisation confronts the

[7] In Lewis Mumford, *City in History*, A Pelican Book, 1984.
[8] In A.E.J. Morris, *History of Urban Form Before the Industrial Revolution*, 2°ed., Longman Scientific and Technical,1987.

subject in all its size and complexity.

A large number of academic approaches participate in its disciplinary plan, which despite long debate, never reach a satisfying compromise, a situation also caused by the assumed complexity of the theme itself. On the other hand, in facing the problem one tends to go overboard in pragmatism, sometimes in supine adhesion to habitual approaches or conventions created within academia, ignoring how, as reasonable and well-founded a theory can appear, "… life and society are equally complex phenomena; it is always possible to produce convincing examples or proof to validate any opinion"[9], alling repeatedly into the unrevealed and the inability to push beyond one's own knowledge. In all this it is necessary to look to the future, and consciously enter the realm of holistic thinking. We should not exclude that large scale synthetic research involving a great number of specialised researchers and academics can act as teaching or inspiration for man. As for the Chinese student, devoted to contributing to the four modernisations of the land of his ancestors, he will have to undertake sober and protracted reflection upon the future of China and of the world, as well as the prospects for development of architecture and the Chinese city. Furthermore, the speed which characterises global transformation and scientific progress urge the various professions – whether we are speaking of teachers, scientists, builders or managers – to progress with the times and to constantly refine and update their knowledge.

The mixture of art and science places architecture and urban planning beyond the humanistic and natural sciences, and in this vast ocean of knowledge it is indispensable to firmly grasp the helm and set the direction and the destination towards which to pilot China in the creation of a working and residential environment which is congenial to its land and to its people. Scientists of every age and in every part of the world will thus reveal themselves willing to work for the attainment of a similarly solid proposal. We have previously referred to this method, which is slightly different to pure trans-disciplinary methodology, in terms of 'synthetic trans-disciplinary research'; in fact, generally speaking, it is the synthetic recourse to integrated knowledge in the construction of an optimal residential environment destined for man. Those involved in architecture must aim to cultivate research into necessities and attain freedom through nature, achieving the opportune balance and equilibrium between logical thought and images, between rationality and intuition, realism and romanticism. This is not simply an individual analysis but rather a collective analysis, the analysis of our age.

Naturally this is anything but simple, but we must devote ourselves to it with absolute tenacity. Uninterrupted philosophical, artistic, scientific and cultural study is initially required, despite the first of these being repeatedly neglected. Architecture, however, needs philosophy: "Those who aspire to the highest peaks of science can in no way do without a theoretical orientation." Scientific progress needs philosophical direction, but even more so requires the study and contemplation of the many serious and delicate problems linked to architecture and urban planning from a suitable philosophical perspective, as it is a potential source of wisdom.[10]

---

[9] Lenin, *Diguozhuyi lun* (On imperialism), in *Lenin xuanji*, vol. III, p. 733, 1960, Renmin Chubanshe.
[10] Citation of Engels, cf. *Wu Liangyong, Gaige – Lilun – Zhixue. Jiyu chengshi jianshe de sikao.*

10. 3.2 The importance of a sublime ethical accomplishment

At the beginning of *The Ten Books of Architecture*, Vitruvius underlined the capital importance of the architect's ethical and professional training, the sagacious contribution of this pioneer of architectural studies, the first of which we know of.[11]

The Ten Books of Architecture illustrates how the cultivation of moral qualities impose upon the architect "force, tollerance", "politeness and courtesy" in behaviour, making him the object of "undisputed credetials", "composed and free from greed" in temperament and therefore in scientific conduct, "aware of the vast dimensions of architecture and its participation in the various branches of knowledge", boasting a "penetrating understanding of historical processes", "knowledgeable about music", "not lacking in ability in debating with jurisprudents", absolutely not "untrained or ignorant" of medicine and "diligently follows the precepts of philosophy"; careful not to neglect the necessary contact between theory and praxis, as "little prestige will spring from untiring devotion to technical refinement without knowledge", but it is also true that "men inclined to theory and to teaching seem almost hunters of illusions or abstract forms". Each profession follows a sublime aim: if literature seeks the truth, medicine seeks wellbeing and, as the doctor conforms to 'medical ethics', so the artist conforms to 'artistic ethics'. Each should "identify its own virtue with the fulfilling of its own responsibilities" and keep scrupulously to his own normative referents. The architect too must engage in an ideal conduct and possess his own concept of virtue.

The *ideal*, in preparing oneself as an architect at the service of the public, consists of participating in the anxieties and fortunes linked to the issue of a safe habitat for 1.1 billion people, sharing that noble interior disposition which animates the verses of an authoritative predecessor: "How to erect a building big enough to offer refuge and happiness to the legions of poor under the arch of the heavens?".

Faith is in the rooted certainty that this science is at the service of the public and the cause of social progress; as an expert in those technologies able to act upon reality, the architect can bring about significant improvements to man's living and working environment, loves his specialisation unconditionally and does not hesitate to consider it as at the avant garde of knowledge. Only this assumption will allow him to arrive at cultural self-esteem, to intuit how to draw sustenance from foreign cultures through comparative research, and to diffuse in the ancestral land the sublime fragrance of a thriving architectural culture.

Conviction lies in the certainty that this science serves peace and the wellbeing of the public and promotes the cause of human social progress, and that from a furthering of scientific research into construction a more scientific administrative processes can spring, necessarily accompanied by their democratisation. This can guide the masses to take an interest and an active role in the improvement of their own living environment, bringing about a more rational use of financial and material resources and extracting the maximum benefit. "The environment is produced by man; but man is also a product of the environment", and an excellent living environment cannot but contribute to corporeal and spiritual health and the consolidation of a new ethic. As there are ideals, faiths and convictions, there should also be adequate scientific methodology, to study with an open

---

[11] Vitruvius, *Jianzhu Shishu* (The Ten Books of Architecture), translation by Gao Luqin, China Architecture & Building Press,1986.

mind, continuously expanding the limits of one's own knowledge and respecting and appreciating – without arrogance and prejudice – the successes and works of others. It is also opportune to avoid by every means possible that unconscious but un-eradicated limits of knowledge or experience or intrinsic unilateralities of mental approach confound the awareness of the huge scale of one's responsibilities.

It would be wise to encourage debate between the various schools, mindful of the saying according to which "the abstaining of the noble from comparison is a sign of the withering of thought". In the sublime purpose of finding a congenial path for China it is equally important to stimulate and promote academic contact and discussion, and there is nothing surprising in the existence, comparison and the composition of the innumerable points of view, being phenomena absolutely consistent with the nature of things. Young people's thinking is sharp and in it lies our future; in the thinking of their elders there is irreplaceable experience of history and a certain maturity of judgement. Onerous responsibilities weigh upon middle-aged architects, but the guardianship and promotion of academic thought are hostile to these 'demarcations' and we are all called upon to possess a sense of history, an awareness of the present and a perception of the future. For dynamic progress, mutual respect is necessary, reciprocal study, the wise compensation of one's own shortcomings through recourse to the experience of others. Unanimous in the aim of identifying the scientific development of architecture of the New China as our responsibility, let us join in one single body and offer a contribution. On the occasion of my lecture to the first session of the Mayor-training Seminar, I proposed that "To prepare oneself with a positive spirit, we must take note of the multitude of conundrums in the cities", and in this we must have "the wisdom of the philosopher, the erudition of the historian, the rigour of the scientist, the experience of the traveller, the devotion of the faithful and the sentiments of the poet".

Next to the bust of a noted professor of Tsinghua University, Wen Yiduo, is engraved a renowned motto of his: "The gift of the poet is love, love for his ancestral land, love for his people". The ardent sentiments of the poet are an inexhaustible source of inspiration for us. May we architects devote to our profession with this love and sentiment.

Epilogue

The architectural education which I received in the university was of the Beaux-arts type. The art of architecture was and still is mesmerising. I have always been overwhelmed by the love and pursuit of the art of architecture since my student days.

For me, the beauty of architecture and the city are one of the greatest human achievements. As noted by Hassan Fathy, architecture is "a human endeavour to meet the spiritual and material needs, and it is the outcome of the interactions between the human wisdom and the environment".[1] Nevertheless, my work has given me only few opportunities for practical design and this is regrettable in my professional life.

Decades of twists and turns in my teaching and practice of urban planning and design have prompted me to rethink. I have felt keenly the need for a holistic view of the wholeness of the urban architecture. We must re-assess architecture from this entirety. This will be much more complex than approaching an individual design project, with numerous manifolds and threads. Moreover, it is imperative to reconsider the experiences and lessons we have had so far and re-evaluate in depth the options for "design" amid the onging Reform.

Our tasks in built environment construction are connected with the widest range of natural and social science disciplines, urban and rural development, modernization and cultural heritage, the professional approach to architecture, and reforms from the realm of the construction industry to the political institutions, etc.

The solutions to this gigantic question, like the solutions to an equation matrix of countless variables, require an understanding of the numerous factors within the mega-system. The heterogeneity and dynamics mean that in the present stage of development there are significant uncertainties and fuzziness, which compound its complexity.

All these have prompted me in my attempt to rethink the destitution of the traditional approach to architecture in practice. I hope every architect, whether young or old, would go on to explore the breadth and depth of architecture.

The main theme of this book was derived from my speech in a session of the civil engineering and architecture group within the Technical Science Division of the Chinese Academy of Sciences in 1981.

But the ideas were not well developed at that moment. After that, in several lectures in Tsinghua University, especially in the lecture "The Development of Urban Planning and the Reinvigoration of Architecture" in 1984, I expanded upon this idea. The term "a general theory of architecture" was the eventually arrived at amidst my background research for writing the main entry for the *Encyclopedia of China, Architecture, Landscape Architecture and Urban Planning Volume* in 1985.

This entry item was deleted due to the reduction of its word limits, as it was not possible then to provide a proper discussion. For the same reason, it was not published in my *Collection of Essays on Urban Planning and Design* in 1986. However, my research

---

[1] See Richards, Serageldim, Rastorfer, *Hassan Fathy*, Mimar Book, Concept Media University of Michigan, 1985.

on this did not stop. In the academic seminar "The Future of Architectural Sciences" in Tsinghua University on 19th August 1987, the concept of a general theory of architecture was formally raised. Before long I was invited by the Academic Board of Tsinghua University to give a lecture on this topic to the University audience.

My initial aim was to discuss the core issues of architecture with colleagues so as to promote the development of the diverse branches of architecture. As an educator, I hope that my work would encourage the young scholars to understand architecture more broadly and comprehensively, such that architectural design is founded upon a more scientific premise.

We live in the times of Reform. The various problems discussed in this book are all urgent and cannot be shied upon. For the development of architectural research, education and practice, the issues raised here should be debated sooner rather than later. Whether the term "a general theory of architecture" is appropriate or not is not really a pressing issue.

This book can be regarded as an outline for my further research. Since it was written during those brief moments that I could spare over a long period of time, the book looks superficial and the opposite of being systematic. Nevertheless, the first try has identified the gaps in my knowledge and the necessity of further work to be done. I had planned initially to add "An Introduction" to the title of this book. However, for the sake of brevity, it was shortened to "A General Theory of Architecture" in the end. The theories in this book are yet to be expanded in the time to come.

Final Remarks

Clothing, food, housing and travel are the fundamental needs of human life. Since antiquity, Chinese people have recognized[1] the need to make living comfortable and businesses pleasurable.[2]

The concerns of living were connected with those of working, and their proper resolution was seen as a prerequisite for a contented and peaceful society. Engels put this in a succinct and profound way: "people must first eat, drink, be housed and be clothed, and then be able to engage in politics, science, the arts, religion, etc."[3]

The fundamental human needs are to be satisfied by the output of the materials for production and consumption, which are the very foundations for the development of social institutions, the arts and religious thought. Architecture represents not only one of the foundations of material living , but also part of the superstructure as culture and art. This implies that urban architecture is entrusted with dual tasks in the development of both the material and spiritual civilizations.

A good built environment is shaped in tandem with the creation of a beneficial social ideal. It is where social idealism meets social construction. Numerous social idealists, and tens of thousands of practitioners in history, inspired by great works such as the Confucian treatise *Liyun*, Kang Youwei's *Datongshu*, Plato's *Republic* and Tommaso Campanella's *The City of the Sun*, contributed to the momentum of social progress and the development of a satisfactory built environment. This continues without exception in our own times.

Architectural professionals should be endowed with the dual personalities of an idealist and a realist. A practitioner without idealism can hardly be full of creativity and passion. Whether in the past or the present, the great architects (from the masters of the Renaissance to modern times) show their brilliance through their philosophical ideas and practical design works simultaneously. Nevertheless, an architect must also be a realist. The characteristics of their profession dictate that he/she cannot stop at theoretical discussions or wait for the arrival of some utopia, but should devote themselves with renewed enthusiasm into the design practice to contribute to a better built environment.

The real world is complex. Sometimes it is full of excitement – at such times the architects and planners have to be cool and dispassionate; sometimes it is full of difficulties and chaos – at such times they should endeavour to identify and resolve the problems in order to progress, with passion, idealism and a pragmatic approach.

The complexity of the built environment means that there is an overwhelming quantity of variables to be considered in handling uncertain trends and changes. Our idealism is often overshadowed by "agnosticism". This leads us to the confines of short-term practical

---

[1] Paraphrased from The Ancient Chinese treatice of *Laozi:* "make food delicious, make clothes beautiful, make housing comfortable, and make the customs contented".

[2] *The Biography of Zhong Changtong*, in *Hou Han Shu (The Book of the Late Han Dynasty):* "make living comfortable and businesses pleasurable, such that the land under the heavens will be in harmony.

[3] Friedrich Engels, *The Speech in front of Marx's Tomb*, in *the Selected Works of Marx and Engels*, Volume III (Chinese Edition), People's Publishing House, 1972, p.874.

problems and to abandon studies of the long term and holistic strategies. Yet from the perspective of epistemology, there are only known and unknown things in this world. Nothing is unknowable, although the discovery of the yet unknown matters may demand a long process of investigation. Hence, architects and planners can and should learn from history and current contradictions, and identify intrinsic rules and principles rather than fabricating imagined ones, so as to develop feasible solutions to planning and design and adjust them according to changing conditions of practice, and to maintain an upper hand over the development of the built environment. The construction of a general theory of architecture stems from the conflicts between idealism and reality, and the search for the paths of survival and development. The point of departure is not to define ideal dwelling patterns, but to attempt a search for a philosophy of the development of the human habitat, which would guide us in a scientific manner in our explorations of better planning and design. That is to liberate ourselves in our thinking, to expand our academic and professional domains, to amplify the sphere of impact of the studies of architecture and to promote the self-education of architects. A problem needs to be identified before a solution to it is found. Even if it is a rough and approximate proposal, an idea can be gradually enriched and perfected through practice. The proposal of this general theory of architecture is precisely at this initial stage of problem identification and conception. Its construction and development still rely on the creativity of the architectural profession and wider society, and is yet to be advanced through practice.

Acknowledgements

I would like to thank my colleagues, comrades and friends both in China and abroad. It is precisely the discussion and collaboration with them that has enlightened and encouraged my rethinking.

I thank Jin Ying who assisted my work in writing this book. As the first reader and critic of this book, he helped me to identify and then expand upon some discussions in the draft.

I should also thank the editors of Tsinghua University Press. It is only through their support and assistance in a variety of ways that the book is able to go to the press under the current difficulties of publication and pressing deadlines.

Finally I need to thank the assistance of my wife Yao Tongzhen. She was put upon almost the same pressure as me when working on this book.

Afterword
by Anna Irene Del Monaco

The development of a 'General Theory on Architecture': Wu Liangyong's Programmatic Mission in Favour of an 'Integrated Architecture'

Wu Liangyong's text, published in China under the title *A General Theory of Architecture* by Tsinghua University Press in 1990, presents the sum of the theoretical ideas – to some degree also 'poetic' or 'creative' if we consider the meaning of the Greek word *poieo*[1] – of one of the most authoritative representatives of post-war modern architecture and urbanism in China. Wu's intense academic activity – spanning more than sixty years, unfolded – and continues to do so – inside the School of Architecture at Tsinghua University in Beijing. A school he contributed to founding as a very young man in 1946, following the suggestions of Liang Sicheng, the principal innovator in scientific studies of Chinese architecture. Shortly after its publication the book received the Award for Scientific and Technological Progress from the State Education Commission of the Chinese Government. The work is presented in the form of a canonical "treatise" comprised of ten chapters – highly reminiscent of Vitruvius' *Ten Books on Architecture*, mentioned many times in the text – and organised based on the structure of a broad-ranging systematized recursive line of reasoning.

The idea of translating the original Chinese text of *A General Theory of Architecture* into Italian and English – presented here – was suggested by professor Lucio Barbera some time in 2004. I had brought a copy of the book to Rome, borrowed from the library of the Tsinghua University School of Architecture. Our original intention was to publish selected portions to create an annotated anthology of ideas. Counselled directly by professor Wu himself, I successively decided to proceed with the integral translation and publication of the text. The book will be released in Italy under the titles *Architettura integrata* (Italian version) and *Integrated Architecture* (English version), personally selected by professor Wu Liangyong. While the books will be released in two separate volumes, the work of translation was a coordinated effort, involving crosschecks of all three versions (Chinese, Italian, English) by a team of scholars and translators: mother tongue scholars, language and architecture scholars from the Sapienza University in Rome – Anna Del Monaco, Michael Riddel, Roberta Tontini – and Tsinghua University in Beijing – Liu Jian and Ying Jin.

The change to the title should not be interpreted as a simple editorial revision by the author, but instead as a demonstration of the incessant re-elaboration and detailed critical refinement to which the Wu subjects his own work since the outset of what is now a lengthy period of activity; Wu clearly conceives and approaches his research, both in theory and practice, as an open process. Broadening the observation from the pages of Wu Liangyong's text to his entire *oeuvre* and the context in which it is situated, provides an understanding of the special value of this book. It is a fundamental benchmark in the itinerary of an architect, theoretician, researcher and professor that has been travelled

---

[1] Transliteration from Greek *poieō*; simplified transliteration: *poieo*.

with patient dedication. Above all it has been verified against the reality of the exceptional historical events of modern and contemporary China: a nation of continental dimensions, a theatre of dramatic and rapid metamorphoses, consistently macroscopic and with increasing effects on the destiny of the rest of the globe. In many passages of the book, the concept of "integrated or integral architecture" is a recurring objective to be pursued. Similar to a fundamental vector, it orients Wu's theoretical and experimental studies of human settlements in China. Some twenty years after the first edition of *A General Theory of Architecture* there is no doubt that Wu's ideas, with all the elements of a laic prophecy, have proved indispensable to comprehending and interpreting the tumultuous processes of urbanisation in modern-day China, and for formulating possible organic hypotheses of correction. Yet what may have most touched the Italian – and more in general Western – reader is Wu's profound participation, direct or indirect, in an international, scientific and humanist movement in favour of the city and architecture; a movement that is an integral part of the most solid modernist culture that occurs beneath every sky, far from the abstract and individualist competition between architectural languages intended uniquely as a means for "communicating" personal intuitions through artistic design. Hence Wu's ideas, while always passionately focused on and compared with the urban condition in China, are directed at each one of us. At the architects and urban planners of any nation who see architecture as the language of the city and who study this language as the result of a structural reading of the history, economy and collective culture of place. In this manner, Wu openly reveals – and to an even greater degree weaves into the filigree of his essay – his belonging to an international network of ideas and actions comprised of intellects or – as we now say – *Scholars* who personally or indirectly collaborate to re-establish – or reinforce – a modern "culture of cities". A condition in which each national culture must and can participate with the richness of its "schools", and the experiences drawn from the study of an individual cultural, geographical, landscape and historical context. Within this setting, we Italians, above all we Italians, are the object of the implicit call found in Wu's "ancient" essay; beginning with the *Scuola Romana*, so rich, articulated and dialectically involved in the discourse on the relationship between the city and architecture (Giovannoni, Ridolfi, Piacentini, Muratori, Quaroni, Aymonino). Yet we must also include the others, naturally those of Milan and Venice (Boito, Muzio, Samonà, Rossi, Canella), together with other young and valuable schools, for example in Cesena, Reggio Calabria, Bari. Our "schools of architecture" must be considered among the "national" schools that have offered the greatest contribution to this diverse and vital "modern movement". Perhaps, at certain times in their history, more than their American counterparts, the University of Pennsylvania *in primis*. Hence a further merit of Wu's book: that of providing a new and extraordinary context of reference within which to frame the profile and value of the ideas and experiments of our best schools of architecture. By observing the other on its own, in fact, we are often able to more profoundly comprehend our own cultural heritage, projected within a broader framework of meanings.

This can be synthetically understood and confirmed by carefully examining the list of professor Wu's publications. After an initial study of the history of planning in ancient China – published in Germany[2] – and the preparation of an illustrated essay on urban design

---

[2] Wu Liangyong, *A Brief History of Ancient Chinese City Planning* (English edition). Kassel:

and urban planning – and following the release of a collection of essays and a book in 1961 and 1987[3] – Wu Liangyong began his work to elaborate a 'general theory', published under the name *A General Theory of Architecture*. Beijing's Tsinghua University Press initially published the book in China in 1990, and successively in Taiwan by Earth-scape Press of Taipei in 1992. Running through the list of works published by Wu, many of which I have directly examined, it is *evident* that the studies published after 1992 continue to focus on the search for a concept of human settlement, analysed and documented with respect to classical Chinese literature and Western texts – Anglo-Saxon in particular. Above all it was verified through in-situ research, as demonstrated by the many reports published by the Institute of Architecture and Urban Studies at Tsinghua University, founded by Wu himself. The work is the result of actions conducted over the past thirty years in so many of China's crucial territorial and urban realties. The important works of urban planning listed on his curriculum reinforces all of this. The study entitled *Rehabilitating the Old City of Beijing. A Project in the Ju'er Hutong Neighbourhood* was the object of considerable international attention through the edition published in 1999 by Canada's UBC Press, with a preface by Peter Rowe. The text includes a fascinating compendium of the urban history of Beijing and describes a method for 'operative' contemporary urban design beginning with the analysis and the evolution of the fabric of the courtyard house – the hutong – of the ancient imperial capital of Beijing. The study serves as the theoretical base to Wu's well-known *Ju'er Hutong Neighbourhood* pilot project, which has received numerous awards since 1987: the ARCASIA 1992 Gold Medal Award for Architectural Excellence and the UN World Habitat Award. The challenge raised by this experimental residential project is aligned with the contents of *A General Theory of Architecture*: organically 'integrating' the ancient city and new architecture. In fact, according to what Peter Rowe writes on the back cover: "Wu argues eloquently for 'organic renewal' […] and shows that [...] it is possible to achieve a balance between ancient values and modern concepts".

The idea of 'integral architecture' is also present in one of the chapters of another fundamental text edited by Wu and presented by Alexander Tzonis: the *UIA Beijing Charter: The Future of Architecture*[4]: the proceedings of the 1999 UIA Conference held in Beijing. The intentions expressed in the *Charter* confirm the questions raised and structured in *A General Theory of Architecture*, applying them prevalently to the case of Beijing and the possibilities, for the ancient Chinese capital, to become "A better Habitat and a better Society". The candidature for the 2008 Olympics was underway at the time[5] and Wu Liangyong was a member of the jury that selected the Master Plan for the Beijing Olympic Park. However, earlier still he had focused his studies, together with his

Gesamthochschulbibliothek, 1985.

[3] Wu Liangyong and others. *Town and Country Planning* (textbook). Beijing: China Architecture & Building Press, 1961; Wu Liangyong, *Selected Essays on Urban Planning and Design.* Beijing: Yanshan Press, 1987.

[4] Wu Liangyong, *UIA Beijing Charter: The Future of Architecture (English and Chinese Versions)*. Tsinghua University Press, Beijing 2002.

[5] On 13 July 2001 the president of the International Olympic Committee, Juan Antonio Samaranch, announced that Beijing would host the 2008 Summer Olympic Games, the XXIX Olympiad. In May of the same year, China joined the WTO.

research team, on the Beijing 2004-2005 Master Plan. The three volumes[6], published as a "research report" in 2002, 2006 and 2009, represent the concrete implementation of what Wu Liangyong had described in the chapter of *A General Theory of Architecture* entitled "Theory on Regionalism". The reports bring together the studies conducted by a national interdisciplinary team of approximately 50 specialists working on the coordination and integrated study of a vast regional territory of dimensions comparable to those of a medium-sized European nation.

What is more, the principles of a "multi-scalar" and "multi-layer" work of research expressed in *A General Theory of Architecture* were recently applied in the latest work published by professor Wu Liangyong, together with professor Wu Weijia[7] – his pupil and the current director of the Institute of Architecture and Urban Studies at Tsinghua University founded by Wu – and other scholars, entitled *Beijing 2049, Research on the Spatial Development Strategy*. Following the investigation from the city to the region, he returned to the scale of the city to predict its possible developments in terms of urban space and architecture, even if at the large scale. The list of planning and urban design works by Wu and his team demonstrate his contribution to the development of the Provinces of Jiangsu, Anhui, Guangxi and Hainan. Wu also served as a consultant to many important strategic contemporary Chinese cities, such as Nantong and Shenzhen.

In 2011 the Chinese Government instituted the Wu Liangyong Foundation for Sciences of Human Settlements and, in February 2012, the President of the People's Republic of China, honoured Wu Liangyong together with the physician Xie Jialin, with the State Preeminent Science and Technology Award.

The result describes the profile of a scholar with an ability to affirm, with great determination and coherence, a long-term line of research, nationally and internationally recognised. A research developed since the era of his master Liang Sicheng, who entrusted Wu with the guidance of the Tsinghua School of Architecture. Wu has consistently resisted the "swirling torrent where it is most furious", in other words, "the cascade of events of the last half century", similar to the "stoutest and most firmly rooted oak tree". These are the terms employed by the American West Coast academic Daniel Solomon to describe Wu Liangyong in his 2003 essay "Nearness. Measure the night with bells". It is Solomon's aspiration that Beijing become a "Heideggerian place" rather than "Cartesian space", paraphrasing Wu's proposal to reactivate a part of the old city walls of the Ming Dynasty and the bell towers, in opposition to what would have resulted, instead, from the possible intervention by Rem Koolhaas, "the poet laureate of airline food, endless shopping malls, and the new Chinese cities […] of identical high-rises". A description affirmed by the realisation of the CCTV tower complex in 2008.[8]

---

[6] Wu Liangyong et al., *Research Report on the Rural and Urban Spatial Development Planning for the Greater Beijing Region (Beijing, Tianjin and Hebei)*, Beijing: Tsinghua University Press, 2002; Wu Liangyong, *Thoughts on Urban and Rural Development Transformation of China*. Beijing: Tsinghua University Press, 2009; Wu Liangyong et al., *Second Research Report on the Rural and Urban Spatial Development Planning for the Greater Beijing Region (Beijing, Tianjin and Hebei)*, Beijing: Tsinghua University Press, 2006.

[7] Wu Liangyong, Wu Weijia et al., *Beijing 2049, Research on the Spatial Development Strategy*. Tsinghua University Press, Beijing 2012.

[8] Curiously, the architecture of one of the two buildings of this complex, designed by Rem Koolhaas and his office OMA, in particular that which caught fire only a few months prior to the 2008 Olympics, is highly similar to a project that appears in a scene from the film *The Fountainhead* – a metaphor of the life of Frank Lloyd

The International Roots of Wu Liangyong's Research Expressed in A General Theory of Architecture (Integrated Architecture)

Aside from his profound belonging to the Chinese cultural and scientific world, and his vast influence over this latter, for many years Wu Liangyong has also been part, in a progressively more integrated manner, of a network of international references whose contact was very important to his research activities. The basic web of his international network of reference undoubtedly consists of the historic and lasting relationships between the Tsinghua School of Architecture and the United States of America, in particular, though not exclusively, with the University of Philadelphia. It was here that during the 1920s, twenty-five young Chinese scholars were taught by Paul Cret – the great French architect, director of the Department of Architecture at the University of Pennsylvania and Louis Kahn's master. The young students included Liang Sicheng and Yang Tingbao, Kahn's classmates, and both future masters and mentors of Wu Liangyong; together with Yang Tingbao, Wu graduated from the National Central University of Nanjing in the early 1940s (the first architecture school in China); with Liang Sicheng, instead, he began collaborating at the time of the foundation of the Tsinghua Department of Architecture in 1948 that initially offered only a three-year basic course. Liang was concerned, at the time, with persuading Wu and his other brilliant young pupils to attend specialisation courses in the United States to acquire the advanced scientific training suitable to the start up of a Master course that would integrate and complete the academic curriculum of the School of Architecture at Tsinghua University. Wu studied at the Cranbrook Academy of Art in Michigan with the great Finnish architect Eliel Saarinen. He returned to Beijing in 1951 (one his classmates was Edmund Bacon, the author of the brilliant essay *Design of Cities* who, among other things, apprenticed as a designer in the office of Henry Murphy, the architect of the Beida.[9]) Yang Tingbao, Liang Sicheng and Eliel Saarinen – with their ideas on architecture, their example and their works, critical or architectural – certainly constituted an incomparable and extraordinarily rich source of stimuli to the formation of Wu's personality that, enriched by an autonomous ability to develop theories and research, finds its full expression in *A General Theory of Architecture* (and thus in *Architettura Integrata)*. Yang Tingbao is present with his sensitivity toward the principles of convenient and symbolic beauty, drawn from the roots of the Beaux-Arts; there is his continuous, free experimental research into the languages of modernity and history, his attention toward the relationship between form, the needs of construction and the productive capacities of the still-living tradition of Chinese artisans. Finally, he is present in an attitude toward philosophical speculation (the concepts of 'essence' and 'form' are ever-present in his theories and often cited by Wu in his book). Liang Sicheng is present with his indelible, scientifically modern intellectual imprint that led him to introduce and to exercise principles of historical, analytical and critical thinking in his study of Chinese architecture and cities; he is present in his important role as a reformer of education and champion of China's cultural heritage. His well-known posthumous text, edited by Wilma Fairbank in 1984, *A Pictorial History of Chinese Architecture (A bilingual*

Wright – repeatedly mentioned in Wu's book.

[9] *Beida* is the colloquial name used in China to refer to Peking University (abbreviation: PKU or in colloquial Chinese 北大, Běidà).

edition) features an introduction by Wu Liangyong, at the time dean of the Tsinghua School of Architecture. Eliel Saarinen exercises his influence above all through an idea of the city fully presented in his book *The City: Its Growth, Its Decay, Its Future*. He is also present with his natural – Nordic – conception of modernism as a continuity of collective meaning and sentiments, despite the technological and productive transformation of architecture and the city. Furthermore, as Alexander Tzonis points out in his presentation of the *UIA Beijing Charter* "like Saarinen, Wu believes that design action should run parallel to the development of design knowledge that should reside, to quote Saarinen, in a 'research institution' responsible for keeping the quality of production up-to-date with new discoveries and new needs".[10]

Research Open to Other Research

The book you have just read, with its vast theoretical, critical and historical implications, obvious or implicit, is also an open work. This is perhaps truest because it stimulates the reader interested in architecture to use it as a tool to trace possible itineraries for new research. This can be done by moving in at least two directions: the first, almost unavoidable, leads to a completion of the critical exploration of the figure of Wu and the results of his academic, theoretical and design investigations of the development of the "culture of cities" in China. The second, as described above, may instead be nurtured by grafting Wu's ideas and design experience onto the more general framework – general in theoretical, as well as geographical and historical terms – that in many parts of Italy serves as the backdrop to an attempt to reconstruct the international identity of contemporary Italian architecture. An identity for too long ideologically amputated of the contributions made by its "schools" and personalities, often considered imperfectly aligned, if at all, with the structuring axis of an official and conventional modernism. A modernism rigidly trapped behind the walls of a more orthodox confrontation with a so-called European "internationalist" system and the more "Europeanising" conditions in America – northern, above all, but also central and southern. What emerges from a reading of Wu Liangyong's book is that, instead, he privileges a different international version of modernism. The most obvious benchmarks here are undoubtedly Charles Correa, an Indian, Hassan Fathy, an Egyptian, and above all Constantinos Doxiadis, a Greek, and hence a Mediterranean European; while three important and distinct personalities, there are in any case the bearers of an advanced and unitary vision of the mission of architecture. A mission identified in the construction of human settlements, from villages along the Nile to the megalopolises of the future. For these three masters, humanity, with its countless needs expressed by multitudes and individuals, becomes the centre of attention, the true focus of the commitment of the modernist architect. A real humanity, with its ancient, rational and symbolic culture, profound and neglected, cared for – almost protected – by poverty.

---

[10] Readers in search of a more defined backdrop to the outstanding personality of Wu Liangyong and those wishing to further explore the events and figures that animated architectural research in China from the late nineteenth century until 1953, may be interested in consulting the recent doctorate thesis of Min-Ying Wang – a graduated of the Tsinghua University of Beijing – defended at Columbia University, New York in 2010 and entitled *The Historicization of Chinese Architecture: The Making of Architectural Historiography in China, from the Late Nineteenth Century to 1953.*

The real humanity that populates rural and urban areas that remains, and will remain so for some time, the incalculable living and suffering body of the social city. Thus it is also for Wu, who, throughout his lengthy career as an architect and thinker, has worked to construct and refine an articulated scientific and intellectual tool. An instrument that makes it possible to harmonise all of the economic, social and cultural components that converge and overlap in the construction, precisely, of human settlements. His is a scientific and humanist method that in an era such as ours, as complex as any in human history, may offer each settlement its own identity, forever unique within the infinite constellation of cities. Each human settlement is an organism impossible to replicate under other conditions, in other geographical locations, in other cultures. It is precisely through the recognition and expression of the "biological" uniqueness of any human settlement – Wu tells us – that architecture can and must realise its contribution to the current culture of cities. Hence, how can we not sense the call to redefine, broadening it extraordinarily, the framework of the international consonances of the most important "Italian schools of architecture", recognisable in the works of such masters as Ludovico Quaroni, Saverio Muratori, Mario Ridolfi, Aldo Rossi, Carlo Scarpa, Paolo Portoghesi, Guido Canella, BBPR, Giancarlo De Carlo and Carlo Aymonino? How can we Italians avoid being tempted by the project for a new study of *our* culture of cities, which moves against the backdrop defined by the historic fabric that– beyond the consolidated official positions of critics – links Heinrich Tessenow and Mies van Der Rohe, Werner Hegemann and Gustavo Giovannoni, Richard Hudnut and Louis Kahn, the critical regionalism of Kenneth Frampton and, precisely, the complex and fascinating vision of Wu Liangyong? Wu Liangyong is thus one of our Masters.