In Search of Alternative Traditions in Architecture

- A Cross-cultural Interdisciplinary Study -

Bong Hwangbo

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to my parents

Summary

[FULL TITLE] **In Search of Alternative Traditions in Architecture: A Cross-cultural Interdisciplinary Study**

[AUTHOR] **Bong Hwangbo** [DEGREE] **Ph.D.** [Submission Date] **September 1999**

This thesis was undertaken to unravel hitherto unattended histories of the built environment with particular reference to traditional East Asian architecture and the German organic tradition in the *Modern Movement* in 1920s Europe. The thesis paid attention to an unclassifiable discipline of *feng shui* with respect to architecture and urbanism within the intellectual tradition of East Asia. The thesis has elucidated that *feng shui* can properly be considered neither an art nor a science from the Western epistemological viewpoint, but a mélange of arts and sciences which governs diverse human interests inclusive of architecture and urbanism, and is also the vehicle to embody an ancient cosmology.

As opposed to the East Asian paradigm in architecture, the thesis intended to reveal a historical meaning of modern traditions in architecture in its emerging period, examining exactly how the dynamic forces of modern architecture could thread into Western modernism in general. The Puginian *Gothic Revival* and the *Instrumentalism* of J. N. L. Durand are considered as emerging currents of the Modern Movement in architecture: an attitude still subscribing to a transcendental mode of existence, as against an opposing current which takes scientific rationality as its ultimate virtue.

Two opposing yet complementary tendencies within the *Modern Movement* are thus recognised; Geometric versus Organic. The significant intellectual enterprise of organic architects, such as *Theodor Fischer*, *Hugo Häring* and *Hans Scharoun*, often mistakenly viewed as Expressionism, is studied in particular. The German organic tradition is further compared with the work of *Frank Lloyd Wright* whose concept of organic architecture included a keen interest in Japanese art and architecture, especially in art printing. In response to the call for alternative traditions in architecture, this thesis suggests that a paradigm beyond *modern science* and *Orientalism* is needed for the synthesis of East and West and of old and new.

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Chapter I

Prologue

1.1 Prolegomenon: Research Orientation

This thesis sets out to compare and contrast East Asian architecture and Western modern architecture with respect to modes of thought, and following up by the comparative analysis of institutions of architecture by which the contrast is to be examined. The traditional East Asian system of architectural planning, design and practice is introduced and systematically established to be probed along with that of modern architecture and subsequently this research attempts to provide an empirical break between these two. The contents of this research pertains to the understanding and the interpretation of different institutions of architecture, and more importantly they contribute to the creation of an advanced paradigm in architecture, allegedly an integration of East and West and of old and new.

The research orientation initially arose from the recognition of a changing intellectual climate that recent scholarships attempted to unveil multiple histories of architecture and urbanism hitherto homogeneously presented under the banners of 'Modern Movement' and 'International Style'. Contemporary awareness of the failure of modern architecture and urban design in terms of loss of humanism and cultural continuity led to an increasing tendency to embrace alternative systems and values in architectural institutions beyond Western cultures. The condemnation of modern architecture suggested that an aetiology is needed to clarify how modern theories of architecture can be re-oriented and re-structured in order to achieve a better built environment. It is self-evident that a new paradigm of architecture that can re-direct the current disorientation in the built environment can only be obtained at the expense of major modifications or even an abandonment of the currently prevailing paradigms, i.e., Modernism, Post-Modernism, De-Constructivism and so forth. However, it is pre-requisite to cast a light on existing institutions of architecture that have not been in the centre of debate. This led to an examination of the theories of alternative traditions in

modern architecture as well as a search for unknown paradigms in architecture in non-western cultures.

Various attitudes towards modern architecture found in the Modern Movement and East Asian architecture can constitute the legitimate and enlightening realm for the current research enquiry. Two opposing tendencies within the Modern Movement are recognised, and an attempt is made to establish them as alternative architectural traditions which would make better sense of dynamic currents of the early twentieth century modern architecture. Furthermore, in the hope of retrieving an unknown paradigm of architecture, attention is given to East Asian civilisation in particular, as her history was unwillingly cut into two pieces in the course of modernisation, and the synthesis of East and West is yet to be achieved. Despite the fact that the use of the term 'East Asia' is intended, as often appears, to stress cultural universality at the expense of obscurity of individual identity, the current research acknowledges a distrust of unifying principles in the creation of the built environment. Rather the term 'East Asia' is employed to stress the homogeneous psyche which was once prevalent in the region. It is equally acknowledged that an analysis of differences in perspectives among diverse issues that the current research involves would prove to be far more sensitive and complicated as various levels of cross-cultural influences blur the archetypal concepts of East and West.

The cultural problems in East Asia began when Western cultural influx upset its own metabolism. Abrupt discontinuity of cultural integration and the loss of natural humanism, in which East Asian philosophy finds its root, caused East Asians to seriously question the value of East Asia culture and its validity. The disorientation of the society is well reflected in modern East Asian architecture which ran straight into the status of anarchy. As the transitional period of Modernism passed, contemporary architects and planners became sure that there is no deterministic way of designing or planning artefacts. No feasible alternatives have developed either. This current chaos in architecture and urbanism can only be re-oriented through awareness of the way reconciliation of systems has failed, i.e., both in terms of integration of vernacular tradition and the modern and of East and West.

To explore the intellectual traditions of architectural institutions of both East and West, the basic assumptions of architecture were put into question. The concept of architecture in East Asia is discussed prior to the question of the comparison and the integration of East and West, and the works of architecture were approached under cross-cultural points of view. It explores the development of architecture as different institutions in opposing civilisations, and elucidates characteristics of different conceptions in architecture. In part, this thesis analyses primary scholarship on conceptions and theories of architecture in East Asia, and the Modern Movement. As they emerged from particular bodies of knowledge that have accumulated over a long period of time in totally independent soils, two different paradigms of architecture would illustrate the way different kinds of psyche mould alternative institutions.

The ultimate distinction made between traditional East Asian architecture and the Modern Movement in this thesis is the idea of a 'science of architecture'. Despite the fact that the current research did not intend to generate another schism between East and West, this proposition would serve as a useful platform to launch an investigation of rather complicated issues. A science of architecture did not exist in East Asia, while descriptive geometry was developed in Western civilisation, especially as an instrument after Renaissance, leading to a scientific method used in the Modern Movement. The science of architecture differs from 'building science' in the way it is brought into existence, and the way in which works of architecture are produced. In this thesis, the concept of 'science of architecture' is 'a conscious, rational and systematic mode of thought in architectural planning, design and practice' and that it holds an epistemological account. The concept 'building science' refers to 'a pragmatic means which has developed in most parts of the world in one form or another in order to construct habitable space'. Forms, spatial configuration and other associations had never been a great deal of consideration in building science. Building Science was not a way of thinking, but a means for carrying on architectural practice under the society's cosmic order, ideology, beliefs, values, customs and so on. Forms and spatial organisations were imposed on builders who were not supposed to make any alteration. This institution still works in contemporary society. Building science and engineering allow architects to design with greater possibility, but architects do not

insubordinate to technology itself. Technology and building science are credited only as useful devices.

The distinction in modes of thought has certainly to do with the classification system which characterise different modes of development in civilisation. The concept of architecture being subordinated to politics or religion under the traditional East Asian perspective contrasts with that of Western Europe where it is an autonomous art in which human creativity is concretised in reality. Architecture in East Asia was never an independent art or science, but an unnameable discipline which relates to natural science, building science, construction technology, and most importantly is constructed within the domain of cosmic metaphysics which governed all possible disciplines. Architecture in East Asia was always an outcome of spiritual speculation identifying human beings and architecture as part of nature. The classification they held for many years should be considered as a fundamental force in shaping the built environment. Durkheim (1903) noted that, given certain concepts which are considered to be fundamental, the minds feels the need to connect to them the ideas which it forms about other things; thus classifications are intended to connect ideas and unify knowledge[1]. Before its autonomy was granted, Western architecture also had experienced a similar period of dependency on religious and cosmological ideas.

Nonetheless, East Asian architecture should not be viewed as phenomenon arrested from further development. The underdevelopment of the architectural discipline is due to the fact that the subordination of one discipline to another signifies a system of classification, therefore it is congruent and systematic in its own right. This thesis recognises that philosophy, especially Taoism, is largely responsible for this nature-bound discipline, lacking in scientific progress, as it emphasised control over the human mind rather than over the external material world in which modern science finds its existence. This conceptual difference provides an acceptable answer for the non-existence of science in East Asia, which inevitably results in the non-existence of science of architecture. This argument is not, of course, intended to frame East Asian

[1] Durkheim, E. & Mauss, M., "The Social Genesis of Logical Operations", in Douglas, Mary (*eds.*), "Rules and Meanings", Penguin, London, 1973, pp. 32 (*originally published in 1903*)

civilisation or architecture within the steps of Western development, but it is rather a structural platform to begin with.

As the lack of science as an independent discipline does not provide a significantly tenable explanation for the lack of emergence of modern architecture as it occurred in industrial Western Europe, it is possible to look at the whole phenomenon the other way around. Industrialisation was in fact boosted by the triumph of technology not necessarily inspired by modern science. As Ellul (1964) points, science is an element of technique. Modern science apparently contributed to the development of technology, so-called scientific technology, but it was not necessarily a condition for such a technological triumph. This is the very point where science can not do justice to further architectural development in future, especially in terms of humanism and culture. Scientific rationality is now in serious question for its validity in general sense, and it marks a turning point towards a reflexive modernisation eulogised by Beck (1992) and Giddens (1994). The reflexivity which they assert is a new paradigm that goes beyond the first modernity; the sequence of development human consciousness is thus tradition, modernity and reflexivity. In order to show a possibility of a system of an alternative paradigm in architecture beyond (or even without) modern science, this thesis will demonstrate a high level of systemisation in architecture practised in East Asia at an early age of civilisation. It was value-laden practice linked to rationalisation of architectural construction.

It is generally recognised that the science of architecture was introduced with the development of geometry in Western architecture from which the value-free systematisation evolves (Pérez-Gómez, 1983 & Vesely, 1985). The question of traditional geometry and abandonment of divine utopian models in the post-Renaissance period seems to be the first sign of the emergence of modern architecture, and it seems it is the main breakthrough to the sciencisation of architecture in Western Europe. Architectural spirit inspired through two hundred years of Renaissance moved to seventeenth century France where actual divine models of architecture ceased to function, and a new sets of rules were proposed by a number of architects such as the Perrault brothers, subsequently culminating in the works of J. N. L. Durand (1760-1834). Along with the Industrial Revolution in England for over one hundred years, an

unprecedented political, social and cultural transformation took place across Europe, and a new society of democracy and capitalism demanded new models for architecture, and also the re-structuring of conventional sets of rules.

The introduction of representational technique brought the loss of sacred forms and spatial arrangements, especially when a number of people in the 18th century France questioned their validity (Pérez-Gómez, 1983 & 1992). In fact, the role of geometry hitherto was limited to working as an intermediate means to get conceptual plans to become visualised. In the course of visualising concepts, the transcendent ideology came into question, and the science of architecture began to emerge and eventually took control. The tragedy of the loss of humanism and the cultural discontinuity begins with the use of descriptive geometry in representation as a *modus operandi* in late 18th and early 19th century, notably from the ideas of C. Perrault and J. N. L. Durand. Given the fact that there exist human dimensions of architecture such as experience or emotion in the over all built environment, then it is simply impossible to reproduce the artefact as a whole in a two dimensional format of representation. If there exists an intimate complicity between architectural meaning and the *modus operandi* of the architect, as Pérez-Gómez (1997) assumed, the way the representation or the reality is created insinuates how a building should be interpreted. Under the principles of descriptive geometry, the embodiment of conventional elements such as symbolic orders in the representations is questionable. The core issue of descriptive geometry was rather how to correct optical distortion of reality in a limited flat space. The very notion that may draw a line between the vernacular and the modern may be converged in this context as well. The immersion of subjectivity in the painting or cartography in China differs from the objectivity of the modern mode of representation found in those of Western counterparts. This is, however, still a valid method of representation in its own right, and it should be equally regarded as a useful vehicle for architectural representation forming a legitimate realm for study in architecture. The current thesis does not intend to investigate this issue, but attempts to cast light on the impact of the use of representation as an instrument and technique in the interpretation of architecture. In the period of the Modern Movement, geometry was taken as a science of architecture, and its realisation became possible in combination with other technical enhancements such as availability of new materials and construction techniques.

In order to undertake the current research enquiry on the institutions of architecture, the current thesis juxtaposes the natures of 'the planned' and 'the executed' through establishing a set of rules reflecting a utopian model by examining texts on architecture, whether written or orally transmitted, and by probing relevant examples of the traditional built environment. The result could be contradictory as the approach is paradoxical. What is built and extant may not be congruent with texts that can be identified by constructing ideal rules and models. However, the presence or absence of the physical evidence for the idea of 'the planned' would not necessarily be the truth of historical discourse of institutions of architecture, for architecture has never been a static entity nor an achievement of a designer's own idea. In fact, it is pretty difficult to establish a comparison between 'the planned' and 'the built', for not only is the former specific to time and place, while the latter is a transitional and unselfconscious phenomenon of implicit complicity, but also there exist intangible multiple codes in 'the planned'. In both hemispheres, multiple layers of meanings are detected by means of cross-examination of documents, treatises and oral transactions and compared with their validity in 'the built'.

A robust *feng shui* system of architectural planning, design and practice is especially considered a detail for contrast with modern theories of architecture. The tradition of *feng shui* is presented here not as a conglomeration of myth, values, customs, technology and so on, but rather as a set of principles and rules bringing conceptual models of East Asian utopia into concrete reality. Of course, *feng shui* is integral to those myth, beliefs, values, customs, etc., but its capacity should be considered as instrumental, and as a stark model to be kept. *Feng shui* forms a major part of East Asian culture as an institution of architecture therefore it is accessed through establishing a framework of East Asian intellectual tradition. The development of architectural institutions in China maybe best viewed when juxtaposed with that of Western architecture, as they mirror each other. Different classification systems present different modes of thinking about the built environment, and the establishment of educational institutes as well as artisan structure reveal fundamental differences between East and West. Building manuals used for architectural practice in both hemispheres also unravel primary differences in understanding architecture as a

discipline and as a process. As the architecture of East and West obviously present their primary structure, German masonry and Chinese carpentry are carefully studied to unravel the hidden dimension in the practice, not being necessarily congruent with that of academic tradition. As secret societies, these mason and carpenters guilds relied on oral tradition for transmitting their professional knowledge, and their practice appears to be fundamentally different from intellectual traditions of their own cultures. The most revealing facet in East Asian architecture is certainly feng shui which is constructed as a mélange of arts and sciences within the intellectual framework of East Asia.

Being totally different from Western architecture as a whole, one may incline to think that every single item in East Asia can be regarded under the umbrella of *feng shui* models. For this reason, *feng shui* appears to be so permissive although its practice is pretty identical. Beginning with a definition of terminology, empirical knowledge on *feng shui* is not just compiled, but virtually re-organised to constitute a systematic set of rules forming an alternative tradition in architecture. Yet, whilst the belief that *feng shui* played an important role in shaping East Asian architecture and the city is widely accepted, its precise place within East Asian intellectual tradition remains far less generally agreed. Often, architectural historians fail to do justice *feng shui* as a significant driving force throughout East Asian architectural history. To build a system of *feng shui*, and clarify the nature and scope of its role in the vernacular tradition is one of the primary objectives in this thesis.

Moreover, it is intended to reveal a historical meaning of modern traditions in architecture in its emerging period, and exactly how the dynamic forces of modern architecture could thread into Western modernism in general. A number of attitudes on modern architecture after the Renaissance are looked at and two opposing attitudes of Romantic and Avant-Garde are identified. The Puginian Gothic Revival and the Instrumentalism of J. N. L. Durand are considered as emerging currents of the Modern Movement in architecture. They are constructed as complementary yet opposed currents of modern architecture; an attitude still subscribing to a transcendental mode of existence, as against an opposing current which takes scientific rationality as its ultimate virtue.

Dynamic forces of Modern Movement in architecture in the early twentieth century are examined with a particular reference to Weissenhof Siedlung in Stuttgart. The significant vectors of interests and influences from the Modern Movement are hitherto generally not adequately recognised, partly due to the propaganda mainstream of modern architecture, culminating in the International Style of 1932, but those currents of modern architecture are also reduced into mere styles. In particular, the significant intellectual enterprise of organic architects such as Hugo Häring and Hans Scharoun is mistakenly viewed as Expressionism. As this case is important for modern architectural history and theory, the German organic movement is studied in detail in an effort to reveal an alternative tradition in modern architecture, and it is also compared with that of Frank Lloyd Wright whose concept of organic architecture included a keen interest in Japanese art and architecture, especially in Japanese art printing. The Japanese influence on Wright's work is significant for exemplifying that East Asian culture and non-western culture can co-operate to play a vital role in building a new conception in architecture.

With the above texts and contexts in mind, this thesis also speculates that an Orientalist attitude may hamper the building of better paradigms in future architecture. 'Orientalism', as Edward Said (1978) suggested, is a notion that explains how the Orient was deliberately created within Western culture, and that it may distort a genuine image of the East. Despite the fact that no one knows if there exists such a thing as the genuine Orient, Said's argument remains valid in that the current portrait of the Orient (or East Asia) is a product of Western imagination. According to Said, Orientalism forms part of Western civilisation, and the West often sought unknown spirituality and intuition from their creative product. A world of Western invention was lost through the Industrial Revolution, and Orientalism is a romantic gesture in the hope of experiencing it. This thesis is rounded off with a section on reflexive modernity in the final chapter, an open debate on the possibilities of alternative traditions in which East Asia can contribute major intellectual resources. Reflexivity in architecture concerns the scientific rationality which established Modernism, but also destroyed it. Modernism's loss of contemporary currency is related to its generalisation over society's diversity which cultural elements are now most important issue. It is

suggested that it is vital to question the validity of scientific rationality in the current and future society and that the new paradigm should go beyond Orientalism, whose contents are no longer tenable.

The questioning of scientific rationality and the challenge to Orientalism are not antitheses, but it is rather a fundamental change in the way of thinking about the constitutive role that the architectural discipline can win in the course of bringing a new paradigm in its theory and praxis. Orientalism's aesthetic approach is already executed by a number of artists and architects. Aesthetics certainly offer a debate on visual images, experiences and subsequently rational judgement. What is here nonetheless more concerned is a modality through the basic creative function that generates built form from its willingness to see, learn, think and build by necessity of being in the world. In this regard, the current thesis is an effort to clarify what has been obscured in contemporary architectural history and theory, and this is a challenge to unbridle it from social prejudice of modernism.

1.2 Cross-cultural Interdisciplinary Approach

The traditional historiography yielded its dominance to the interdisciplinary research in the early 20th century, mostly stressing anthropological perspective in architectural history. History, according to Carr (1961), is viewed as "an enormous jig-saw with a lot of missing parts... ...our picture has been pre-selected and predetermined for us, not so much by accident as by people who were consciously or unconsciously imbued with a particular view and thought the facts which supports that view worth preserving"[2]. This phrase reflects the nature of history rather than indicating that current history is intentionally biased or distorted; since the problem lies on the available material which is very much limited at first hand, and secondly the research angle is confined to a single discipline. For those two reasons, historical material was often used in monotone. In this sense, the terms 'biased' or 'distorted' are not very appropriate. On the contrary, there also appears to be a collective creation of images which mislead history. Edward Said's erudition on Orientalism is a monumental piece

[2] Carr, Edward Hallett, "What is History" (2nd edition), Penguin Books, London, 1987, pp. 13

in this context. His claim of the concept of the Orient as 'a system of ideological fiction' legitimates its validity and relevance in the current thesis[3]. This is rather a problem of interpretation, and cross-cultural interdisciplinary research can eliminate the innate dangers of a single disciplinary approach by looking at the facts from various angles.

With an interdisciplinary perspective, cross-cultural study is especially beneficial to this kind of research in general. In this thesis, taking various angles on cultural phenomena is important not only to understand East Asian architecture, but also for the self-discovery in Western architecture, or *vice versa*. Needham (1971) asserted that "One of the greatest needs of the world in our time is the growth and wide dissemination of a true historical perspective, for without it whole peoples can make the gravest misjudgements about each other ... ... a right historical perspective here is one of the most urgent necessities of our time"[4]. This cross-cultural study therefore highlights elements that were not given proper attention due to the fact that East and West hitherto neglected to the alternative paths of development in human consciousness. Owing to the cultural condition or intellectual deficiency that impedes one to limit oneself into only one line of development, it is not easy attempt to honour other cultures, and to envisage a much bigger picture of the development of the whole civilisation. Guidoni (1975) suggests that "(with) the reciprocal counter-influences between dissimilar economic and political system help to define an extremely wide and varied gamut of situations"[5]. He maintains that "the connection between architecture and society even the most original local developments can be understood as accentuation of characteristics present in other cultural contexts, though to a different degree and in a different way"[6]. Surely, cross-cultural perspective will accentuate a number of elements in different institutions in the way in which they are regarded and used in different contexts.

[3] Said, Edward W., "Orientalism: Western Conceptions of the Orient", Penguin Books, London, 1995, pp. 321 (*originally published in Routledge and Kegan Paul in 1978*)
[4] Needham, Joseph, "The Historian of Science as Ecumenical man: A Meditation in the Shingon Temple of Kongosammai-in on Koyasan" in Shigeru Nakayama & Nathan Sivin (*eds.*), "Chinese Science : Explorations of an Ancient Tradition", The MIT Press, 1973, pp. 1
[5] Guidoni, Enrico, "Primitive Architecture", Electa Editrice, Milan, 1975, p. 10
[6] Guidoni, Enrico, *op. cit.*, 1975, p. 12

Overcoming ethnocentrism is undeniably one of the most important conditions to be considered in cross-cultural studies. Western perspectives on East Asian architectural history, or other cultures, potentially possesses more or less of this kind of drawback, as Orientalism clearly exemplified. It is, in a sense, true that Western architectural history is solely emphasised in major history books, others being given a superficial place in the Western taxonomy. Recently a number of scholars tried to balance hitherto incomplete editions of architectural history in response to newly discovered relationship with much more enlightened attitudes[7]. Be that as it may, sharpening current understanding of East Asian architecture in line with its own ideology and context, as a significant element of human experience, is a critical task in this thesis, discouraging pigeon-holing East Asian elements and characters into Western classification system. What is equally concerned here is that one should not fall into 'Occidentalism' either. Without a fine conscious understanding of modern western society, mere economic development and political consolidation in non-western countries would not suffice to integrate the best of the two cultures. Finally the only criteria that the current research employed to select and examine the works of architecture and cities is that the artefacts should be capable of sustaining discourse within the context of this thesis. This is in part due to the vast amount of data available covering wide geographical area as well as a period of time, and in part due to locating them in the appropriate part of the thesis.

1.3 Organisation of the Thesis

This thesis is comprised of three main bodies of which the first part is the research framework, the second an East Asian architecture and the last on the Modern Movement. The prologue in chapter one provides the research orientation, and guides the development of thesis. Research frameworks in chapters from two to four form pieces of architectural epistemology in East Asia and Western Europe. A necessary schism is established as a platform to open an argument, and the thesis is proposed that architectures in East and West were formed under the different bodies of knowledge,

[7] A famous history book 'Sir Banister Fletcher's History of Architecture" recently added a substantial amount of non-western architectural documentation. Although Pyla (1999) pointed that the vast majority of architectural history books neglect non-western material, its recognition signals

therefore an interpretation on them should be aligned with their own rights. The concepts of architecture as a discipline, an architect as professional, and the traditions of the vernacular and Modernism are sought, and they provide a framework for the thesis. The vernacular and Modernism are considered as paradigms of which the former has no science of architecture while the latter has. The differences between the vernacular and Modernism are legitimated as independent institutions, and the characteristics of these two institutions are studied in terms of their representations in various ways.

Chapters five and six form a series of interpretations of East Asian architecture. Chapter five deals with the classification of architecture in East Asia in terms of art, science and technology, concluding that the nature of East Asia architecture is unnameable under the Western classification system. The way science is not developed in East Asia is investigated under the philosophical point of view differing from building science, and reaches an idea that architecture in East Asia is not an independent discipline, but subordinated to various disciplines such as politics and religion. East Asian architecture faithfully works as a means to embody the cosmic ideology of the society. Chapter six consults *feng shui* under the epistemological point of view, and attempts to legitimate it as an ancient theory of architecture and the city in its own right.

Chapters seven to eight are devoted to the development of modern architecture. The emergence and development of rational thinking in architectural planning and design in association with the use of geometry as an instrument in the early modern period to the emergence of two opposing strands of modernism in architecture is discussed in these two chapters. In order to ascertain the root of modern architecture, the study tried to detect the transformation of the discipline of architecture regardless of time period so long as the material works in tune with the context of thesis. The sciencisation of architecture, dating from the Post-Renaissance period to the early twentieth century, is a very notion that distinguishes modern architecture from the vernacular tradition. Chapter eight discusses the Weissenhof Siedlung project as a centre of modern debate

changing tendency in architectural historians' perspectives.

on the theorisation of alternative traditions of modern architecture. It is recognised that the Bauhaus tradition is a driving force behind the dispersion of a universal style, but there existed another tradition of architecture that initially termed as 'Expressionist'. An organic approach of German architects, especially Hugo Häring and Hans Scharoun, is studied as opposed to the Miesian tradition of modern architecture with an extension to Frank Lloyd Wright's notion of organic architecture.

Chapter nine scrutinises Orinentalism and the problem of the art market as a hindrance in building a new paradigm in architecture and urbanism for future society. Reflexivity is suggested as an advanced modernity, a further advanced from the first one, and it is asserted that it can be an alternative vehicle to exit the current dilemma of intellectual deficiency. In conclusion, chapter ten sums up the way different institutions in architecture came into existence, and the dilemma of synthesising tradition and modernism. East Asian architecture grew out of its own vernacular body of knowledge that has accumulated and cultivated in its own soil, and it deserves careful examination for its values and further validity in the future. It is, therefore, necessary to interpret them in their own terms. On the other hand, two traditions in Modern Movement, compared and contrasted as opposing institutions in architecture in West, suggest multiple histories of modern architecture. Incompatible institutions uncovered as alternative traditions in architecture, feng shui and organic architecture, suggest the possibility that the currently prevailing paradigm in architecture, increasingly losing its currency, can be re-oriented towards a better integration of old and new, and of East and West.

Chapter 2

Institutional Transformation:

The Vernacular versus Modernism

Architecture is a cultural product of the society to which it belongs. The society, then, should be defined in order to identify what architecture it produces, and how different itself is from the other societies. This basic enquiry has never succeeded in achieving a pin sharp concept contrasting differing societies, which could lead to distinctions among different architectural works across the world. This requirement can be met however at least in one point; in terms of different modes of thought. Although it may look too permissive, this kind of notion can not be sliced into clear pieces. Instead it would govern rather a broad range of transformation. There might be implicit drawbacks in establishing this postulate such as "could there be only one way of thinking in a society" or "does everyone in a society share one way of thinking?" Of course not. This is why the basic distinction among societies should be more generalised, but at the same time it should be made verifiable to a higher degree. The rationality and verifiability came out of development of human awareness and consciousness. The change of the mode of thought, as the attitude towards human experience, can be considered as the vital force of the institutional transformation from the vernacular to Modernism. For the purpose of this thesis, the vernacular and Modernism are therefore regarded as incompatible paradigms; institutions of alternative modes of thinking.

The phases of development of civilisation are greatly associated with self-consciousness or self-awareness. Gebser (1949) pointed out that human culture has developed through an array of stages - archaic, magical, mythical, mental and integral - and his notion of transition from unperspectivity to perspectivity and towards aperspectivity is understood in terms of development of human consciousness[1]. According to Gebser, the human civilisation was an unperspective world before

[1] Gebser, Jean, "The Ever-present Origin", (*trans.*) by Noel Barstad with Algis Mickunas, Ohio State

Renaissance, and at the integral stage, which is most recent as yet, the human civilisation reincorporates myth and rationality together. In this respect, Western scientific thought is the result of fast growing self-consciousness. These phases of consciousness and awareness can be defined as paradigms to which societies can belong as appropriate. Then, modes of thought can be viewed under the coherent systematic perspective acknowledging their own rights of phases. For the purpose of this thesis, if "scientific thought" is defined as a mode of thought with a higher degree of rationality and verifiability, then it could be clearly distinguished from other modes of thought, although the question of how much it differs from conventional science would be an another matter.

Making a critical distinction between the vernacular and the modern involves more than just one feature. Among them are the division of labour in contrast with collective labour, openness of the society as opposed to the closeness, secularism as opposed to religiousness, individual creativity as opposed to the dominance of tradition and, most importantly, the Western scientific thought to other non-scientific ones[2]. Western scientific thought, however, is not precisely defined nor does it occupy a clear position in contrast with non-scientific thoughts, as it can be understood under many different perspectives. Nonetheless, this scientific mode of thinking might be considered as part of so-called "modernity", a Western mode of social institution or life which emerged from seventeenth century Europe towards the globalisation in the twentieth century.

Modes of thoughts are normally understood as 'processes of thinking' rather than their contents; i.e., as 'the way people think'. According to Colby and Cole (1973), traditional societies could be distinguished through the 'deutero-learning' method[3]. This is in a way plausible, at least in East Asian context, as students have been told to follow things given passively rather than think and judge creatively. Memorising old rhymes and poems, mostly by Sages and prestigious scholars, was the most important matter for the intellectuals in the past, and even nowadays. Still the rote memory

University Press, 1991 (originally published as "Ursprung und Gegenwart", Stuttgart, 1949)

[2] For the possible distinctions see, Horton, Robin & Finnegan, Ruth (*eds.*), "Modes of Thought", Faber and Faber, 1973, pp. 17

[3] Colby, B. & Cole, M., "Culture, Memory and Narrative", in "Modes of Thought", Horton, R. & Finnegan, R. (*eds.*), Faber & Faber, London, 1973

method is used in many schools. This facet is a sharp opposition to the modern Western way which is much more rational and self-conscious.

There are, of course, scholars who strongly disagree with above notion about modes of thoughts like Gay and Cole (1967) who said that "the reasoning and thinking of different people in different cultures do not differ...just their values, beliefs and ways of classifying things differ"[4]. Alternative cultural systems certainly differ in their values and beliefs, but these are closely linked with ways of thinking and attitudes. This assertion, although correct, does not devalue the modes of thought as a distinctive factor in differing societies in which the built environment is produced in association with values, beliefs and classification systems and so on. If one can set opposing values of the cognitive processes, either static and dynamic, then it would seem that differing processes would influence people in their creative behaviour in the built environment in different ways. Undoubtedly, the scientific mode of thought has delivered a higher proportion of tenable beliefs than others, and it did affect people's value and classification systems, i.e., social institutions.

Furthermore, if the scientific mode of thought is to be considered as the basic distinction among societies, it should be valid in association with other changes which may occur along with any particular phenomenon. This means that if a notion, of science or whatever as the basic distinction, limits its validity to one specific characteristic of the society, then it lacks explanatory power over other societies as it can not justify associations of one specific characteristic in other societies. Wolfram (1973) also insisted that "...it (the basic distinction) would have to be discovered that it is a difference which brings about others..."[5]. For example, the scientific revolution accompanies an overall socio-economic transformation in the modern European society, or the apprehension of Confucian values enables one to see underdevelopment of science and technology in China within its own historical context. Under this structural context, it seems the scientific mode of thought, featuring high awareness and self-consciousness, can serve this purpose well.

[4] Gay, J., & Cole, M., "The New Mathematics and an Old Culture", Holt, Rinehart and Winston, New York, 1967

[5] Wolfram, Sybil, "Basic Differences of Thought", in "Modes of Thought" (*eds.*) by Horton, R. &

2.1 The Vernacular as a Paradigm

As there are historians who take the idea of vernacular architecture from a rather narrow point of view as differentiating common everyday buildings from monumental architecture, the concept of the vernacular in this thesis should be clarified. The vernacular in this thesis refers to "a less self-conscious, non-scientific paradigm which flourished before the Industrial Revolution in general, and its tradition involves local knowledge, oral transaction, local material and so on". Regarding this, Quiney (1990) wrote that "in England, it (vernacular architecture) is ... ... a series of inter-linked local sub-traditions which were born in the Middle Ages, flourished in the sixteenth and seventeenth centuries, and died in the Industrial Revolution"[6]. The vernacular in this thesis is defined as a paradigm. It is not entirely extinguished yet as Quiney claims, but it has increasing difficulty in preserving its tradition. Therefore, it should be stressed that framing the vernacular in a certain period of time or realm of territory (e.g., before the Industrial Revolution or in Europe or East Asia) is not a concrete fact, but a mere medium of classification in undertaking diachronically and synchronically comparative research. Carr (1961) has noted that "the division of history into periods (or geographical sectors) is not a fact, but a necessary hypothesis or tool of thought, valid in so far as it is illuminating, and dependent for its validity on interpretation"[7].

Brunskill (1970) suggested a vernacular zone to clarify which buildings belong to a vernacular tradition; the period between which vernacular buildings appeared in relatively permanent materials and ceased to have this quality[8]. For him, the survival of vernacular quality is the most important requirement in differentiating vernacular from ordinary buildings and for archaeological concern[9], and the quality of vernacular involves social status, time, place and permanence on the basis of non-absoluteness but as a matter of degree[10]. While Brunskill (1970 & 1981) differentiates between polite architecture and vernacular architecture, e.g. St. Paul's versus crofter's cottage, and

Finnegan, R., Faber & Faber, 1973, pp. 361

[6] Quiney, A., "The Traditional Buildings of England", Thames and Hudson, London, 1990, p. 6-7

[7] Carr, Edward H., "What is History?", Penguin Books, London, 1961, pp. 60-61

[8] Brunskill, R. W., "Illustrated Handbook of Vernacular Architecture", Faber and Faber, London, 1970, p.25

[9] Brunskill, R. W., *op. cit.*, 1970, p.28

[10] Brunskill, R. W., "Traditional Buildings of Britain", Victor Gollancz Ltd., London, 1981, p. 22-23

also in terms of degree in professional/academic and amateur/folk, he also cites that the emphases on construction are aesthetics and function. His argument, however, on traditional influence differentiating vernacular architecture from polite architecture[11], is under the umbrella of "a non-scientific mode of thought". For although St. Paul's is much more academic and professional than a crofter's cottage, it is also inherited from the classical vocabulary of traditional church buildings as cottage is from local tradition of masonry. On balance, both fall into the realm of the vernacular tradition of non-scientific and less self-conscious.

There is another influential misleading predisposition on the vernacular. Pevsner's famous remark: "a bicycle shed is a building; Lincoln cathedral is a piece of architecture"[12] presents a historian's conventional perspective on architecture until quite recently. Here, a building denotes roughly a structure in lack of decoration while architecture is placed in another higher dimension. This standpoint is, however, not appropriate to reflect modern architectural history. Much earlier, the eminent nineteenth century French architect and theorist Viollet-le-Duc put the notion of architecture as a work of art in his work of 'Histoire d'une maison' (1873), in a form of dialogue between a schoolboy Paul and his architect-cousin Eugene, that

Paul : "You consider a barn, therefore, a work of art?"
Eugene : " Certainly; if it is constructed so as to afford a suitable shelter for what it is intended to hold, it is, in my view, more admirable than an inconvenient palace, though decorated with colonnades and pediments."[13]

Viollet-le-Duc also claimed that it was 'les enfants du peuple' who in the Middle Ages has produced admirable monuments, not any privileged class such as the architect, the painter, or the sculptor[14]. Furthermore, John Ruskin (1853) also noted that the building is the work of the whole race, while the picture or statue is the work of one person

[11] Brunskill, R. W., *op. cit.*, 1981, p.22
[12] Pevsner, Nikolaus, "An Outline of European Architecture", Pelican Books, London, 1960, p. 7
[13] Viollet-le-Duc, Eugenè, "Histoire d'une maison", Paris, 1873, (translation from Hearn, M. F., "The Architectural Theory of Viollet-le Duc: Readings and Commentary", The MIT Press, 1990, pp. 193)
[14] Viollet-le-Duc, Eugenè., "Revue Générale d'Architecture" (recitation from Pevsner, N., "Ruskin and Viollet-le-Duc", Thames and Hudson, London, 1969, pp. 18)

only[15]. In view of Viollet-le-Duc's notion, Pevsner's distinction between architecture and building then appears rather precious, as Broadbent (1988) points out, since the essential properties of architecture include even rudimentary architectural gestures like marking of places, trees, stones for example[16]. Unlike the current trend in architecture, famous and influential historians in the past, like Fletcher[17] (1896), Fergusson (1874), Pevsner (1960), largely ignored vernacular architecture. Oliver (1969) wrote that "books on the history of architecture are seldom concerned with other than monumental building"[18].

It was Bernard Rudofsky who introduced this subject in 1964 through the exhibition of "Architecture without Architects" at the Museum of Modern Art in New York although the term 'vernacular' dates back to several hundred years[19] (Filarete in Trattato: Turan 1990). Rudofsky (1964) said that "it is so little known that we don't even have a name for it. For want of a generic label, we shall call it vernacular, anonymous, spontaneous, indigenous, rural, as the case may be"[20]. Rudofsky cited historian's parochialism of the discriminative approach to monumental architecture. The need for vernacular or folk architecture is further strengthened by Doxiadis' claim (1964) that only 5% of houses are architect-designed[21]. Yet, although the profession of architect becomes more and more popular, somehow because of the law or incapability of building a house for oneself, the vast majority of the current built environment in most parts of the developing world is the work of and by the population in general. In this context, understanding the vernacular is very important as it would still dominant in the near future. Oliver (1997) notes that "there is the issue of identification with tradition and the significance of the building heritage in giving material expression to it. Yet, I believe that the study and conservation of vernacular tradition and the abilities

[15] Ruskin, John, "The Stones of Venice", London, 1856, pp. 389 Ruskin's idea is a complex one as he acknowledges ornament as a criteria for distinguishing architecture from mere buildings, as Pevsner followed, but he also sees that it was general public who could actually built great works of architecture. (recitation from Pevsner, N., *op. cit.*, 1969, pp. 18)

[16] Broadbent, Geoffrey, "Design in Architecture", David Fulton Publisher, London, 1988, pp. xiv

[17] Fletcher's posthumous editions, 21st edition (1996), for example, began citing vernaculars of non-European cultures.

[18] Oliver, Paul, "Shelter and Society", Barrie & Jenkins, London, 1969, p.7

[19] Turan, M. (*eds.*), "Vernacular Architecture", Avebury, 1990

[20] Rudofsky, Bernard, "Architecture without Architects", Museum of Modern Art, New York, 1964

[21] Doxiadis, A. Constatinos, "Architecture in Transition", Hutchinson Ltd., London, 1964, p. 71-75 He says that architects' influence is precisely nil in most of the world (p.71).

necessary to sustain is fundamental to the housing of millions in the twenty first century"[22]. Scruton (1991) also acknowledged the importance of the vernacular architecture to which Georgian terraces and Victorian slums belong. He defined it as "the architecture of the ordinary builder, the person with neither pretension nor claim to genius, who has nevertheless availed himself of patterns and principles through which to exercise his taste, to please his clients, and to make lasting decisions as to what is right and wrong"[23]. His notion of vernacular architecture in terms of its builders, however, needs further clarification.

Because of terminological uncertainty of 'vernacular architecture', Oliver (1969) discussed the term 'architecture', and found that it came from Latin *arkitekton* and it can be divided into *arkhi* which means chief or leader and *tekton* builder, and 'vernacular', from the Latin *vernaculus* meaning native or from *verna* which means French home born slave, as the language or dialect of a country or region[24]. In this sense, 'architecture' does not include primitive dwellings and any other non-architect produced phenomena, while 'vernacular architecture' means absolutely indigenous to the place of origin not borrowed nor learned from elsewhere. This narrow concept, however, brings problems for the term 'architecture' as we do not have architect-designed buildings in most of the world even nowadays (Doxiadis, 1964). Quiney (1990) even excluded architects from tradition by referring to a property of tradition as "beliefs or customs which are carried from one generation to the next by practice or word of mouth, not by writing"[25]. Therefore, the concept of architect should also include builders in order to justify the vernacular as a kind of architecture, and architecture as a historic achievement. In this sense, primitive dwellings in Africa and tepees of North American nomads are part of architecture, say traditional architecture, simply because they are man-made environment and man, as a historical being, is an architect. As vernacular architecture is a collective product of traditional society, it should be understood from a rather broader point of view not to oversimplify complex

[22] Oliver, Paul, "Encyclopaedia of Vernacular Architecture", Vol. 1, Cambridge University Press, 1997, pp. viii

[23] Scruton, Roger, "The Classical Vernacular: Architectural Principles in an Age of Nihilism", Carcanet Press, Ltd., Manchester, 1994, pp. 15 (Originally published in Gaston, Robert W. (*eds.*) "On the Public Face of Architecture", Melbourne, 1991)

[24] Oliver, Paul, "Shelter and Society", Barrie & Jenkins, London, 1969, p. 11

[25] Quiney, Anthony, *op. cit.*, 1990, p. 6

phenomena of the built environment. With regard to this permeability, Rapoport (1999) suggested the use of the term 'vernacular design' rather than 'vernacular architecture', for the former refers not only buildings but also to systems of settings within which systems of activities take place[26]. Despite the fact that his notion certainly embraces the over-all institution, the artefact and human activities, the term 'vernacular architecture' also encompasses the whole building institution: for without human activities architecture of any kind can no longer exist.

Importance lies more in the differentiation of types of architecture, for those under the general name architecture do not belong to the same stratum having different social and economic contexts. Among types of architecture, 'primitive', 'traditional', 'vernacular', 'indigenous' should be discerned in order to clarify what this thesis concerns and on what basis. First, 'primitive architecture' is the built environment made by primitive men[27] and it refers to a cultural product for societies which are essentially different from Western Europe and technically less advanced than the Western countries and the great civilisations of the Orient[28]. 'Traditional architecture' can mean any type of architecture since the term acknowledges the lineage and inheritance of the past; Oliver (1997) defines traditional society as "one (society) which depends on the authority of its traditions to affirm present thoughts and actions"[29]. 'Vernacular architecture', which this thesis mainly concerns along with the Modern Movement, relatively denotes the folk equivalent of formal architecture in terms of linguistic point of view[30], and it is also regarded as an uncultivated type of architecture without conscious style and not in relation to official architecture[31]. 'Indigenous

[26] Rapoport, Amos, "A Framework for Studying Vernacular Design", Journal of Architectural and Planning Research, Vol. 16, No. 1, 1999, pp. 54

[27] Oliver, Paul, "Dwellings: The House across the World", Univ. of Texas Press, Austin, 1987, p. 9
It should be noted that the concept of primitive men is rather inappropriate, as the term does not correctly justify underdevelopment of human intelligence or physical development. Le Corbusier (1923) noted that "there is no such thing as primitive man; there are primitive resources" (see Le Corbusier, "Towards a New Architecture", London, 1927, pp. 66). I may further say what is primitive is their technology, not human itself. Le Corbusier's notion of instutional change fom primitive society to modern society (an advancement) is, however, too mechanistic. He argued that the human civilisation has made an advancement from elementary decorative staisfaction to the higher satisfactions of mathematics. (see Le Corbusier, *op. cit.*, 1927, pp. 129)

[28] Guidoni, Enrico, "Primitive Architecture", Electa Editrice, Milan, 1975, p. 16

[29] Oliver, Paul, *op. cit.*, Vol. 1, 1997, pp. 117

[30] Oliver, Paul, *op. cit.*, 1987, p. 9

[31] Guidoni, Enrico, *op. cit.*, 1975, p. 16

architecture' means architecture by native residents and it does not possess many imported characteristics in terms of a semantic point of view.

The distinctions made among said terms are under the semantic perspective in general. The semantic point of view, however, is often pervasive, loose and too much generalised as seen above. Definitions seem to overlap and criteria for distinction are not coherent. Although the term 'vernacular' delivers an impression of folk culture, it possesses more distinctive features than others to be an opposing term to the modern. Vernacular architecture, first of all, does not limit its technological advancement like primitive architecture does, nor does it exclude potential cultural influence from outer world like indigenous architecture does, and most importantly it possesses a strong tenacity to tradition which embraces virtually everything. Where the vernacular differs the most from others is that it denotes institutions which bear strong historical lineage and inheritance along with its varied possibilities. As long as this institution works in a society, it is the vernacular world regardless of technological development or possible economic or political transformations, for the very essence of the architecture and of the society remains valid. The term 'traditional' was not adopted in this thesis as the Modern Movement is a tradition as well. Especially with the emergence of post-modernism or de-constructivism, the Modern Movement in architecture became 'a traditional style of the early 20th century architecture', rather than a serious intellectual exploration towards the betterment of human habitation.

Alexander (1964) introduced the notion 'self-consciousness' to explain the difference between the vernacular and the modern, and pointed out that "unself-conscious cultures contain, as a feature of their form-producing systems, a certain built-in fixity - patterns of myth, tradition, and taboo which resist willful change"[32]. He also mentioned immediacy of building material, directness of altering action, enough time for adaptation to occur, and the owner as the builder as features of unself-conscious cultures. In addition to Alexander's distinction, the concept of unselfconsciousness may extend to the society of artisans. Chinese artisans take apprenticeship for the purpose of cultivation of intuitive and meditative skill towards the mastery of an

[32] Alexander, C., "Notes on the Synthesis of Form", Harvard University Press, 1964, p. 48

indescribable technique of workmanship. In part, this has to do with the fact that the transmission of knowledge is conditioned by language barrier (artisans are illiterate in many cultures). Oliver noted that "a general typology of channels of oral transmission was intended as a means of access to historical information in non-literate cultures"[33], and it includes "builder's personal histories which give oral documentation of traditions within their experience, from training to maturity and retirement"[34]. Needham (1965) further pointed out that "the transmission of the crafts from one to another naturally involved a total education of the body and spirit of the learner. Apprenticeship was subjective and personal, not a matter of intellectual understanding, not at all the appreciation of mathematical functions describing the behaviour of deeply analysed physico-chemical entities"[35]. A description of traditional English four-wheeled farm wagon making by George Sturt would be a good example. Sturt (1923) noted that "the nature of this knowledge should be noted. It was set out in no book. It was not scientific. I never met a man who professed any other than an empirical acquaintance with the waggon-builder's lore"[36]. Needham further pointed out the nature of the English vernacular that "there was no conscious understanding of the why and the wherefore, only traditional good sense handed down through generations of Surrey wagon-builders"[37]. In contrast to this, self-conscious cultures have features of the other way around; i.e., rational approach to the discipline and systemisation of knowledge. Le Corbusier described this modern automated way of building as "the father no longer teaches his son the various secrets of his little trade; a strange foreman directs severely and precisely the restrained and circumscribed tasks"[38]. In his 1923 masterpiece "Vers une Architecture", Le Corbusier praised the idea of a "collective spirit without one's being in a worker's booth". Le Corbusier's machine aesthetics suggested an immense change in building and interpreting the built environment, and also in being in it. It is indeed true that one of the notable changes after the modern period is people's attitude towards built-in-fixity. People have changed their attitudes

[33] Oliver, Paul, *op. cit.*, Vol. 1, 1997, pp. 117
[34] Oliver, Paul, *op. cit.*, Vol. 1, 1997, pp. 118
[35] Needham, Joseph, "Science and Civilisation in China", Vol. 4, Part 2, Cambridge University Press, 1965, pp. 47
[36] Sturt, George, "The Wheelwright's Shop", Cambridge University Press, 1923, pp. 73
[37] Needham, Joseph, *op. cit.*, Vol. 4, Part. 2, 1965, pp. 49-50
[38] Le Corbusier, "Towards a New Architecture", (*trans.*) by Frederick Etchells, The Architectural Press, London, 1927 pp. 255 (originally published as "Vers une Architecture" in Paris in 1923)

from their body, at the minimal, to the far reaching cosmos. The changes in people's attitudes to the body often allow us to see houses with more bathrooms than bedrooms in North America, and these altered spatial organisations were caused by changes of dining behaviour, use of backyard and so on[39]. The vernacular is already suggested as one of the types rather than of form[40] featuring lack of rapid change and persistence[41], or as the characteristics of traditional planning and the use of local material[42].

As Blundell-Jones (1996) asserted, architecture is more the result of complicity than coercion between the building and its inhabitants which frames human activities[43], cultural integrity in the vernacular society was considerably stronger than in the modern world which suffers from a serious lack of immediate communication. The vernacular can be defined as a paradigm which involved old institutions that were inherited and exercised by the vast majority of people without seriously questioning their validity.

2.2 Modernism: a Shift of Paradigm

To avoid congenital rhetoric on the subject of the modern, such as modernism, modernity, modernisation, it is necessary to figure out what the term 'modern' means first of all, and how the relationship can be defined between the modern and the vernacular. According to Calinescu (1977), the word '*modernus*', an adjective and noun, was coined from the adverb '*modo*', meaning 'recently' or 'just now' during the Middle Ages[44]. Habermas (1981) also points that the term 'modern' came out of a late fifth century Latin term '*modernus*' in order to distinguish the Christian present of the time from the Roman and pagan past[45]. The term was gradually used for the general identification of that era with respect to the antique past. As the implication of the term is a transition from one mode to another, it has been used for various accounts that are

[39] Rapoport, Amos, "House Form and Culture", Prentice-Hall, N.J., 1969, p. 131
[40] Rapoport, Amos, *op. cit.*, 1969, p. 131
[41] Rapoport, Amos, *op. cit.*, 1969, p. 46
[42] Brunskill, R. W., *op. cit.*, 1981, p. 25
[43] Blundell Jones, Peter, "An Anthropological View of Architecture", in "Architecture and Anthropology", Architectural Design Profile, No. 124, Autumn, 1996, pp. 22-25
[44] Calinescu, Matei, "Faces of Modernity", Indiana University Press, Bloomington, 1977, pp. 13
[45] Habermas, J., "Modernity versus Postmodernity", New German Critique, No.22, 1981, pp. 3

not necessarily dependent on each other. This is why the term 'modern' generates rhetoric among various disciplines such as politics, science, literature and arts. Following Habermas (1981), the term 'modern' can be used when a new consciousness is established through a rediscovered relationship to the ancients.

Given the context of historical relativism, 'the modern' in this thesis is identified as a societal institution with a highly rational, and self-conscious mode of thought which saw a great shift from the vernacular state to the late 19th century and the early 20th century industrial, capitalistic and nation-state society. Thus, Modernism is constructed as a paradigm being a highly rational and self-conscious phenomenon in comparison to 'the vernacular'. Lash (1987) asserted that current society can be understood in terms of Modernism, which is conceptualised as a reaction to break with modernity, as a paradigm change in the arts which began at the end of the nineteenth century, and which also can be extended to encompass contemporary society[46]. Hays (1992) also concluded that Modernism has to do with the emergence of new kind of objects and events along with the new conceptualisations of their appearance, of the structure and relationship between objects, their producers, their audiences and consumers[47].

The conceptual identity of Modernism may be established in the light of two currents of modernity; the disengaged instrumental mode of thinking, and the Romantic attitude. Ignited by the French Enlightenment, the disengaged instrumental form of modernity is inspired by modern science, while the Romantic attitude reflects Bourgeois conservatism. Habermas (1981) described the former instrumental modernity as having changed with the belief in the infinite progress of knowledge and in the infinite advance towards social and moral betterment, while the latter, the Romantic modernists, sought a new historical epoch from the Middle Ages as opposed to the antique ideals of the classicists, which in turn developed into a radicalised consciousness of modernity free from all specific historical ties[48]. It can be

[46] Lash, Scott, "Modernity or Modernism: Weber and contemporary social theory", in S. Whimster and S. Lash (*eds.*), "Marks Weber, Rationality and Modernity", Alan & Unwin, London, 1987, pp. 355

[47] Hays, K., Michael, "Modernism and the Posthumanist Subject", The MIT Press, 1992, pp. 4

[48] Habermas, Jürgen., *op. cit.*, 1981, pp. 4

recapitulated that Modernism emerged from a Romantic attitude of nostalgia towards a past feudal and vernacular world as well as from a biased disengaged instrumentalism.

Conceptualising the process of modernity would also be useful to establish a sound foundation for the paradigm shift in the context of this thesis. According to Berman (1983), three major steps of the development of modernity can be identified. The first is that people began to experience modern life from the sixteenth century up to the eighteenth century; the second is the great upheaval of the French Revolution; and the third is the global diffusion of modernisation. Following Berman, although the terms 'modernity' and 'modernisation' are often used in a way that is synonymous, 'modernity' denotes a kind of 'experience of life' while 'modernism' is a developing culture in association with modernisation [49].

Modernisation is an incessant flow of phenomena which generate a conscious break and provoke a new association between past and present, and it existed ever since humans came into being. What dramatically differs with the change from the vernacular to the modern is that the modernisation of the modern period (c. 1900) worked throughout society and its impact was immense and fast. The most notable characteristics of this shift is that the modern and the vernacular became culturally discontinuous and deficient in humanism. Modern society tries to separate itself from the past in search of its own authenticity, while in the vernacular, the past is honoured and regarded as a foundation for all present development. In the course of modernisation, the discontinuity is more or less congenital. Modern society, however, does not honour even its own immediate past, resulting in an ephemeral, fragmentary and contingent mode of life. The disengaged instrumental mode of life was reprimanded for being devoid of meaning and even a threat to public freedom.[50].

The conditions of Modernism involve disorientation in time and space. The fundamental transformation in communication, transportation along with severe erosion of religious belief and values are eventually followed by a crisis of self-consciousness and self-identification. It was a fundamental change in contrast with the

[49] Berman, M., "All That is Solid melts into Air", Verso, London, 1983

conditions of the vernacular. Technological triumph and its own self-evolution made a significant contribution to the alteration of the vernacular. First, the development of transportation facilitated the change of built form. The spread of railways and highways enabled men and material to be allocated in remote places from their origins and it brought 'submergence of local practice under national styles'[51]. Secondly, the availability of new material brought emergence of new types of construction, thus, of new architecture. Traditional materials yielded to new materials such as steel, glass, Portland cement, concrete, plastics, and the nature of material has changed in the way it is utilised, e.g. wood has become plywood. Thirdly, the service of electricity transformed the vernacular way of life into a modern one.

Another important condition of Modernism is the advent of architects as profession. This reflects a different modality of the architectural production process and relates to the way in which architectural knowledge is delivered to the next generation. Traditional elements in generating architecture such as religion, cosmology, and any sacred values which could have been delivered through either oral transmission or written matter became less significant, as rational professional *posteriori* began taking its position over the domain of past practice. The establishment of the architectural profession, being an autonomous discipline, however, is very recent creation of Western culture, according to Choay (1997), which spread across the world due to the Industrial Revolution, either by consensus or by force[52]. The creation of the profession executed an enormous impact on architecture as a social institution. Unless an architect is a part of the highly homogeneous society, he or she may not provide buildings as a social institution. The works of architects are their own creative pieces, not the social construction of reality. Although architects do express the symbolism of society, the very distinction between works of the vernacular tradition and those of architects is the role of the built environment to social constituents. The vernacular works as an institution while the works of architects do not. Looked at positively, the spread of well illustrated documents did, however, enable laymen to learn and practice construction better.

[50] Taylor, Charles, "Sources of the Self", Harvard University Press, 1989, pp. 500
[51] Brunskill, R. W., "A Systematic Procedure for Recording English Vernacular Architecture", Vol. 13, London, 1966, p43-44

The emergence of the modern architecture can perhaps be traced back to Claude Perrault in seventeenth century France. The key issue at the time was the erosion of tradition's authority in matters of knowledge and taste that the Renaissance could not carry forward beyond the mere replacement of the authority of the church to that of antiquity; i.e., Greco-Roman traditions[53]. The divine treatises of the past were put into question, and the discipline of engineering began to separate from architecture. Since then, along with the two currents of modernity, architecture was also divided into two major tendencies, i.e., the avant-garde attitude towards the modern utopia and Romantic Gothic Revival attitude. The avant-garde, a movement towards the unification of the art and society, rejected any historical continuity urging radical social, cultural change, whilst Romantic modernists found their idealised model in the medieval era. The use of a word avant-garde dates back to Middle Ages, being developed into a figurative meaning of self-consciously advanced position in politics, literature, art, religion, and so forth as early as the Renaissance[54].

J. N. L. Durand (1760-1834) was a prominent and influential initiator of the rational avant-garde movement, and A. W. N. Pugin (1812-1852) can be seen as the counter Romanticist geared towards a more moral-value orientated architecture. Durand approached architecture as a rational vehicle in the process of form making, while, for Pugin, Gothic Revival was a true expression of Christian ethics. The conflict between these two currents of modernity in architecture will be discussed at more length later on; for the moment, it suffices to note that many modern manifestos that emerged through the late nineteenth and twentieth century both in Europe and North America fall within these two major streams. Two polemical stances of early Modernism in architecture illustrate conflicting values and attitudes towards a new epoch. With the advent of the International Style, symbolic values were no longer attributed to buildings and rituals. The divine use of geometry was abandoned, social dependence became weakened. Factory production materials became dominant in the market economy, and construction methods became much more standardised. The characteristics of the vernacular were virtually eliminated.

[52] Choay, Françoise, "The Rule and the Model", The MIT Press, 1997, pp. 3
[53] Calinescu, Matei, *op. cit.*, 1977, pp. 23
[54] Calinescu, Matei, *op. cit.*, 1977, pp. 97

Chapter 3

Texts on Architecture and the City:

The Rules and the Models

In both vernacular and modern traditions, there are considerable numbers of written works on the built environment from various sources. What one should be aware in the course of investigating literatures of the vernacular tradition is that works of architecture and cities were often built upon social practice empowered by religion or the sacred myths, philosophy and politics, not upon the basis of professional treatises or rational judgement. In most cases, vernacular traditions do not possess professional treatises on the built environment, and the available written works on the subject are mostly parts of general histories or commentaries of books of miscellanies. Some cultures do not even possess written texts at all. In such cases, oral history and extant social practice such as custom and tradition enable a sub-conscious re-construction of the built environment. The built environment, on the other hand, also works as a mnemonic device in itself for the ongoing duplications of building practice. The creation of an independent architectural profession with the written literature dedicated to the architecture and the city is only a recent Western invention, although its origin may date back as early as the Italian Renaissance. In fact, the aims and motivations of ancient architecture and cities are not much known, though the objects themselves are often well preserved.

With respect to texts, the current study is aware of rather paradoxical atmosphere with regard to the governing rules and models on the creation of the built environment. Despite the fact that there are various types of texts possessing information on the built environment, one can assume that the role of literature was limited in ancient times for various reasons such as illiteracy or the unavailability of a printed matter. It is also often observed that descriptions or drawings in the literature do not very much correspond with extant objects. Sometimes literature is even used as active means to protect the governing secret in the society who practice design or construction in

buildings and cities. In such cases, oral history is affirmatively involved in the creation of a built environment whose contents nowadays rarely become available.

3.1 Types of Written Texts

To find out the natures of texts on architecture and the city, Choay (1997) suggested two categories of writings; *realizers* and *commentators*, the former being the works that conceive of human settlement as a project to be realised, while the latter are satisfied to treat it as an object of commentary or speculation, without intending to go beyond the written world to the real world[1]. Choay used the term 'instaurational' for those writings that have the explicit aim of developing an autonomous conceptual apparatus in order to conceive and build new and unknown forms of space. Instaurational texts are, of course, parts of realizers, but she also points out that the realizers should not be confused with architectural treatises which form only a small subset of all the texts (1997:13-14). Choay (1997:8) continues that since the emergence of instaurational texts, there are two types of mechanism for generating built spaces; the rules and models (the former developed from architectural treatises and the latter from the concept of utopia).

Choay asserts that Alberti's *De re aedificatoria*, originally published in Latin in 1485 and then in Italian in 1550, both in Florence, would be the first autonomous treatise in architecture. She suggested five reasons why *De re aedificatoria* is an authentic treatise in architecture. First the book is organised as a whole, second it is signed by the author, third the author's approach is autonomous, fourth the book aimed to provide conceptual method to enable creation, not transmission of precepts, and finally the principles and rules in the book are intended to engender its totality[2]. She also suggests that Thomas Moore's *Utopia*, originally published in Louvain in 1516, was the first autonomous treatise in city design. *Utopia* features seven distinctions; first it is signed by an author, second a subject expresses himself in the first person singular, third the text describes a present indicative of a model society, fourth an ahistorical model society is described in association with the criticism of the real historical society, fifth the model space supports the model society which is integral to

[1] Choay, Françoise, "The Rule and the Model", The MIT Press, Massachusetts, 1997, pp. 15
[2] Choay, Françoise, *op. cit.*, 1997, pp. 16

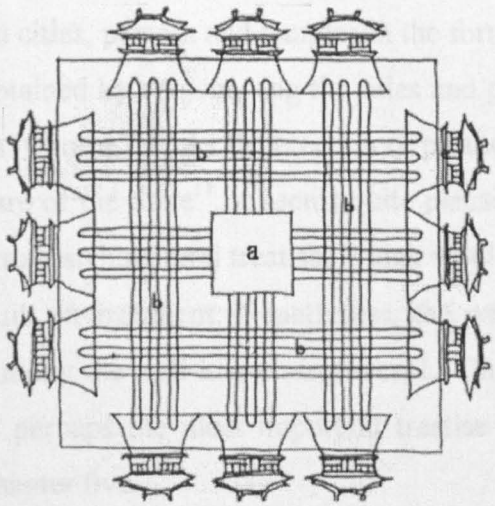
it, sixth the model society is located outside of the current time-space system, and lastly the model society is not subject to the constraints of time and change.

Under this line of approach, instaurational texts never existed in ancient Greece or China, although realizers did exist in different formats. Both in ancient Greece and China, writings on the architecture and cities were not intended to construct building practises as the basis for a specific autonomous discipline. Hitherto the difference remarked between ancient Greece and ancient China is that ancient Greek cities are the result of legislation that is practical and specific rather than derived from abstract universal principles[3], while ancient Chinese cities are built under their cosmic ideology. There are also some similar characteristics in two worlds. The models in the city design of Greeks and Chinese are also subordinate to other disciplines such as political ideology. For instance, Aristotle's propositions about the city, the optimum size of the *polis*, the choice of site, the utility of walls and the desirable location for the various public edifices, are only a small part of his work on the theory of state[4]. The Chinese schematic grid plan city described in Kao Gong Ji (The Rule of Workmanship) section of *Chou li* (Chou Ritual) is only a part of the literature on the state institutions of the Chou dynasty [Figure 3-1 & 3-2]. In a similar grid plan described in the Monthly Commands in the Book of Rites, a Chinese classic dating from before Confucius (551-479 BCE), associations are made between spatial configuration and the emperor's timely location as well as various aspects of his political matters.

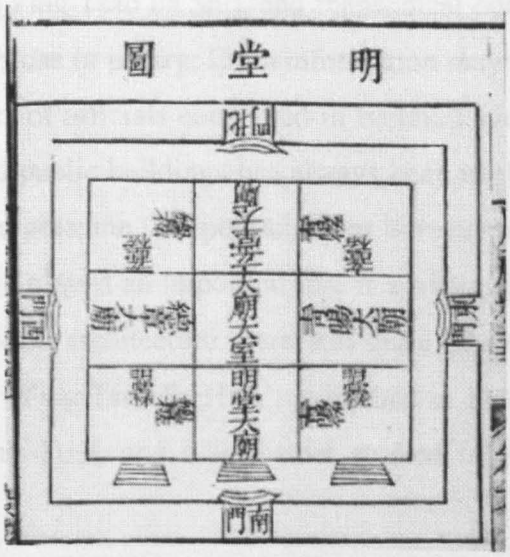
Another interesting matter found in both Greek and Chinese architecture is the exercise of divination. In the treatise of the Roman architect Vitruvius 'De Architectura', it states that the livers of the animals feeding on the site should be carefully examined in order to find out they are healthy[5]. Livers of freshly killed animals were long used as oracles for the purpose of divination by the Romans[6]. The Chinese also exercised a type of divination prior to determining any significant state

[3] Choay, Françoise, *op. cit.*, 1997, pp. 17
[4] Choay, Françoise, *op. cit.*, 1997, pp. 18
[5] Vitruvius, "De Architectura", trans. by Frank Granger, Vol. II, London, 1931, pp. 41-42 (after Wright, Arthur F., "Symbolism and Function", Journal of Asian Studies, Vol. 24, No. 4, August, 1965, p. 670)
[6] Vitruvius, "De Architectura" (The Ten Books on Architecture), (*trns.*) by Morgan, Morris Hicky, Harvard University Press, 1914, pp. 20

matters, city design being one of them. There is no doubt that the origin of Chinese divination is scapulimancy, the heating of tortoise carapaces or shoulder-blades of ox and deer with red hot metal, dating from no later than the early Chou dynasty. The crack forms produced are interpreted as displaying future phenomena. In the Book of History, a phrase is reported when the king Bwan-kang justified the establishment of a new capital An-yang. It reads "I have taken the (tortoise) oracle and have enquired (about this matter), and the answer is as I say...I dare not disobey the oracle, and so I am undertaking (this enterprise) on a grand scale".



[Figure 3-1]
Reconstruction of conceptual plan of 'Kao Gong Ji' in the '*Chou Li*' (Chou Ritual)
*a=Palace b=streets



[Figure 3-2]
A spatial plan as depicted in the 1823 version of 'Kao Gong Ji'
(Courtesy of Leiden University)

Similar phrases are also found in the Book of Odes which reads as "he who took the omens was the king Wu, he took up his residence in the capital Hao; it was the tortoise (-shell) oracle which decided the matter"[7]. During the Chou dynasty, another divination method of choosing stalks became available, from which some suspect the trigrams have originated[8]. This stalk method is used mainly for less important issues, the tortoise-shell method being used for greater issues. Using trigrams for

[7] Wheatley, Paul, "The Pivot of the Four Quarters", University of Edinburgh Press, Edinburgh, 1971, pp. 459

[8] According to the Oxford English Dictionary (1989), the term 'trigrams' means; (a) an inscription of three letters; (b) a figure or a character formed of three strokes traditionally used in the Chinese philosophy of the I Ching (Book of Changes) for the purposes of divination. See "The Oxford English Dictionary" (second edition), Vol. XVIII, Claredon Press, Oxford, 1989, pp. 529

prognostication developed later during the Warring States period (fourth-third centuries BCE)[9].

Not being an independent discipline, literatures on architecture are found in various sources not necessarily related to the built environment. According to Needham (1971), there was a dictionary called 'Erh Ya' as early as Han dynasty which a chapter was devoted to matters connected with building. In addition to that, there are several different classes of sources on buildings such as 'Illustrations of Rituals' (San Li Thu), 'Treatise on Architectural Methods'(Ying Tsao Fa Shi), and rhapsodical odes on cities, palaces and temples in the form of prose or poetry. Extra information maybe obtained by conjecturing the titles and powers of officials concerned in building such as 'Chou Li'[10]. As the erection of palaces and public buildings has always been in the care of the State[11], it seems quite plausible to presume that politicians or bureaucrats wrote architectural treatises which would have played an important role in making the built environment. Nonetheless, the writings on architecture were still quite scanty. Among the well-known treatises, Li Chieh's 'Ying Tsao Fa Hsih', published in 1103, is perhaps the most important treatise of this kind, and it is further studied in the chapter five.

Like 'Kao Gong Ji' section of 'Chou Li' treatise which states a general description of a city plan, Hippodamus invented the division of cities into blocks and cut up the city of Piraeus according to Aristotle's treatise on politics. Aristotle stated that the arrangement of the private dwellings is thought to be more convenient for general purposes if they are laid out in straight streets after the modern fashion introduced by Hippodamus[12]. Despite the similar appearance of the two ancient city plans, it must be remembered that the primary purpose of the Greco-Roman block was the convenience of citizens, while that of the Chinese seems to have been control of the urban

[9] Needham, Joseph, " Science and Civilisation in China", Vol. 2, Cambridge University Press, 1956, pp. 347

[10] Needham, Joseph, *op. cit.*, 1971, Vol. IV, pt. 3, pp. 80-89

[11] Yetts, W. Perceval, "A Chinese Treatise on Architecture", The Bulletin of the School of Oriental Studies, Vol. IV, pt. 3, London, 1926-28, pp. 473

[12] Aristotle, "Politics", Vol. II, 5 and Vol. III, 10, (*trans.*) by H. Rackham, London, 1959, pp. 121 and 589

population[13]. This clearly points the philosophical difference between two civilisations in which architecture is equally subordinated to politics.

With respect to the portion of the works on architecture and city in available literatures, Aristotle's proposition on the buildings, chapter 8 of book 2, occupies only one twenty-fifth of his work on the theory of state[14]. A similar case can be observed in the Chinese antique 'Hui Nan Tzu', a Taoist compendium in which a chapter IV is devoted to topography. In 'Hui Nan Tzu', it is the only chapter among 21 essays of the volume comprising a range of interests from Heavenly patterns to human affairs. Therefore, it would be quite common to find remarks on architecture and the city in unexpected places.

Regarding the subordination of architecture, two early texts on medicine in both cultures especially deserve attention. 'Airs, Water, Places' by Hippocrates (460-351BCE?) and 'Huang ti Nei Ching' (Yellow Emperor's Internal Classic), the oldest and the greatest Chinese medical classic, traditionally ascribed to Huang Ti (2698-2598 BCE?) without historical evidence. Both are medical treatises, but contain information on the built environment. What the two treatises concern equally is strong association with philosophy. One can notice that there is no need to relegate the ancient line of thoughts under a contemporary system of classification. This is not only because ancient disciplines are pretty often the mélange of various concerns, but also because the object of current research is partly to vindicate subordination of architecture and planning in other disciplines. As will soon be evident in following chapters, references to architecture and the city are interconnected with other disciplines that may share the same theoretical foundation, varying in their level of influence.

Among the Hippocratic treatises in ancient Greece, '*Airs, Waters, Places*' maybe recognised as a theory for siting on the basis of rational observation of natural configuration and climatic, atmospheric condition. "Airs, Waters, Places" accounts for the role of environmental conditions in the course of disease in terms of both individual and epidemics in the community. It comments on housing, town

[13] Wright, Arthur F., *op. cit.*, 1965, pp. 671
[14] Choay, Françoise, *op. cit.*, 1997, pp.18

construction, drinking water, and other factors that can influence health. Jones (1923) notes that patients have to modify their ordinary mode of living in order to recover health, as the origin of disease is connected with the geographic and atmospheric environment[15]. It must have been a driving force not only to patients but also to the public, as the nature of this treatise is compelling to any inhabitants if the treatise was ever known to them.

A similar attitude is observed in seventeenth century London when Christopher Wren tried to re-build the city destroyed by the Great Fire between the first and sixth of September 1666. Wren was Professor of Astronomy in Oxford, and architecture was a new discipline for him at the time, hence he spent the year 1665 in Paris learning the most advanced architectural and town-planning methods. It was also the time when a plague swept London. Wren assumed that epidemics like plague are caused by bad air. The prevailing idea of the time was that air became stagnant in narrow streets, and this caused the spread of contagious diseases. It makes sense to a certain point, and of course the same narrow streets were equally blamed for the spreading of fire.

Particularly interesting here is that the components of Greek medicine towards the end of the fifth century BCE included a religious element, a philosophical element and a rational element, of which the philosophical element is very influential[16]. Just as Thales declared that the universe consisted of water, Hippocrates seems to have believed that all diseases were caused by air, as his whole Corpus writing maintains this line of thinking[17]. Nonetheless, due to lack of development in naturalism in Greece at the time, philosophical influence on medicine and other disciplines was not as great as in China as explained below. Tradition has it that Western civilisation, philosophy begins with Thales (fl. 6th c. BCE), the founder of Ionian or Milesian school in Miletus who also made a prediction of an eclipse in 585 BCE. According to Herodotus, Thales said that water is the source for all materials; everything is made out of water. Anaximander (fl. c.550 BCE), the second philosopher of the Miletus school, proposed a monism that everything comes out of one infinite primal substance. For him, this unknown prime substance can be transformed into various

[15] Jones, W. H. S., "Hippocrates", Heinemann, London, 1923, pp. ix
[16] Jones, W. H. S., *op. cit.*, 1923, pp. xiv
[17] Jones, W. H. S., *op. cit.*, 1923, pp. xi

forms such as fire, water or earth, and these also can transform into each other. The idea of Anaximenes (fl. c.550 BCE), the last of the three representatives of the Milesian School, provides sequential pattern of transformation in terms of different degrees of density. He thought that the universe is comprised of air. He explained that when air is condensed, it becomes water, and if it is further condensed, then earth, and finally stone. Because of this rather limited idea, philosophical influence in medicine did not develop more than abstract thinking on the origin of disease which is air.

In a parallel position to Greek medicine, 'Huang Ti Nei Ching' is a canonical work in Chinese medicine in which a philosophical foundation for the built environment is also observed. Like Greek 'Airs, Waters, Places', the medical principle of 'Huang Ti Nei Ching' is also combined with philosophy, but much earlier in date. Thales' philosophy, which Hippocrates influenced, is very rudimentary in its form in comparison to Chinese Naturalism. The Milesian concept never developed beyond the first abstract notion despite the fact that Milesian philosophy is strikingly similar to Chinese in its outlook. In comparison to the Greek, the Chinese concept of five elements developed into patterns of changes combined with yin/yang theory, then influential in almost all disciplines. As chapter six of this thesis will explore in detail, Chinese naturalism was deliberately manipulated and refined to apply to nearly all human affairs. Actually Chinese naturalism played a vital role in nearly all disciplines. Known as the theory of yin/yang and five elements, its influence is clearly observable in disciplines such as politics and architecture as well as medicine.

In Chinese naturalism, two opposing currents of the cosmos were assumed, and the classification system of five elements (water, fire, wood, metal and earth) is combined with them to form a coherent cosmology. At about the fifth century BCE, Chinese naturalism was already in a much developed and refined format. In the Book of History, a commentary written by Confucius (551-479 BCE), five elements are already associated with various kinds of matters such as government objectives and the virtues of a ruler. The Chinese presumed that the universe was comprised of five elements, which were not actual substances, but changeable energies (or 'pneuma') attributed to substances. These five elements are further applied to spatial structure, seasonal changes and many other phenomena. The Chinese imposed a conceptual configuration derived from the above cosmology into everyday reality through social

practice, which simultaneously strengthened the royal regime and its feudal legitimacy. As the creation of the city was subordinated to the reproduction of the same transcendental configuration with the elimination of the individual's mundane interference, the sacred prescription of spatial order could prolong its validity without serious disturbance.

Just as Vitruvius's work of "Ten Books of Architecture" is aimed to assemble and transmit knowledge, Chinese sources show even more orthodox tendency in assembling, acknowledging and transmitting known knowledge. In contrast to Western world, which gradually lost the dependency and association of architecture and city design on antique sacredness or religion, the Chinese accepted antique treatises as transcendental, and refined them into others which were still based on the same ideology. As the prestigious Chinese philosopher Yu-Lan Fung remarks, the basic Chinese approach to anything can be represented "pouring a new wine into an old bottle"[18]. New ideas and inventions are synthesised rather than remaining as an identical phenomenon. Individual creativity had never remained individual, it became absorbed into the existing system, or arguably it could be justified in a manner as if it came into existence from the system. In line with this, it is intriguing to clarify what those ancient literatures contributed to the making of the built environment. Within their own context, they have similar formats in their construction, and contain various sorts of information with similar approaches. As will become clearer in the next chapter, the Chinese made incessant commentaries on the development of science and technology within their intellectual tradition. New inventions and development were all put into the old bottle of epistemology.

3.2 Problems of Written Texts

As already mentioned, written texts have a limited capability in transmitting knowledge. Early documents in China were very small in distribution, and they were not devoted to the creation of the built environment. Representation in the literature on the built environment does not define how it should be provided, and often does not match the way it was fulfilled. It is often observed that what is written is taken

[18] Fung, Yu-lan, "A History of Chinese Philosophy", Vol. II, Princeton Univ. Press, 1953
See preface pp. 1-6

entirely out of context. Without understanding the intellectual tradition, partial scraps of the texts would certainly not transmit an appropriate meaning. Moreover, written texts do not possess important meanings in many cultures in so far as established social institution prevails in the practice. In Chinese culture, Taoism was a metaphysics that did not regard any written texts as able to deliver real meanings about any phenomena. Taoists believed that universal phenomena could not be expressed in any form, but only understood in the mind. In Taoism, therefore, texts are not taken seriously whether they are written or spoken. In principle, the Taoists were very sceptical about the way conceptual ideas are transmitted by concrete language. Instead of the normal way of transmitting ideas, they used paradoxical dialogues and paintings for the record. Needham (1965) noted that "the Taoist philosophers, particularly interested in techniques not transmissible by words, were always giving examples of incommunicable, but learnable skill" recognising that Chinese artisans in general have worked by knack, by rule of thumb, and by slowly inherited tradition[19]. In this context, it can be even inferred that only verbal communication would have been used to transmit ideas when confidential issues were involved, since recording a significant issue in written matter risks leaking it outside the secretive circle. In such cases, written forms of texts were of no use, so some ideas were not recorded in literature.

The spread of literature and the acquisition of ability to read undoubtedly affected the representation of space. Vernant (1983) notes that writing was the privilege and speciality of the scribes in the near-eastern Kingdoms, used to set up archives which were always kept more less secret inside the palace in order to allow the royal administration to keep account of and so control the economic and social life of the state. In Greece, however, writing became the common property of all the citizens, and its purpose was the exact opposite[20]. The transformation of the role of writing is obviously linked to the development of democracy. The separation of private matter and public matter, and the involvement of every citizen in public matters without interference is a major ground for this political development. Ancient Greek democracy, of course, differs from modern democracy. Slavery was the major labour

[19] Needham, Joseph, *op. cit.*, Vol. 4, Part 2, 1965, pp. 47

[20] Vernant, Jean Pierre, "Myth and Thought among the Greeks", Routledge & Kegan Paul, London, 1983, pp. 182 (originally published in French in 1965 as "*Mythe et pensee chez les Grecs*")

power, and women were not allowed to participate political matters. At the same time, and more importantly in the context of this thesis, it was only Greek astronomy that developed a geometrical model from Babylonian arithmetical astronomy from which the Greek borrowed techniques and instruments. For the reason why Babylonians remained trapped in the arithmetical religious cosmology was the lack of the spread of writing and its common use. In Greece, the spread of writing along with the rational social transformation to the population led to political democracy. It should be noted here that it is politics to which architecture is most effectively subordinated. As Vernant (1983) notes, politics appears to have been attached to a representation of space that deliberately emphasised the circle and its centre, giving them a very definite significance[21].

Despite the fact that the spread of writing made a huge impact to the representation of space as in the work of the ancient Greek *polis*, there has always been 'a world' where its own social practice differs from what is written in 'the world' to which it belongs. Rykwert (1984) points out that as the medieval craftsmen's society in Europe was a secret society, whose proceedings at occasional meetings and details of working methods were therefore inevitably unrecorded, the oral tradition must have been an important speculation, more than a mere handful of rules-of-thumb, but a body of theories about the nature of building[22]. He also adds that Paris masons demanded that their secrets should not be revealed to anyone outside as early as 1258, and that "it (keeping a secret) is a constant tradition, not only of Masonic guilds, but of all work corporation in general". For instance, in Paris, anyone who even breached the rule could be fibbed or physically punished, and in Germany, no money trade was allowed for the teaching of masonry. Rykwert described this as almost simony[23].

The Chinese form of a theory of architecture and planning, *feng shui*, involved a similar institution. Meyer (1978) notes that the geomantic tradition in China was to a great extent oral and individual[24]. In terms of architectural technique and building practice, Yetts (1926) notes that "the technical methods (of the art of building) have

[21] Vernant, Jean Pierre, *op. cit.*, 1983, pp. 183
[22] Rykwert, Joseph, "On the Oral Transmission of Architectural Theory", AA Files 6, London, 1984, pp. 15
[23] Rykwert, Joseph, *op.cit.*, 1984, pp. 19-20
[24] Meyer, Jeffrey, "Feng shui of the Chinese City", History of Religion, The University of Chicago

been an oral tradition handed down through generations of practising craftsmen who are the real architects of China"[25]. In fact, in China, the oral transmission of architectural theories has been carried on continuously over a period of more than two and a half thousand years. There is a mythic element in this kind of discourse. Chinese *feng shui* masters normally lived in poor financial conditions and this is ascribed to their revealing of Heavenly secrets. As will be explained in the chapter six, it was a myth that played an important role in moulding an oral tradition of architecture and planning.

On the role of written literature, another matter should be addressed. The development of printing occurred at a late stage in both East and West, therefore it would not be expected that architectural theories or principles could have been widely disseminated through written texts. Of course, publication and printing are different matters, but the publication of only small numbers of books in handwriting does not affect the majority of the population. Paper was first invented in China around second century and widely used in the third century[26]. In Europe, paper was introduced from China in the tenth century, and paper manufacturing began centuries later, being used for printing from the middle of the fifteenth century. The manufacture of paper dates at its earliest from 1150 in Spain although the use of paper there dates from as early as 950[27]. A printing technique using woodblock in China (cir. 700) is at least seven hundred years earlier than Gutenberg (1400?-1468)[28]. In the cases of the neighbouring countries Korea and Japan, the introduction of paper was much earlier than Europe due to their geographical proximity, whilst in the cases of Europe and Middle East, the introduction came later for the same reason[29].

When printing methods became available in the fifteenth century, architectural books began to be published slightly later than other subjects, but in a speedy manner. The first was 'Ten books of architecture (*De Architecturra*)' by Vitruvius that was

Press, Vol. 18, No. 2, Nov. 1978, pp. 139

[25] Yetts, W. Perceval, *op. cit.*, Vol. IV, pt. 3, 1926-28, pp. 473

[26] Needham, Joseph, *op. cit.*, Vol. V, pt. 1, section 32, 1985, pp. 1

[27] Needham, Joseph, *op. cit.*, Vol. V, pt. 1, 1985, pp. 293

[28] Needham, Joseph, *op. cit.*, Vol. V, pt. 1, 1985, pp. 1

[29] Needham, Joseph, *op. cit.*, Vol. V, pt. 1, 1985, pp. 296
In Korea, introduction of paper was no later than third century and manufacture followed no later then sixth century. Damjing (579-631), a Korean Monk, delivered papermaking to Japan in 610. See, Needham, Joseph, *op. cit.*, Vol. V, pt. 1, 1985, pp. 320

probably published in August/September 1486 edited by Johannes Sulpitius of Veroli, followed by many other editions. The number of available manuscript of Vitruvius became doubled at the first half of the fifteenth century[30]. It was also at this time that Alberti's *De re Aedificatoria* was published in Florence and Rome. At this stage, the accuracy of the information held in written texts was in question. Despite the fact that the oral secret was broken, or at least weakened, with the advent of printing, it was still far from the modern sense of printing distribution. More likely, oral speculation remained the dominant method for transmitting knowledge on professional matters. Rywert points out that "either the booklets were not publications in our sense of the world, and would be kept within the workshops; or alternatively, that the secret was something quite different from what was revealed in the booklets. Or perhaps again a bit of each"[31]. Rykwert postulates a double discourse about architecture between the years 1000 and 1500, that is roughly the Gothic period. One is so-called 'Vitruvian' which is public, involves literacy and is used in talking about buildings by the lords and clergymen who were not actual producers of the works. The other is a private and secret 'Euclidian' discourse carried on by carpenters, masons and other building workers[32].

Furthermore, the state of the language in ancient times and in the Middle Ages should be taken into account. The Chinese language is ideographic, and it is very difficult to achieve sound knowledge in a short period time even for the Chinese themselves. It is said that only about two percent of the population of China enjoyed high literature[33]. Although the basic norms, ideas and values of Chinese culture were recognised by every stratum of Chinese society[34], the role of written texts was probably limited to very small, learned social groups. Moreover, there were certainly limitations in obtaining basic literary sources as they were too expensive, and more importantly, it could hardly be expected that the full meanings of obtained sources were passed on. The same applies to the contemporary Chinese. Cauchy (1994) points that the change

[30] Rykwert, Joseph, *op. cit.*, 1984, pp. 16
[31] Rykwert, Joseph, *op. cit.*, 1984, pp. 20
[32] Rykwert, Joseph, *op. cit.*, 1984, pp. 26 This point will be exemplified in the chapter five where German masonry practice is juxtaposed with Chinese carpentry tradition.
[33] Chang, Chung-li, "The Chinese Gentry", London, 1955, pp. 165-209
[34] Smith, Richard, "An Approach to the Study of Traditional Chinese Culture", Chinese Culture, Vol. XIX, No. 20, June, 1978, pp.50

of Chinese characters under Mao threatens access to ancient Chinese culture and philosophy[35].

One more item to be addressed is the alteration or distortion of texts in transmission. Wang Shu-min, one of the most renowned Chinese textual critics, illustrated ninety different ways in which Chinese characters can be corrupted[36]. Being an ideographic text, with a Chinese text it was easier than with the Western alphabet to distort the whole context by altering a few characters or even strokes. Although this research does not concern textual criticism, the study of textual history certainly contributes to the reconstruction of authentic thought and ideas. Achieving sound knowledge about the history of the texts is the necessary antecedent of architectural criticism. The situation is not much different in the West. As difficult Latin was used to record things and for teaching, and certainly for the most important ceremonies such as religious matters, oral transmission of knowledge remained the prevailing method in architecture. As oral transmission itself is a tradition, it forms part of tradition in architectural discipline. According to the German sociologist Gleichmann (1992), secretive knowledge in architecture affects the modern transformation of architectural institutions. He points out that the entire configuration of architectural institutions was transformed in the modern period, the role and authority of architects being considerably narrowed. The most influential architects or professors became looked upon as competent managers of planning operations, thus, they hold back their knowledge of the reality of complex construction processes. They do not reveal them in journals or in teaching, as the knowledge is viewed as a trade secret of their architectural firm and at the same time they are agents of their clients, and more practically, they must protect themselves from competitors. In this context, nothing has changed in the tradition of oral transmission nowadays. It is just another form of institutionalisation in architecture[37].

After the printing technique was introduced in Europe towards the end of the twelfth century, the church's quasi-monopoly of teaching weakened following the publication

[35] Cauchy, Venant, "Chinese and Oriental Approaches to Philosophy and Culture", Journal of Chinese Philosophy, No. 21, 1994, pp. 64

[36] Wang, Shu-Min, " Chiao-Ch'ou t'ung-lieh", Chung-yang yan-chiu yuan li shih yu yen chiu so chi kan 23, 1953, pp. 303-47 (After Harold D Roth, *op. cit.*, 1992, pp. 2)

[37] Gleichmann, Peter R., "Architecture and Civilisation: A Sketch", Theory, Culture & Society,

of philosophy, mathematics and astronomy, thanks to the newly established organisations comprised of secular scribes[38]. Subsequently and most significantly, individuals such as Dante began to write in their own tongue, enabling them to access the public more closely, especially those educated but unable to read Latin[39]. The accessibility to literature by middle class people brought a huge response and demand of books and printed matter, catering for all sorts of interests such as medical manuals, education, novels and even cookery[40]. Gutenburg's mechanised printing in the mid-fifteenth century marks the turning point of dissemination of knowledge to the public in general as he was aware of all the advantages of paper for publication[41]. In 1550, many European countries started to use their own language in place of Latin. Towards the end of the sixteenth century, Protestant Holland played a significant role in the publication, as it was also the time when new ideas are suppressed by strong monarchies across the Europe. Holland was safe place for the men of letters who preferred to publish Greek and Roman classics in their own national languages, not yet accepted by old-fashioned monarchies in many countries, and Holland became home of literature soon after as it was banned elsewhere[42]. In the late eighteenth and early nineteenth century, printing technique developed significantly due to the use of iron bed and copper plate in the printing machine. In 1828, *The Times* newspaper in London could print at a rate of some 4000 sheets per hour, of course in English[43].

3.3 Summary

As discussed hitherto, texts on architecture and the city are in hybrid form, and they provide different meanings and contexts dependent on varying socio-cultural settings. The paradigm shift from the vernacular to modernism certainly involves the dissemination of knowledge with the arrival of printing and its availability to the general public, which eventually contributes to the development of democracy. This change carries massive implications in architecture and urbanism towards the twentieth century when modernism proper began to take shape.

Vol. 9, 1992, pp. 32

[38] Jean, Georges, "Writing, the Story of Alphabets and Scripts", Thames and Hudson, London, 1987, pp. 87

[39] Jean, Georges, *op. cit.*, London, 1987, pp. 88

[40] Jean, Georges, *op. cit.*, London, 1987, pp. 88

[41] Jean, Georges, *op. cit.*, London, 1987, pp. 95

[42] Jean, Georges, *op. cit.*, London, 1987, pp. 101-102

[43] Jean, Georges, *op. cit.*, London, 1987, pp. 106

Chapter 4

Representations in Architecture and the City

4.1 Conceptions in Architectural Representation

Architectural representations such as drawings, paintings, prints, treatises, models, and photographic images are of great importance in revealing how the built environment is conceptualised, constructed and perceived. This chapter scrutinises alternative conceptions and the roles of representation in architecture and the city in East and West. The alternative conceptions and the role of representations in architecture and the city will represent the characteristics of alternative institutions and disciplines of architecture and urbanism.

The idea of representation initially sprung from the need to store and transmit knowledge to the next generations, and afterwards it was developed to a useful vehicle to instruct construction. Architectural representations, however, not only store views of the past depicting objects of architecture and the city, but also present themselves as objects in the way in which they transmit knowledge on the built environment; ideals, ideas, attitudes and so on. They even cast light on what the present generation wishes to build in the future. The way ideas on the built environment can be given definition prior to being constructed as a reality is always a fascinating matter. In architecture and urban design, the role of representation is somewhere between the imagined and the built. Evans (1989) notes the nature of the representation as follows.

"Presentation drawings are not supposed to have any effect on the design. Their job is to propagate a completely defined idea, not to test it or modify it. They should then be classed as records. And yet what they record is not real. To use the word projection in a completely different sense, they are projections of a plausible outcome for a set of instructions and proposals already defined elsewhere but not yet accomplished. Their status is unclear because they are neither impressions received from a real object, as would be a perspective from life or a photograph, nor are they directly instrumental in the making of what they represent. They are neither received from nor transmitted to a

building, but are pulled into a sort of cul-de-sac somewhere between the beginning and the end of process"[1]

Evans proposes drawings as the principal locus of conjecture in architecture[2]. Pérez-Gómez (1997) also remarks that the representations are often regarded as necessary surrogate or automatic transcripts of the built work[3]. He notes that "since the inception of Western architecture in classical Greece, the architect has not 'made' buildings; rather, he or she has made the mediating artefacts that make significant buildings possible"[4]. Moreover, these mediating artefacts have never been constant. They have been writings, drawings, pictures, camcorder images, computer graphics and so on. As these means vary, their contribution to the creation of the built environment differs, too. Writings can only inspire readers to envisage images in their minds, while perspectives and computer graphics provide much more realistic and objective images although they are still confined to a flat surface. The most up-to-date technology even permits architects and clients to make virtual visit to 'the buildable'. The core problem of these, however, has always been how to interpret them as they represent different motivations, attitudes, values and so on.

People tend to think that models and pictures of the past depict things exactly as they were. However, there has always existed a substantial interstice between what is represented and what is built both in the vernacular and the modern traditions. The associations established between the rules and the images extant are not necessarily identical in the same sense. In addition to the fact that there are always links between them, it is equally important to remember that there have been constraints both in representing and in building the built environment. The transformation of the representation from the vernacular to the modern tradition occurred along with the development of rational science as well as representational techniques. Apparently, it is a condition that the buildings conceptualised in peoples' minds could only become realised when the available construction technology allowed. The dimensional

[1] Evans, Robin, "Architectural Projection", in Eve Blau & Edward Kauffman (*eds.*), "Architecture and Its Image" by, Canadian Centre for Architecture, Montreal, 1989, pp. 19
[2] Evans, Robin, *op. cit.*, 1989, pp. 20
[3] Pérez-Gómez, Alberto, *et al*, "Architectural Representation and the Perspective Hinge", The MIT Press, Cambridge, Mass., 1997, pp. 7
[4] Pérez-Gómez, Alberto, *et al*, *op. cit.*, 1997, pp. 3

difference between the two paradigms can be further recognised from the representations of architecture and the city in the way they are created.

In order to investigate the different institutions of architectural representation, it is first necessary to acknowledge that architecture was never a liberated art in East Asia until early this century. Regarding the nature of architecture in East Asia, one should approach it rather warily. Petrucci (1920) advocated that "in commencing the study of an art of strange appearance, what we must seek primarily is the exact nature of the complexity of ideas and feelings upon which it is based"[5]. In his study of Chinese Painting, Sullivan (1974) also asserts that "one can only understand this Chinese attitude if we can see the pictures as the Chinese do, not as a complete artistic statement in itself, but as a living body, an accretion of qualities, imaginative, literary, historical, personal, that grows with time, putting on an ever-richer dress of meaning, commentary and association with the years"[6]. Therefore, to gain an understanding of architecture in East Asia, it is essential to read paintings as well as cartographic works with reference to architectural representation, although they will oscillate among three disciplines any way. Moreover, it is significant to recognise that artefacts in China have never been understood under a homogeneous discipline of art. Art in China did not come into existence through any unifying principles or essences linking a wide range of man-made things[7], nor did it in any other part of East Asia. 'Art in China' or 'Art in East Asia' are modern creations under a Western perspective. In this sense, one should speak equally of 'Art in Western Europe' rather than 'Western European Art'. Thus, it would be misleading to read the art of East Asia, including representations of architecture and the city in painting and cartography, as a unilateral mode of thinking. The East Asian mode of representation, or the whole classification system, is an alternative path that the occident simply did not take. In fact, the Chinese kept on using various types of perspectives and methods of pictorial representation even after the Western European cartographic method was introduced, for they regarded both as proper cartography[8]. There existed no presupposition about superiority or a sense of need for advancement.

[5] Petrucci, Raphael, "Chinese Painters: A Critical Study", translated into English by Frances Seaver, Brentano's Publishers, New York, 1920, pp. 15
[6] Sullivan, Michael, "The Three Perfections", Thames and Hudson, London, 1974, pp. 20
[7] Clunas, Craig, "Art in China", Oxford University Press, 1997, pp. 10
[8] Yee, Cordell D. K., "Chinese cartography among the Arts: Objectivity, Subjectivity, Representation",

With the above in mind, one should approach the artefacts of architectural representation as these will form a parallel with those of the West. Architecture has been a liberated discipline in Western Europe after the Renaissance. The liberation involved a separation of architecture from other disciplines of art such as painting and sculpture, but more importantly, the mode of design representation became instrumental. Architectural drawings were prepared in the form of plans, elevations, perspectives and so on. They did not form a part of the work of architecture, but remained as a necessary part of the building process. More importantly, however, this unexpected institution in architecture, the instrumental mode of representation, employed orthographic projection that granted objectivity to architecture. Architectural artefacts differ in their mode of representation from that of painting. Painting remained linked to the realm of individual creativity no matter what it tried to deliver, while architecture elevated its status beyond subjectivity. Evans (1989) points that the mode of representation in architecture was overwhelmingly orthographic after the Renaissance, while that of painting was overwhelmingly perspectival[9].

As the above reading does not necessarily apply to non-western traditions, the study of cartographic images would be useful device in elucidating the nature of architecture in East Asia. As maps can only be properly understood when recognised as an integral part of the simultaneous histories of arts and sciences[10], it is significant that the confusion of genres should be taken into consideration to achieve better understanding of alternative traditions in architecture as well as other disciplines. The definition of cartography advocated in 1964 by the British Cartographic Society as "the art, science and technology of making maps together with their study as scientific documents and works of art" clearly demonstrates this unclear boundary of disciplines[11]. Crone (1953) also recognised that "a map can be considered from several aspects, as a scientific report, a historical document, a research tool, and an

in Harley, J., *et al*, (*eds.*), "History of Cartography", Vol. II, book II, University of Chicago Press, 1994 (3), pp. 152

[9] Evans, Robin, *op. cit.*, 1989, pp. 25

[10] Harley, J. B. & Woodward, D., "The History of Cartography", Vol. I, University of Chicago Press, 1987, pp. xviii

[11] Harley, J. B. & Woodward, D., *op. cit.*, Vol. I, 1987, pp. xv

object of art"[12]. A map is indeed much more than a necessary surrogate of space, just as one can mistakenly see architectural representation as merely standing in for a building: both of them also play ideological, political, religious and symbolic functions.

Contemporary modes of representation involve advanced techniques beyond people's normal perceptival capability. New means of representing the built environment not only include graphic charts of traffic movement, consensus statistical sheets, satellites and aerial maps, etc, but also computer technology that has been hitherto unavailable. The new technology also seriously transforms the traditional concept of representation, for computer technology can create images beyond the immediate experience of time and space as conditioned by the human senses.

Two modes of architectural representation, the vernacular and the modern, or numerical as opposed to geometrical, would serve as a useful means to elucidate how a particular sort of architectural institution came into existence among other possibilities. Their rules and underlying models can be detected by examining the geometry and symbolism of different modes of representations. March (1931) points out that the Chinese and the Occidentals had different perspectival solutions for linking three-dimensional nature with binocular vision[13]. He notes that the Chinese never developed mathematics as a pure science, especially the geometry that was essential to the elaboration of a perspective formula. Moreover, Chinese visual works were carried out by the scholars of the society in an indoor studio, intending to produce a visual poem rather than a prose record, translations rather than transcriptions[14]. It was their choice and taste, which also form part of their cultural system.

It is necessary to cast light on the specific socio-cultural context in order to grasp further layers of meaning. In terms of cultural differences, for instance, Keightley notices (1990) that the way people are represented usually differs profoundly between

[12] Crone, Gerald R., "Maps and their Makers: An Introduction to the History of Cartography", Folkestone, Kent, 1953, pp. ix, note 13
[13] March, Benjamin, "Linear Perspective in Chinese Painting", Eastern Art, Vol. 3, College Art Association, Philadelphia, 1931, pp. 117
[14] March, Benjamin, *op. cit.*, Philadelphia, 1931, pp. 139

China and the West[15]. He notices that the dominance of heroes in Western art is not paralleled in Chinese art. Instead, there exist only anonymous groups of people working, or doing things collectively. Illustrations on porcelain exemplify this point clearly [Figure 4-1 & 4-2][16].

[Figure 4-1] Kylix by the Penthesileia Painter, München, Antikensammlung (Source: Keightley, David N., *op. cit.*, 1990, pp. 17)

[Figure 4-2] Drawing of the décor in an wine vase from Chengtu, Szechwan. The Eastern Chou dynasty (c. 600 BCE) (Source: Keightley, David N., *op. cit.*, 1990, pp. 18)

According to Keightley, the vase representing the tragedy of Achilles around 460 BCE shows two individuals, Penthesileia and Achilles, at large size. The work captures the moment that Achilles fell in love by representing his eyes crossing with those of his swooning victim. According to the legend, the representation conveys the tragic, poignant and unwished for consequence of an unpredictable ironic world through the story of a hero. In contrast, the Chinese bronze vase shows anonymous groups of people in the same uniform, without recognising individuals. The Chinese vase seems to have been intended to illustrate an organisation, a society. These

[15] Keightley, David N., "Early Civilisations in China: Reflections on How It Became Chinese", in Paul S. Ropp (*eds.*), "Heritage in China", University of California Press, 1990, chapter 1

[16] Illustrations are from Keightley, David N., op. cit., 1990, pp.17-18

opposing tendencies of representation suggest that, in order to achieve better understanding of cultural differences, one must take into account different visual languages derived from modes of thoughts that maybe entirely incompatible. The two vases representing different attitudes towards visual representation may explain similar phenomena under the same approach, such as non-existence of a Chinese equivalent of Merton or Euclid.

4. 2 The Vernacular Mode of Representation

Representations of the built environment do not capture every element of reality, but manipulate a number of features in order to record it in a decodable manner. In the vernacular tradition in particular, they were not intended to represent what is imagined or planned, but they generally describe and depict what is already seen and experienced. It would be useful to consider cartographic works as there is no demarcation between architectural representation and that of cartography in the vernacular tradition, especially in the East Asian context. Works of cartography are more than just mere maps drawn geographically; they are cultural products that reveal uniformity as well as diversity. If cartographic history is seen as a movement toward increased mathematisation or quantification[17], it is hoped that a series of maps will manifest the development and transformation of representations in the cities and buildings over history. As a parallel to architectural representation in a macro scale, a number of cartographic representations can illustrate how different attitudes are adapted to make them. Although the history of cartography proper is yet to be written[18], the examples that follow will suffice for the purpose of this thesis.

Yee (1994) notes that cartography in China did not emerge as a representational practice fully independent of the visual and literary arts. It rather contributed in the way that the representation went beyond the duplication of physical forms stressing its multi-faceted function[19]. As this dimension in the representation of "super-

[17] Yee, Cordell D. K., "Reinterpreting Traditional Chinese Geographical Maps", in Harley, J.B. *et al.*, (*eds.*), "History of Cartography" by Vol. II, Univ. of Chicago Press, London, 1994 (1), pp. 35

[18] In part, this is due to the lack of extant material in the pre-Han period China as well as super-abundance of maps in the Ming and Ching dynasties. See Yee, Cordell D. K., "Reinterpreting Traditional Chinese Geographical Maps", *op. cit.*, Vol. II, Book II, 1994 (1), pp. 35

[19] Yee, Cordell D. K., "Chinese cartography among the Arts: Objectivity, Subjectivity, Representation", in Harley, J., *et al*, (*eds.*), *op. cit.*, Vol. II, book II, Univ. of Chicago Press, 1994

empiricism" such as hexagrams goes beyond formal resemblance, it is even inappropriate to use terms such as realism or symbolism [20]. Henderson (1994) also points out that Chinese cartography generally shows that they represent the structures in microcosmic dimensions in the architecture, the urban, and the agrarian rather than depicting the shape of the earth or the system of the world. In comparison with Western counterparts, they are also much more dependent on and subordinated to a textual description[21]. As the Chinese made use of both verbal and graphic modes of representation to store geographic information as well as symbolic values, their concept of representation and purpose became clearly distinctive from that of the West. Hence the usual oppositions between visual and verbal, cartographic and pictorial, mimetic and symbolic representations are inappropriate[22]. Rather, possibility as opposed to reality, conception as opposed to perception, and the creative as opposed to the imaginary would count for achieving sound understanding of an alternative system in East Asia.

In paintings, a dialectic of objectivity and subjectivity can be observed. Yee (1994) notes that the history of Chinese artistic practice in painting can be viewed as a series of pendulum swings between formal likeness and expression. Yee continues to juxtapose these two opposing tendencies such as the artisanly and the scholarly, professionalism and amateurism, outwardness and inwardness[23]. For noble scholars, painting was an 'imprint of mind' like poetry, or moreover 'painting is a poem with form' while 'a poem is a painting without form'[24]. As painting is an imprint of mind, it is a corollary to stress the notion of sincerity. Rowley (1947) notes that the artist needed to be sincere in order not to fall to the level of those professional painters who simply try to seduce the eyes of the common people for monetary gain. He also asserts that painting was a playful pastime for a scholar, even though one should prepare to paint, "as if to receive an important guest"[25]. Three characteristics of Chinese painting would successfully distinguish the painting of literati from that of

(3), pp. 128

[20] Yee, Cordell D. K., *op. cit.*, Vol. II, Book II, Univ. of Chicago Press, London, 1994 (3), pp.131

[21] Henderson, John B., "Chinese Cosmographical Thought: The High Intellectual Tradition", in Harley, J., *et al*, (eds.), *op. cit.*, Vol. II, book II, Univ. of Chicago Press, 1994, pp. 203

[22] Yee, Cordell D. K., *op. cit.*, Vol. II, Book II, 1994 (3), pp. 128

[23] Yee, Cordell D. K., *op. cit.*, Vol. II, Book II, 1994 (3), pp. 135

[24] Yee, Cordell D. K., *op. cit.*, Vol. II, Book II, 1994 (3), pp. 136

[25] Rowley, George, "Principles of Chinese painting", Princeton University Press, New Jersey, 1947, pp. 13

artisans: artists' social status was that of scholar-officials, the mode of production of art was seen as an expressive outlet for scholars in their spare time, and the style of painting was a good blend of picture, calligraphy and poem[26]. The hybrid form of these three characteristics manifests Chinese thinking about representation. Rowley (1947) recognised this as follows:

"the spirit of art was identified with the spirit of the universe... ... the western critics were so accustomed to emphasise the material manifestation on the means toward the beyond-the-material that they missed the Chinese insistence, first on the spirit and then on the form... ... every artists, east or west, seeks the reality behind the appearance, but his quest is coloured by his approach to spirit and matter"[27].

Sullivan (1974) also refers to three characteristics of Chinese painting, i.e., picture, poem and calligraphy,

"... this subtle and profound marriage of ideas and forms, words and images, was a reflection of Chinese culture in its maturity, when the scholar class had turned in on itself, employing a language, in art as in the written word, that was difficult, full of illusions, accessible only to members of the tiny aristocracy of letters at the apex of the Chinese social pyramid"[28].

A very important notion that must be captured here is that the Chinese tried to identify a human element in painting by recognising 'chi', a concept parallel to the Greek atom which may mean current, energy, pneuma, etc. One of the Chinese art historians Guo Ruoxu (fl. ca.1075) mentioned that "a mountain has streams as blood vessels, grass and trees as hair, mist and clouds as its countenance" denoting a fundamental vitality underneath external appearance[29]. This is a clear manifestation of the Chinese mind trying to experience beyond the immediate physical environment, and it insinuates a collective psyche that forms an unnameable genre converging between art and science, between subjectivity and objectivity, between idea and form. Sullivan

[26] Bush, Susan, "The Chinese Literati on Painting: Su Shih (1037-1101) to Tung Chi-Chang (1555-1636), Harvard University Press, 1971, pp. 1
[27] Rowley, George, *op. cit.*, 1947, pp. 34
[28] Sullivan, Michael, "The Three Perfections", Thames and Hudson, London, 1974, pp. 55-56
[29] Guo, Ruoxu, "Tuhua Jianwen Zhi" (Record of Experiences in Painting), 1074, recitation from Yee,

(1990) described this mentality as "an expression of the craftsman's intuitive sense of vitality-his chi"[30]. The recognition of the fusion of genres, of calligraphy and painting in delineation of architecture and the city, can be a further hermeneutic device for the complicated mode of representation in East Asia. Painting works on landscape were often not even considered complete without a poem[31], and it is considered as a condition for perfection. In fact, some poetry works suggest a sensation as if the poet were looking at a real scene, although written in response to a map; the complete work is a substitute for reality [Figure 4-3][32]. In Figure 4-3, the scene was not available when the poem was written. Moreover, cartographers, painters and poets were often the same people as aristocrats, bureaucrats, etc.

[Figure 4-3] "The Yang-tze Kiang (river)" (F11.168)
Courtesy of Freer Gallery, Smithsonian Institution, Washington

Regarding the geometry of representation, a number of tendencies can be observed; that pictorial scale dominates natural scale and viewpoints shift within one frame that can be often found in an architectural delineation. Yee (1994) notices that the size of an object is determined by the need and context, not by geometric rules, and the mobility of the point of observation is parallel to that of pre-Renaissance European art[33]. Nonetheless, one significant condition must be considered for this tendency. The

Cordell D. K., *op. cit.*, Vol. II, Book II, 1994 (3), pp. 136

[30] Sullivan, Michael, "Chinese Art and Its Impact on the West", in "Heritage of China" by Paul S. Ropp (*eds.*), Univ. of California Press, 1990, pp. 268

[31] Sullivan, Michael, "The Three Perfections: Chinese Painting, Poetry, and Calligraphy", Thames and Hudson, London, 1974 recitation from Yee, C. D. K., *op. cit.*, Vol. II, Book II, 1994 (3), pp. 158

[32] Yee, Cordell D. K., *op. cit.*, Vol. II, Book II, 1994 (3), pp. 162

[33] Yee, Cordell D. K., *op. cit.*, Vol. II, Book II, 1994 (3), pp. 144, 146

medium for this cartography or architecture-oriented painting representations is a scroll made out of silk or high quality paper. As the scroll can provide a successive representation, viewers can experience optical changes from one object to another gradually, from macro scale to micro. Indeed, the scroll should be experienced in time like music or literature[34]. Opposed to this medium, the Western frame has a fixed vantage point which requires attention to the geometric properties for accurate reading. Rowley (1947) points that, in the European tradition, the interest in measurable space destroyed the continuous method of temporal sequence used in the Middle Ages[35]. It is a paradox that the limitation of artistic creativity within the fixed space of perspective invented in the fifteenth century led to a scientification of architecture. As will be introduced later in this chapter, the discovery of perspective in the Renaissance made a contribution towards a science of architecture as well as towards individualism as opposed to the collectivism experienced in the East.

For the Chinese, geometric and mathematical fidelity to observed reality has not been an aim of cartographic representation, and this also applies to architectural representations. If a duplication of the observed reality had been a core issue in East Asia, if an instrumental mode of representation had been favoured, then the early development of cartography would have not left it out, for one can clearly perceive the geometric, mathematical replication of the observed reality in the map "Yu Ji Tu" [Figure 4-4]. This ancient Chinese map shows that there existed a highly mathematised cartographic method. This map, whose title means 'the track of emperor Yu'[36], was carved in stone on the grid in 1136, independent of text and with constant use of signs. A note on the map reads that a side of a grid square indicates one hundred *li* (one *li* is equal to about 500 meters). Despite the contention that the gird was pre-framed in order to draw the map or it is superimposed later[37], it is important to see that it involved numerical calculations, and that its representation of rivers and mountains is very accurate.

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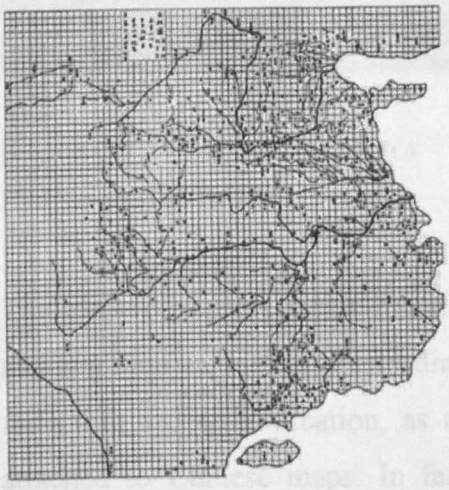
[32] Rowley, George, *op. cit.*, 1947, pp. 61

[35] Rowley, George, *op. cit.*, 1947, pp. 61

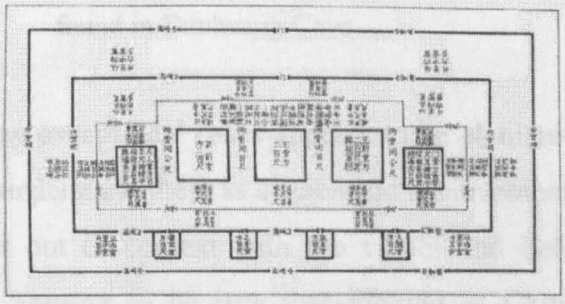
[36] "Yu the Great" is a legendary hero-emperor who mastered the waters and became the patron of hydraulic engineers, irrigation experts and water-conservancy workers in after ages. See Needham, Joseph, "Science and Civilisation in China", Cambridge University Press, Vol.3, 1959, pp. 500

[37] Woodward, David, "The Image of the Spherical Earth", Perspecta 25, The Yale Architectural

Another example of much earlier representation of conceptual building complex is even more stunning. A conceptual plan for a building complex found in the mausoleum of King Cuo of Zhongshan Kingdom, one of the small states in the Warring States period (403-221 BCE) in current Hebei province, shows what is believed to have represented a walled area of about 191 by 414 meters [Figure 4-5][38].



[Figure 4-4] Yu Ji Tu (1136)
(The Track of Emperor Yu)



[Figure 4-5] A plan of the building complex
Warring States period (403-221 BCE)

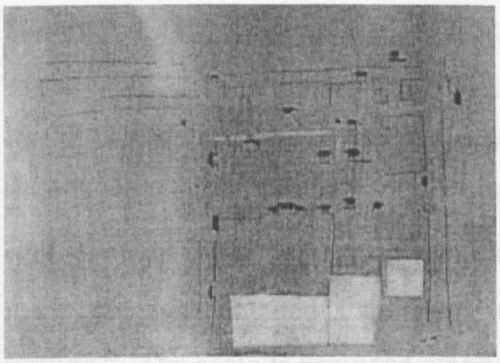
The plan is not intended to depict existing structures, but a plan for construction. It reveals the process of creation of the built environment at the time of fourth century BCE. Nonetheless, most representations of that period have features like that of a silk map found in a tomb of Hunan province [Figure 4-6][39]. The tomb was closed in 168 BCE, hence the map is drawn some time earlier. The clear image of a building complex, with the sense of scale and quantification in the Figure 4-4, is not found in this silk map at all. The same applies to the representation of an auspicious family burial site found at Dunhuang in the Cave of the Thousand Buddhas, drawn about tenth century [Figure 4-7][40].

Journal, Rizzoli International, New York, 1989, pp. 7

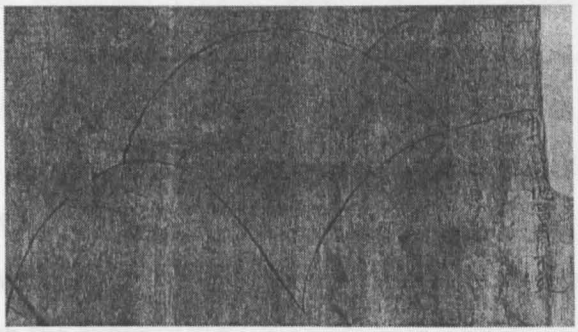
[38] Yee, Cordell D. K., *op. cit.*, Vol. II, Book II, 1994 (1), pp. 37

[39] Yee, Cordell D. K., *op. cit.*, Vol. II, Book II, 1994 (1), pp. 41

[40] The vast majority of ancient Chinese works found in Dunhuang are kept in a number of libraries and collections throughout the world. There is no doubt these works would provide significant information on Chinese civilisation inclusive of architectural tradition before 10th century. A family tomb in the Figure 4-6 as well as the oldest printed almanac of 877, in the chapter 6, are only the ones that the author instantly recognised for its correlation with architectural tradition of China. see Yee, Cordell D. K., *op. cit.*, Vol. II, Book II, 1994 (1), pp. 57



[Figure 4-6] A Silk Map found in a Han Tomb (168 BCE)

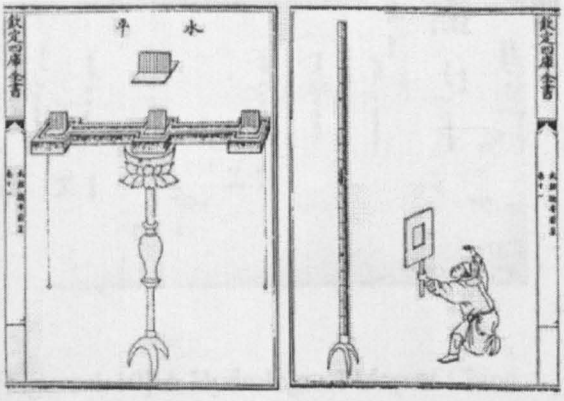


[Figure 4-7] An auspicious Family Burial Site found in Dunhuang Cave

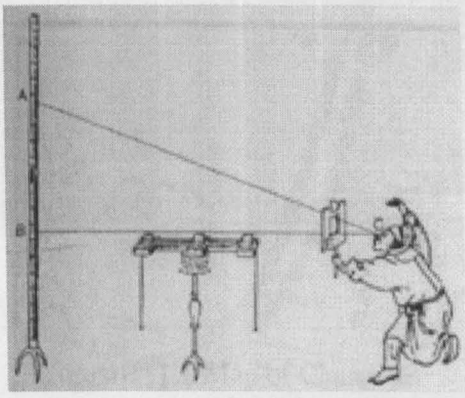
The mode of representation found in few exceptional cases appears to be planimetric and quantitative, but it is misleading to understand them as a scientific achievement of reduction and quantification, as this is out of context with the values and beliefs attached to Chinese maps. In fact, it appears to be true that looking at Chinese cartography as a rational, mathematical discipline for understanding space leads to a failure to consider the full range of cartographic functions such as representation of power, for education and for aesthetic appreciation[41]. It is perhaps tempting to approach to Chinese cartography as a scientific product, because of its progressiveness over time. The emphasis, however, should not be restricted to simple development in technique. For example, an illustration in an eleventh century book "Wu Ching Tsung Yao (Collection of the most important Military Techniques, 1044 CE)" clearly exemplifies scientific measurements with the use of plumb-lines, water-level and the graduated poles [Figure 4-8][42]. The objects in the figure appear to be a kind of plane table or a theodolite. The description in the text, however, tells that it is a trough with three floats, each bearing a fiducial sight[43]. It is nonetheless easy to speculate about the combination of the equipment [Figure 4-9]. What counts more is that this illustration is drawn from the written description in an eighth century book of "Thai Pai Yin Ching (Manual of the White and Gloomy Planet of War, 759 CE)[44]. For three centuries, there must have been no development in measurement technology, or the Chinese did not pay attention to it, having alternative preferences. Perhaps, the

[41] Yee, Cordell D. K., *op. cit.*, Vol. II, Book II, 1994 (1), pp. 55
[42] Needham, Joseph, *op. cit.*, Vol. 3, 1959, pp. 570
[43] Needham, Joseph, *op. cit.*, Vol. 3, 1959, pp. 571

latter explanation is more convincing in acknowledging the overall picture of Chinese modes of representation. The Chinese preferred textual description of visual experience, and that they did not value accurate reproduction of physical properties. For the Chinese, it was obvious that no physical substance can be reproduced as it is. This is clear from the fact that later maps do not present any better images in terms of accuracy and the amount of information they possess; the Ming dynasty (1368-1644) maps are less detailed than Sung dynasty (960-1279) maps, but include more writing[45]. The scale is provided along with the distance between objects in writing, as shown in a Ching dynasty hydrological map [Figure 4-10][46].



[Figure 4-8] Scientific Measurements (8th century)
(Source: Needham, J., *op. cit.*, Vol.3, 1959, pp. 570)

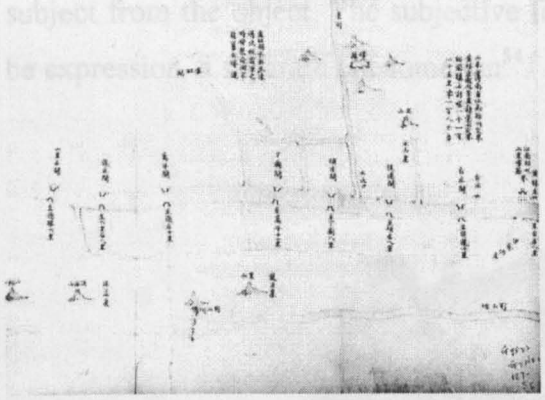


[Figure 4-9] Reconstruction of the Potential Use of Theodolite

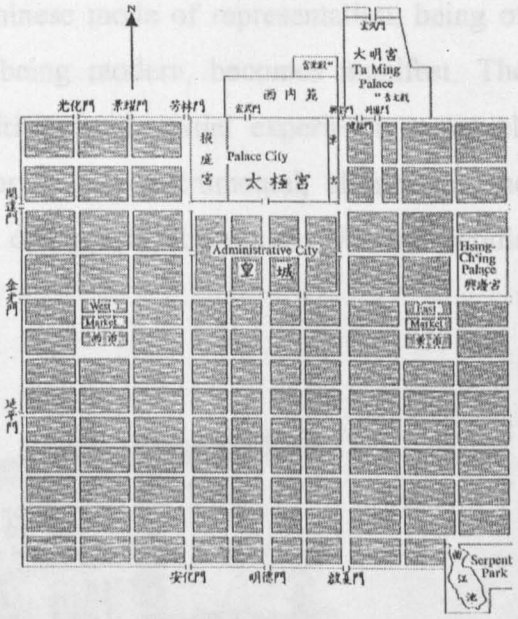
A map of Chang-an, the capital of the Tang dynasty, shows no scale indication, and serves only to indicate the relative positions of various landmarks [Figure 4-11]. More detailed information is provided in the text. According to Yee's careful study, a typical passage reads as "the palace wall is four *li* from east to west, and two *li* and 270 *bu* from south to north. In perimeter, it is thirteen *li* and 180 *bu*. Its height is three *zhang* and five *chi*"[47]. Simply, scale mapping was not a primary concern for the Chinese although they understood its principle at an early period[48]. Apparently, having text in the maps, in part, hampered the development of the science of

[44] Needham, Joseph, *op. cit.*, Vol. 3, 1959, pp. 570
[45] Yee, Cordell D. K., *op. cit.*, Vol. II, Book II, 1994 (1), pp. 58
[46] Yee, Cordell D. K., *op. cit.*, Vol. II, Book II, 1994 (1), pp. 61
[47] recitation from Yee, Cordell D. K., "Taking the World's Measure: Chinese Maps between Observation and Text", in "History of Cartography", by Harley, J.B. *et al.*, (eds.), Vol. II, Book II, 1994 (2), pp. 106 The map shown in this thesis in [Figure 4-11] is not what Yee referred. For the original map, see his work, *op. cit.*, 1994 (2), pp. 107

cartography, but it rather appears that the characteristics of Chinese cartography come partly out of their pictographic writing that conveys meaningful messages to readers, making visual images less useful than written signs.



[Figure 4-10] A Hydrological Map of Ching Dynasty (1644-1911)



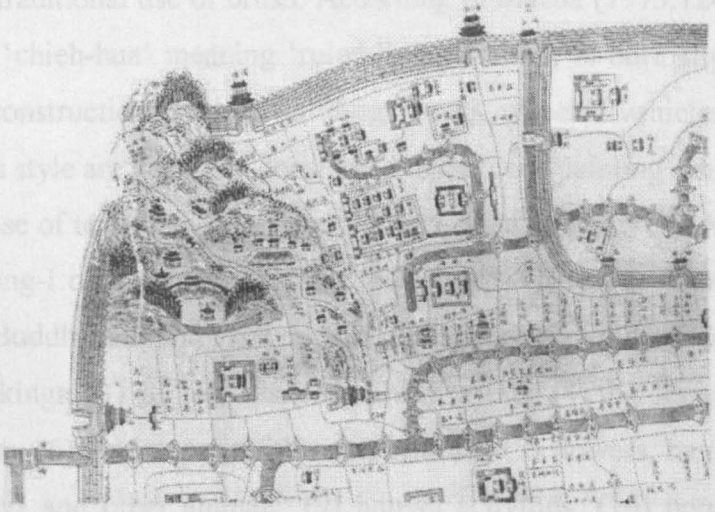
[Figure 4-11] A Map of Chang-An (Souce from Wheatley, P., *op. cit.*, 1971)

Traditional maps were products of scholarly enterprises, and they possessed intellectual values under the Chinese conceptions[49]. The use of literature in maps and paintings is particular to the Chinese concept of cartography including representations of architecture and the city. The use of literature, however, is not separable from the whole context of the maps, partly due to the characteristics of Chinese language being ideographs. Yee (1994) noted that Chinese cartography encompassed both numerical techniques and humanistic concerns; graphics and texts are not opposed, but were associated with value and power[50]. Literature appears to function as a way of seeing as well as a means of preserving utterances[51]. The Chinese painting was, in a sense, an extension of language, attempting to insert the atmosphere of the region, and Chinese artisans, in fact, yielded the square and compass (to the spiritual touch of brush) in

[48] Yee, Cordell D. K., *op. cit.*, Vol. II, Book II, 1994 (1), pp. 63
[49] Yee, Cordell D. K., *op. cit.*, Vol. II, Book II, 1994 (1), pp. 67
[50] Yee, Cordell D. K., "Taking the World's Measure: Chinese Maps between Observation and Text", Harley, J. B. *et al.*, (*eds.*), *op. cit.*, Vol. II, Book II, 1994 (2), pp. 96
[51] Yee, Cordell D. K., *op. cit.*, Vol. II, Book II, 1994 (3), pp. 134

order to capture reality[52]. In this context, the Chinese regarded inter-connections among three arts, poetry, calligraphy and painting, as "three perfections", all of which share the same medium of representation; a scroll[53].

At this point, the distinction between the Chinese mode of representation, being of vernacular type, and that of the Western, being modern, becomes manifest. The former depends on the subject's own sensitivity and spatial experience in which literature plays the key role, while the latter is only instrumental, eliminating the subject from the object. The subjective form of representation in the Western would be expression, a separate phenomenon[54].



[Figure 4-12] A Map of Hangzhou Cheng Tu

Regarding the fusion of genres that hampered the development of the science of geometry in East Asia, the same kind of impediment can be observed in the West. Evans (1989) claims that the promotion of orthographic projection as a form of knowledge was obstructed by the subordination of its usefulness in the pursuit of other tasks such as a perspective[55]. In the West, perspectives were subordinate to orthographic projection, for the latter was often drawn in preparation for the former, from architectural perspectives to cartography or engineering images[56]. This tendency

[52] Yee, Cordell D. K., *op. cit.*, Vol. II, Book II, 1994 (3), pp. 134
[53] Yee, Cordell D. K., *op. cit.*, Vol. II, Book II, 1994 (3), pp. 134
[54] Yee, Cordell D. K., *op. cit.*, Vol. II, Book II, 1994 (3), pp. 135
[55] Evans, Robin, *op. cit.*, 1989, pp. 24
[56] Booker, Peter Jeffrey, "A History of Engineering Drawing", London, 1963, chap. 5-7, 37-38,

maybe viewed in parallel in the sense that different objects in the Chinese representations adopt different perspectival methods. March (1931) notes that the typical Chinese perspective is neither a single system, nor a primitive and unsystematised convention, nor a conception that has not changed with time. Architectural representation in paintings or maps can be looked at as more or less independent perspectival works[57]. Indeed, later maps of China show more than two modes of representation in one map; both planimetric and pictorial. A map of Hangzhou Cheng Tu is a good example of its kind [Figure 4-12][58].

There is a particular type of painting in China that is comparable to the Western architectural representation in the sense that it involves ruler, compass and square in addition to the traditional use of brush. According to Maeda (1975:124), this painting method, called 'chieh-hua' meaning 'ruled-line painting', is normally employed for description of constructions such as buildings, boats, wheeled vehicles and so on. As paintings of this style are generally considered to be 'dead painting', due to the lack of liveliness, the use of term 'chieh-hua' would have been pejorative[59]. According to the list by Tao Tsung-I of thirteenth century, there were thirteen categories of painting, they were; (1) Buddha and bodhisattvas; (2) Taoist portraits of the jade Emperors and other celestrial kings; (3) deities, arhats, and holy priests; (4) the dragon and tiger; (5) historical figures; (6) landscape in full compositions; (7) flowers, bamboo, and birds; (8) wild donkeys and other animals; (9) human activities; (10) boundary paintings [i.e., ruled-line painting]; (11) all forms of lower existence; (12) agriculture and sericulture; (13) decorative paintings in blue and green[60]. According to Tang Hou, a well known scholar of the Yuan dynasty (1260-1368), among the thirteen classifications, ruled-line painting was regarded among the lowest while landscape was at the top[61]. Kuo Chung-Shu (c. 920 -977), a government officer of the posterior Chou dynasty and poet, who is known to have achieved the actual practices of masons

recitation from Evans, Robin, *op. cit.*, 1989, pp. 24

[57] March, Benjamin, *op. cit.*, Philadelphia, 1931, pp. 122

[58] Yee, Cordell D. K., *op. cit.*, Vol. II, Book II, 1994 (1), pp. 62

[59] Maeda, Robert., "Chieh-Hua: Ruled-Line Painting in China", Ars Orientalis, Vol. 10, 1975, pp.123 Due to the difficulty in translation, the term "chieh-hua" is sometimes put as "boundary painting" or "measured painting".

[60] Bush, Susan & Shih, Hsio-Yen, "Early Chinese Texts on Painting", Harvard University Press, 1985, pp. 248 footnote 5.

[61] Tang, Hou, "Hua-Chien", 1328, recitation from Maeda, R., *op. cit.*, pp. 141 see also Bush, Susan *et al., op. cit.*, 1985, pp. 248

and carpenters, led this genre to be legitimised. Well known for his eccentricity, excessive drinking and disorderly personality, Kuo Chung-Shu is even better known for his elaborate architectural painting whose pedigree is not found in the precedent dynasties[62]. The style of this painting is well described by Kuo Jo-hsu (fl. 11th c. ?). He wrote that,

"In painting buildings among trees, one's calculations should be faultless, while the drawing [should be carried out with] a brush of even length. Perspective distances will penetrate the space, with a hundred [lines] converging on a single point; as in the work done during the Sui, Tang, and Five dynasties, down to the styles of Kuo Chung-shu and Wang Shih-yuan at the beginning of the present regime. In painting towers and pavilions, one usually shows all four corners, with the bracketing ranged in order; front and rear are clearly distinguished, without error in the marking-lines. Painters of present day usually make use of the straight-edge, and lay out the bracketing by ruled lines. The brush-work then becomes complicated, and fails to impart any idea of vigorous beauty or easy elegance"[63].

He also stresses the importance of understanding actual architectural work as follows.

"How could one paint buildings among trees, again, if he did not understand about "Han halls" and "Wu halls"; beams, columns and brackets; "crossed arms", cushion timbers, shu king-posts, and "camel's humps", fang-heng, ke-tao, pao-chien, ang-timber ends, lo-hua, lo-man, an-chih, cho-mu, hu-sun timber ends, hu-po timbers, "tortoise head" [building forms], hu-tso, "flying"eaves, "water-repelling" boards, po-fu, hua-fei, "hanging-fish" and "stirring grass", tang-kou, "in-and-out" ridges, and so on? Few enough are the painters who have been able to give all this any detailed investigation; how much more so [is that true] in the case of the observers!"[64]

It should be noticed that although Kuo Chung-shu led this tradition of using ruler and square, he was separated from those who mainly used the equipment for painting since he is considered as an exceptionally gifted scholar[65]. Kuo Jo-hsu also wrote that "a painting must encompass 'spirit consonance' to be hailed as [one of the] treasures of its age. Otherwise, though [it presents] the utmost efforts of cunning thought, it will be no more than common artisan's work"[66]. His exceptional talent, in being able to immerse a spiritual value into a work of painting would have granted legitimacy to his

[62] Waley, Arthur, "Introduction to the Study of Chinese Painting", London, 1923, pp. 185

[63] Soper, Alexander C., "Kuo Jo-hsu's Experiences in Painting", American Council of Learned Societies, Washington D.C., 1951, pp. 12 c.f.) Kuo Jo-Hsu's assertion that Tang dynasty had a good example of this kind denotes a perspective. It is doubtful whether Chieh-Hua had any precedent before Kuo Chung-Shu.

[64] Soper, Alexander C., *op. cit.*, 1951, pp. 13

[65] Maeda, Robert., *op. cit.*, 1975, pp. 126

use of instruments and added to his scholarly status. This spiritual consonance in painting must have been extremely hard to achieve. Probably this is why architecture was seldom used as the main subject, although buildings had long been used as pictorial device to convey the illusion of depth, perhaps since the Han dynasty (202 BCE – 220 CE)[67]. This assertion can be further verified by the fact that a pictorial realism found in eleventh century painting, notably those of Kuo Chung-Shu, was not carried on after the twelfth century. Sullivan (1974) points out that the scholars left pictorial realism more and more to professional and craftsmen painters, while their own art became increasingly abstract and conventionalised, a vehicle to express ideas rather than to record visual experience. This attitude only emphasised the insertion of inscription as an important element in Chinese painting as a total work of art[68].

Despite the fact that nearly all these ruled-line painting works are depictions of existing built environment, and that they were looked down by the most literati, there existed exceptionally rare examples of painting works used for actual construction of buildings supposedly done by literati. According to Kuo Jo-hsu's writing 'Experiences in painting' (? 11th c.), a painter named 'Liu Wen-Tung' received an Imperial Command to draw up a design for the pavilion of the Seven Worthies in the Yu-ching-chao-ying-kung[69]. He is known to have drawn small-scale architectural drawings passed to an architect, i.e., probably a man in charge of construction work, used for actual construction[70]. Kuo Jo-hsu also left a record of a painter and Taoist in the Chih-tao era (995-998), Lu Cho, who drew up a design for the Yu-lo-hsiao Terrace, and submitted it to the throne[71]. Subsequently, the Emperor sent the drawings to an architect, i.e., probably a man in charge of construction work, and had the Terrace constructed as part of a shrine[72].

Despite such exceptional evidence, Chinese painting did not intend to draw representations for planning, but remained largely as a depiction of existing buildings. Their imagination produced imaginary images, not necessarily buildable ones

[66] Soper, Alexander C., *op. cit.*, 1951, pp. 15
[67] Maeda, Robert., *op. cit.*, 1975, pp. 131
[68] Sullivan, Michael, *op. cit.*, 1974, pp. 46
[69] Soper, Alexander C., *op. cit.*, 1951, pp. 70
[70] Soper, Alexander C., *op. cit.*, 1951, pp. 186 endnote 578
[71] Soper, Alexander C., *op. cit.*, 1951, pp. 71
[72] Soper, Alexander C., *op. cit.*, 1951, pp. 186 endnote 583

intended for construction. In this context, there is no wonder why the Chinese representations did not employ instrumental forms of representation such as orthogonal, but remained illogical in size and scale as well as fusing pictographic methods both perspectival and planimetric.

In addition to the tendency to decline of realism in representation, which is already illustrated in cartography, the tendency in painting also supports this character. The development of painting style, chieh-hua, ruled-line painting, becomes even more symbolic than in the earlier period. Tang dynasty painting generally encompasses various compositional forms, regarding them as separate entities, without concern for geometric abstraction of reality. Trousdale (1961:312) notes that although meticulous drawing of chieh-hua was developed and employed by the Sung dynasty (960-1279) painters and subsequently inherited by Yuan dynasty (1260-1368) painters, Ming dynasty (1368-1644) painters no longer wanted to paint for realism, but worked for the opulence of symbolism. In Ming paintings, details of buildings such as bracketing is abbreviated, and the proportions become exaggerated. The deterioration of this style continued under the Ching dynasty (1644-1911) as well[73].

4. 3 The Modern Mode of Representation

The modern mode of representation in architecture concerns, first of all, the form of a building. The term 'form', however, has been very obscure in relation to the way most people understand. Vesely (1985) notes that the term 'form', as a notion, was originated from an Aristotelian understanding of creativity in terms of matter and form; the former is everything that can be formed, while the latter is an idea forming an icon that appears in visual reality[74]. In this context, he continues that form emerged as an idea in architecture only in the late eighteenth century as the term 'form' was hitherto hardly used in this sense. Vesely also points out that the development of architectural presentation occurred with modern science and technology along with the architectural tendency towards the idealisation of architectural physiognomy[75]. This belief, that an idealisation of architectural representation would bring the

[73] Trousdale, William, "Architectural Landscapes Attributed to Chao Po-Chu", Ars Orientalis; The Arts of Islam and the East, Vol. 4, University of Michigan, 1961, pp. , 311-313

[74] Vesely, D., "Architecture and the Conflict of Representation", AA Files 8, 1985, pp. 21

betterment of architecture, apparently contributed to the emergence of modern scientific thinking. As it was based on an assumption that the truth of the real beauty can be found in mathematical principles, there emerged questions about a transcendental proportional system. This initiated the modern tradition accompanied by an instrumental mode of representation. This tradition is advocated by architects such as Claude Perrault, Guarino Guarini and J. N. L. Durand, to name a few.

Pérez-Gómez and Pelletier (1992) note that, before the Renaissance, architectural drawings were rare, and they were not instrumental artefacts that conceive the idea of a whole building. Especially, Gothic architecture was built under well-established traditions and geometric rules that would be applied directly to the building site; architectural representation did not play a significant role in the process of building ideation in the Middle Ages[76]. Even when the drawing was introduced for the initiation of the building process, it was certainly not as dominant as it is nowadays. It was in the Renaissance, however, that a mathematical and geometrical rationalisation of drawn images developed, beginning with Euclidean geometry. The conflict between symbolic and instrumental modes of representation gradually emerged during the Baroque period when the Cartesian worldview and the modern scientific revolution took place. It was in the nineteenth century then that actual systematisation of drawing methods became a process of translation between drawings and the building[77].

The representation method of the modern tradition in the nineteenth century features the "scientific" drawing of artefacts. It is often called "descriptive geometry", which differs from conventional architectural drawing in that it does not concern what things are actually like, but only determines relations between geometrically defined bodies and surfaces[78]. Pérez-Gómez and Pelletier (1992) recognise that the introduction of descriptive geometry as the paradigmatic discipline is the key transformation in the history of architectural drawing[79]. Parisian schools of architecture such as École Polytechnique, founded after the Revolution, employed descriptive geometry as a core

[75] Vesely, D., *op. cit.*, 1985, pp. 22
[76] Pérez-Gómez, A. & Pelletier, L., "Architectural Representation Beyond Perspectivism", Perspecta, The Yale Architectural Journal, Vol. 27, 1992, pp. 23
[77] Pérez-Gómez, A. & Pelletier, L., *op. cit.*, 1992, pp. 34
[78] Evans, Robin, *op. cit.*, 1989, pp. 29

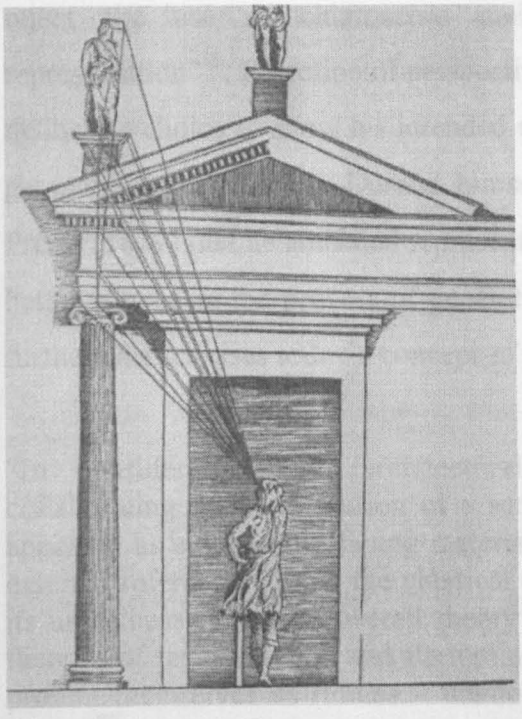
subject, and it was gradually taken for granted as an underlying assumption in Western architecture[80]. From the École des Beaux-Arts to the Bauhaus, this tradition was never seriously questioned.

The recognition of architectural representation as a technical vehicle can be found in a very early period of modern architecture. An early eighteenth century French architect Michel de Fremin already shows a suspicion in his little book of "Mémoires Critiques d'Architecture (1702)" that architectural drawings are well rendered, but they lack architectural consistency. He realised that an architectural representation is a mere technical tool that nineteenth century architects began to understand[81]. Pérez-Gómez points out that "once geometry lost symbolic attributes it had maintained in Renaissance and seventeenth-century philosophical speculation, perspective ceased to be the preferred cultural form for ordering nature and the built world. Instead, it became a simple re-presentation of reality, an empirical verification of how the external world is presented to human vision"[82]. The difference between conceptual image and the perceptual reality was also felt and discussed. Two opposing attitudes found in the eighteenth century French architects, Françes Blondel and Claude Perrault, exemplify problems of optical distortion. Blondel considered optical corrections of great importance, and emphasised the need to adjust the dimensions of buildings in order to achieve correct proportions at perspective. Perrault, on the other hand, refuted the need for optical adjustment, and asserted that human perception would correct such optical distortion[83] [Figure 4-13]. Although both were well aware of traditional architectural institutions, their attitudes towards contemporary aesthetics were dramatically opposite.

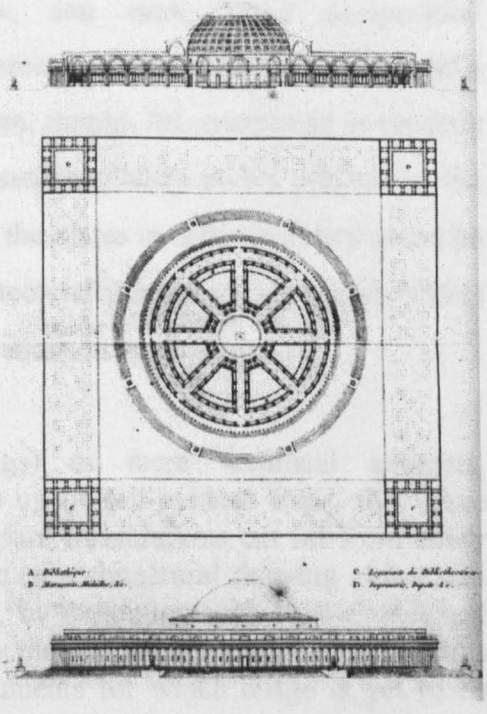
It was Durand who provided the concept of objectification of representation. His book "Précis des Leçons d'Architecture" (1819) adopted descriptive geometry for the vehicle for his representation [Figure 4-14]. The introduction of descriptive geometry not only enabled systematic reduction of three dimensional objects to two dimensions,

[79] Pérez-Gómez, A. & Pelletier, L., *op. cit.*, 1992, pp. 34
[80] Pérez-Gómez, A. & Pelletier, L., *op. cit.*, 1992, pp. 34
[81] Pérez-Gómez, A., "Architecture and the Crisis of Modern Science", The MIT Press, 1983, pp. 50
[82] Pérez-Gómez, A. & Pelletier, Louise, "Architectural Representation and the Perspective Hinge", The MIT Press, Cambridge, MASS., 1997, pp. 71
[83] Pérez-Gómez, A., *op. cit.*, 1983, pp. 41

but was also taken as a paradigmatic discipline[84]. Durand's attempt is the first of its kind to lay the foundation of an architectural order without direct reference to the transcendental tradition, referring to architecture as autonomous discipline[85]. Despite general recognition of his methodological success, the inherent problem of his method should be raised. Vesely (1985) points out that there exist two assumptions in Durand's method; one is looking at architecture at the time as a deadlock of development in need of the foundation of a new architectural order, the other being that this new method can be based upon formal principles situated outside history[86].



[Figure 4-13] A Typical Illustration of the Optical Correction in Architectural Design Excerpt from French Edition of Vitruvius' 'De Architectura' (1547)



[Figure 4-14] An Excerpt from 'Précis des Leçons d'Architecture', 1819, Paris Jacques-Nicola-Louis Durand

[84] Pérez-Gómez, A., *et al*, *op. cit.*, 1997, pp. 84
[85] Vesely, D., *op. cit.*, 1985, pp. 22
[86] Vesely, D., *op. cit.*, 1985, pp. 22

This obviously raises a question about the historicity of architectural representation; how a self-referential phenomenon can be a framework for other historical products. Vesely also points out that this dilemma has never been answered, but quietly absorbed into new ways of thinking inspired by the continuous success of modern science, and thus became a new sophisticated form of self-deception[87]. Vesely recognises this "divided representation" as the main source for the contemporary crisis of meaning and of the general crisis of contemporary culture[88]. It is, however, important to notice that Durand could not entirely escape from historicity. Vallari (1990) notes that "Durand cleansed architectural design of every painterly or plastic effect, eliminating all lyrical or sentimental infections; it was a short step from here to reject the use of chiaroscuro and shadow, and even forbid perspectival representation"[89]. Rejection of perspective or chiaroscuro denotes that it was Durand's deliberate choice to show his intended reductivism, though his orientation is towards geometrical reductivism. Durand himself confessed explicitly in his preface to the Précis (1819) that he amended representations in the plates in order that they could be better viewed in the process of generating architectural principles. Libeskind (1991) further characterises today's concept of representations in architecture as,

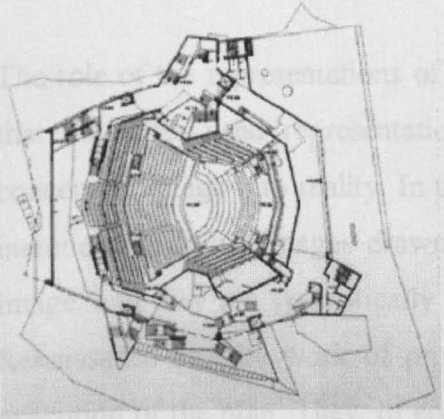
"In considering them (architectural drawings) as mere technical adjuncts, collaborating in the execution of a series made up of self-evident steps, they have appeared as either self-effacing materials or as pure formulations cut off from every external reference. While the classical axiomatic of architectural drawing elaborated its usefulness within an overall theory of order, by beginning with well-established theories of representation and attempting to unify them, contemporary formal systems present themselves as riddles – unknown instruments for which usage is yet to be found"[90]

Libeskind, therefore, suggests that "an architectural drawing is as much a prospective unfolding of future possibilities as it is a recovery of a particular history to whose intentions it testifies and whose limits it always challenges"[91]. It was Gottfried Semper who carried forward Durand's idea in an eclectic manner. His architectural vision was a conformity of artistic form with the history of its origin, with all the

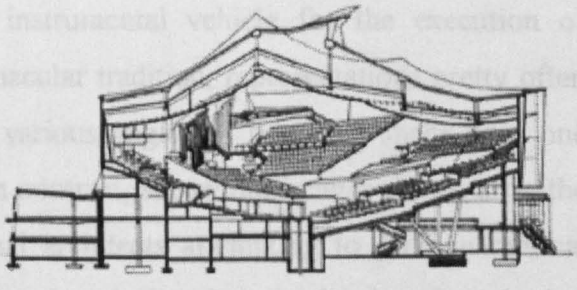
[87] Vesely, D., *op. cit.*, 1985, pp. 22
[88] Vesely, D., *op. cit.*, 1985, pp. 24
[89] Villari, Sergio, "J. N. L. Durand: Art and Science of Architecture", Rizzoli, NY, 1990, pp. 57
[90] Libeskind, Daniel, "Countersign", Architectural Monographs No. 16, Academy Editions, London, 1991, pp. 14
[91] Libeskind, Daniel, *op. cit.*, 1991, pp. 14

conditions and circumstances of its creation[92]. With the history of architectural form in mind, Semper was led to a hut, like Laugier before him, as a generative matrix of architectural order recognising instrumentality of structure. His ambitious task of synthesis was never achieved, and its conceptual success would have transformed architecture as an instrumental discipline devoid of meaning.

Even nowadays, there exists a fissure between architects' imagination and the level of envisagement in drawings despite the existence of an ongoing progress in the way in which representations in architecture are created. Evans (1995) notes that modern architecture does not seem to accord well with the present drawing techniques. The relinquishment of the conventionally underlying orders of frontality, symmetry, planarity, and axiality, to a certain extent, left another task to be cared for in the representation method. An expressive design like the Berlin Philharmonie, which appears to show the notion of aperspectival space[93], eulogised by Jean Gebser[94], well illustrates the difficulty of rendering building in drawings [Figure 4-15 & 4-16]. Hans Scharoun's renowned work the Berlin Philharmonie faced a major technical problem due to the lack of drawings of sections when it was about to be built. A large scale set of drawings was known to have supplemented to the standard set of drawings[95].



[Figure 4-15] Plan of the Philharmonie Berlin, Hans Scharoun (1893-1972)



[Figure 4-16] South-North Section of the Berlin Philharmonie (1956-63)

[92] Vesely, D., *op. cit.*, 1985, pp. 24

[93] Blundell-Jones, Peter, "From the Neo-Classical Axis to Aperspectival Space", Architectural Review, Vol. 183, No. 1093, London, March, 1988, pp. 18-27

[94] Gebser, Jean, "The Ever-present Origin", (*trans.*) by Noel Barstad with Algis Mickunas, Ohio State University Press, 1991 (originally published as "*Ursprung und Gegenwart*", Stuttgart, 1949)

[95] Evans, Robin, *op. cit.*, 1995, pp. 120

This is no coincidence, with the modern trend in representing architectural design in terms of architect's own abstract sketch for the sake of intuitive artistic expression. Evans (1989) noted that the axonometric projection has become recently increasingly prominent with its subsequent incorporation into the conventional set of architectural drawings; and more frequent use as a sketch. The use of the sketch for the representational means is especially distinct as its relation to the actual object is very uncertain[96]. Perhaps, it is useful to remember what Bruno Zevi concerned several decades ago about the problem of architectural representation. Zevi (1957) wrote that, "all the techniques of representation and all the paths to architecture which do not include direct experience are pedagogically useful, of practical necessity and intellectually fruitful; but their function is no more than allusive and preparatory to that moment in which we, with everything in us that is physical and spiritual and, above all, human, enter and experience the spaces we have been studying[97]. When one attempts to sense the spatiality of architecture, a true sense of architecture according to Zevi, then the representation in sketch could be very useful in conveying what architects attempt.

4.4 Summary

The role of the representations of the vernacular and the modern differs in the sense that the latter used representations as instrumental vehicle for the execution of conceptual image into reality. In the vernacular tradition, representations pretty often include descriptive images drawn from various angles of time and space onto one image, and they are symbolically rich. In contrast, sequential images drawn after the Renaissance are the work of professional architects attempting to provide rational execution of the plan. They, of course, introduced a much more developed method to describe as much presentable as they could. It was more than a matter of development of presentation techniques, but rather an indication of the development of knowledge on architecture and city. As Evans (1989) notes, the orthographic method is used on

[96] Evans, Robin, *op. cit.*, 1989, pp. 33
[97] Zevi, Bruno, "Architecture as Space: How to Look at Architecture", Horizon Press, New York, 1957, pp. 60

the way to buildings while perspectives are retrieved from buildings[98]; along with the discovery of perspective and descriptive geometry, different modes of representation reveal fundamental difference in the ontology of architecture, whether vernacular or modern. The science of architecture can be observed through the introduction of descriptive geometry and its development. Evans (1995) writes that architecture could ride on the back of geometric rationality as it does not confine architecture to rationality while it still provides a rational ground for the creative, intuitive or rhetorical aspects of architecture[99]. It is, however, most intriguing to observe that contemporary architects become more intuitive in their representations in design in the sense that they prefer sketches irrespective of abstract rationality. What can be derived from the contemporary tendency in representations in architecture is that the architects take whatever vehicles or techniques they need to make use of, even irrespective of practicality, for the purpose of their intention, and they are pretty much within their own social and political domination. The vernacular tradition did not need rational representations as it possessed a well-established tradition of building, while the contemporary building tradition appears to be confident in its triumph of structural technology as well as a well-institutionalised design process.

[98] Evans, Robin, *op. cit.*, 1989, pp. 21

[99] Evans, Robin, "The Projective Cast: Architecture and Its Three Geometries", The MIT Press, Cambridge, Massachusetts, 1995, pp. xxviii

Chapter 5

A War of Classification

5.1 Taxonomic Apprehension of Architecture

In order to conceive a discipline of architecture in the context of a particular intellectual history, it is a pre-requisite to acknowledge its position in the classification system. The innate frustration of comparative research on alternative traditions in architecture can be promptly recognised in this sense. For no equivalent discipline of architecture, and even the term 'architecture', is found in East Asian history. This difficulty, however, maybe overcome by the apprehension of the institutions of architecture within the intellectual structure of East Asia as opposed to that of the West. The formal system of classification should be considered only as an alternative to that of the informal or implicit. The recognition of the latter is, thus, equally qualified for the current debate on the different cultures and their institutions on architecture. What is currently attempted is to sense a human consciousness, not the way in which an individual item is named or labelled. It is significant in this dissertation to acknowledge the very nature of classification that will eventually elucidate the alternative conceptions in the different traditions in architecture, and the deeper understanding of their changing implementations. This chapter, therefore, attempts to establish an alternative epistemology of classification of architecture in two civilisations with incompatible institutions. The alternative ways in which architecture is conceptualised and perceived are scrutinised in contrast between the classified discipline of architecture, buildings as the objects of study and the way they are practised. The way people consider the objects is the key factor that has shaped the nature of the classification system, and the whole content of it.

The classification system in the Middle Ages in the West was crude in its conception in terms of what was studied and the methods adopted for study. Architecture did not form a part of the seven liberal arts in the Middle Ages, despite it being practised below the academic surface. There was also a hidden dimension within architectural institutions that has not been hitherto recognised properly, and this is perhaps also a

reason why it is dropped out from the nine liberal arts. It is a parallel to the pre-modern East Asian system of classification whose analysis is another key issue in this chapter. Without the label of 'architecture', it yet existed in another dimension of classification. The critical point that has created an incompatible establishment of architectural institutions in the two hemispheres is probably the way in which crude classifications developed in accordance with the Scientific Revolution over hundreds years. In both civilisations, philosophy superseded most disciplines in its outlook in the medieval times. Although there is a general assumption on the disciplinary divisions such as theology and arts, which are not regarded as science for example, the way in which these classifications are established is pretty crude in the sense that mathematics is considered as a branch of philosophy.

It is true that the classification system changes over time in order to meet the new ideas and developments. According to Kedrov (1964), there were three stages in the philosophical history of classification of science. There was a single philosophy embracing all genres of knowledge at the first stage, and its major concern was to divide it, mostly from ancient times to Medieval Ages. The second period involved co-ordination of those separated sciences, from the Renaissance to the eighteenth century. Finally, from the nineteenth century on, unification of the sciences was the key issue in the philosophy of classification, as there appeared a number of new connections among sciences[1]. In this sense, the current popularity of interdisciplinary studies, in order to overcome a narrow perspective of a single discipline, is in tune with this dialectic current. This classification system, however, is a pretty static phenomenon in the way it is structured, despite being subject to external factors. Perhaps there have always been such conflicting tendencies of unification and separation of knowledge. Dolby (1979) wrote in opposition to Kidrov that unity was sought among sciences at various periods of time, and that the classification of sciences is too multifaceted to be successfully encapsulated in one simple theory. Sciences were distinguished by subject matter in the Aristotelian tradition and they were probed in order to achieve true unity, and from Bacon to Kant, there was also a period in which a unity was sought among sciences previously divided. Modern scientists also sought scientific unity[2]. What is certain is that the human consciousness

[1] Kedrov, Bonifati M., "The History of Classification of Sciences", Organon, 1964, pp. 165-85
[2] Dolby, R. G. A., "Classification of the Sciences", in Ellen, Roy F., & Reason, David (*eds.*),

grows as time elapses no matter how classification systems change from one form to another. For example, Renaissance classification was established on the criticism of previous schemes, and it arose with growing self-consciousness[3].

In a broad view, there are two classification systems; theoretical and practical. According to Dolby (1979), the three-fold Aristotelian classification of theoretical, productive and practical philosophy, based on the purpose of the knowledge, was reduced into theoretical and practical, and this division has long been the basic contrast within science[4]. The organisation of knowledge, by objects of study or by study methods, is an essential concern of classification, as in the seven liberal arts in medieval times, while the organisation of libraries, dictionaries and encyclopaedia are practical classifications. Library classification is probably not such an arbitrary creation as the dictionary and encyclopaedia, whose systematic organisation follows alphabetical order. These practical classification systems are primarily auxiliary to the theoretical ones as they created another discipline of knowledge along with the growth of knowledge.

The classification of knowledge is profoundly connected with philosophy. Jaspers (1959) wrote that "the idea of knowledge as a cosmos does not stem from practical application, but from philosophy, its vitality is tied to the diffusion of philosophical awareness throughout the university. From the very start, the idea of knowledge as a unity has given rise to different systems classifying the various fields of knowledge. Classifications abound. None of them, however, can claim absolute truth and validity"[5]. Certainly, there have existed a number of intellectual movements aiming to establish an independent whole. Such attempts, however, inevitably exposed an overlapping and interrelating of elements within themselves. What governs the changing classification is a metaphysical concept which motivated their formal configuration. Today's departmental system in the universities, for instance, which originated from the Middle Ages, does not completely accord with the classification of knowledge.

"Classifications in their Social Context", Academic Press, London, 1979, pp. 170

[3] Dolby, R. G. A., *op. cit.*, London, 1979, pp. 171

[4] Dolby, R. G. A., *op. cit.*, London, 1979, pp. 169

East Asia had a system of classification very different from both traditional and modern Western worlds. Over thousands of years, East Asian scholars categorised, classified and systemised all branches of knowledge in ways of their own. Studying the history of early Chinese thought would be an illuminating vehicle to parallel the Greco-Roman tradition of disciplinary classification. Nonetheless, the immediate discouragement of this approach, as stated before, is the lack of a formal system of knowledge; i.e., an epistemology. There were, of course, serious writings and compilations by Sages in ancient times, which have been available. Such availability, however, does not manifest a system of knowledge, nor common classificatory standards. The Chinese tradition of scholarship is, in principle, connected with Confucianism, Taoism, Buddhism and so forth. Under such mainstream philosophical stances, few significant texts play roles for education. All take a philosophical perspective, if a label is needed, and nearly every item from A to Ω is discussed. 'A hybrid form of entire human interests' would be an appropriate description of such texts.

Despite frustration over the lack of a formal system of knowledge, there is still a chance to access and analyse Chinese conceptions of architecture in their own right within its local tradition. The prestigious philosopher Fung (1952) suggested that the system of philosophy could be divided into formal and real, and that the important duty of the historian of philosophy is to find a real system underlying a philosophy that may lack a formal system. Fung's admittance of a lack of formal system in Chinese philosophy comes from a cultural reference that the Chinese have always laid stress on what human 'is' rather than what human 'has', thus, they have not emphasised pure knowledge[6]. What was important to the Chinese was direct use of knowledge in practice, not method or knowledge for its own sake. In tune with this tradition, architecture can probably be understood from sources quite unlike those found in Western libraries.

It is certainly not easy task for Westerners to understand Eastern conceptions of knowledge about architecture, for they constantly attempt to organise them within their own hermeneutic tradition. It is, however, no less difficult for contemporary East

[5] Jaspers, Karl, "The Idea of the University", Beacon Press, USA, 1959, pp. 94
[6] Fung, Yu-lan, "A History of Chinese Philosophy", Princeton Univ. Press, Vol. I, 1952, Chap. 1

Asians, for their viewpoint is significantly hampered by modern education and the contemporary mode of thinking. This is, then, an inevitable condition that one has to confront, if not necessarily a frustration. No one at any given period can be free from socio-historic constraints.

The study of the early Chinese history of thought, therefore, not only illuminates its Western counterpart with contrasting disciplinary conceptions, especially in terms of the way in which architecture is conceived, but it is also vital to understand the evolution of subsequent East Asian civilisation. The emergence and crystallisation of Chinese concepts of discipline is crucial, as the rest of the Chinese history of thought seems to stay virtually undisturbed until the modern Western influx upset East Asian civilisation. This thesis does not attempt to elucidate such a vast intellectual enterprise, but its academic stance paves the way towards structuring an alternative institution in architecture.

5.1.1 East Asian Conceptions on Architecture

The most notable feature of East Asian thinking is an "anthropo-cosmic" vision which regards everything in the cosmos as related to everything else in mutual response. This holistic approach or tendency in understanding natural phenomena certainly characterises the mode of thought in East Asia. The East Asian version of architecture is a complicated phenomenon, and when one attempts to classify it, seems esoteric. With the recognition that Chinese or East Asian philosophy lacks a formal system[7], the ancient East Asian classification system is a metaphysical system that governs the nature of things, not the methods employed to study them. In terms of architecture and urbanism, buildings and cities are not seen as dead physical configurations, but as living organs that should accord with nature. As a living entity, the built environment was considered an inseparable part of nature or the cosmos in which human beings are also a vital element. The built environment or architecture, as a part of holistic nature, is a spiritual entity that should be taken care of, and it is the place human sentiment is necessarily attached and there everything should be in tune with everything else. This

[7] Fung, Yu-lan, *op. cit.*, Vol. I, 1952, pp. 4

is a stunning contrast with the Western perspective that nature is an object to be explored, explained, and subdued.

The difficulty is that, since everything is approached in this manner, philosophy embraces virtually everything. This is indeed the case with the East Asian tradition in architecture. Unlike the Greco-Roman tradition, whose classification puts architecture as a liberal art at the service of upper faculties of law, medicine and philosophy, the East Asian system - perhaps one can call it a cultural schema - is a single all-embracing phenomenon. East Asians indeed dwelt on the idea that unity is the prime virtue of all. This explains the reason why there were no architects in East Asia, for the architectural profession is completely preceded by philosophy and politics. Glahn (1982) wrote that "the designing of a building was not an art but a craft. There were no architects, only supervising officials and craftsman"[8].

Be that as it may, architecture in East Asia has remained unrecognised and clouded in obscurity. Among the misleading concepts is that architecture was not given a status of higher discipline like autonomous Western architecture. Lack or Weakness of architectural theory, assuming the underlying geometrical systemisation, was normally an excuse for such an accusation. There was, however, a much more elaborate form of theory for the built environment in reality. In opposition to the Western view, it is hard to justify that architecture should bear inherent geometrical properties as in Western culture; i.e., in fact 'is there any object without geometric property?', nor should architectural theory be read only for architecture's sake. This attitude undoubtedly created an incredibly different classificatory position for architecture in East Asia. While architecture has been part of science in the West, especially since the Renaissance, it remained unchanged under the domination of prognostication or religious phenomena in East Asia. Perhaps, it is an illuminating manifestation of the nature of architecture that contemporary architecture is being led into a much more organic paradigm.

As such, architecture in the East Asian context should be approached as a dependent discipline within the framework of East Asian thinking. No attempt within the limits

[8] Glahn, Else, "The Tradition of Chinese Building", in Izikowitz, K. G. & S□rensen (*eds.*), "The House in East and Southeast Asia", Curzon Press Ltd., London, 1982, pp. 25

of Western scientific thought can achieve the real value of East Asian architecture. East Asia created a splendid civilisation over several thousand years, and every part of the system differs from the Western counterpart. This is the most important viewpoint in this thesis, as it attempts comparison with the Western world in which architecture has enjoyed its status as an autonomous discipline since the Renaissance. The science of architecture in the Western World began as early as the 17th century, and it culminated at the Bauhaus in Germany, while the science of architecture never developed in East Asia.

Nonetheless, building science and technology seemed to have developed to high level within the domain of correlative thinking in East Asia. The difference between science of architecture and building science is very clear under the perspective of rationalisation of the mode of thought, not a mere part of the system of thinking, but the whole system of thinking. This also explains how East Asia could achieve high technology in printing, textiles, materials, building, etc., even though a scientific revolution had never occurred. Although correlative thinking may not be a unique property of East Asia, as it can be observed in many other cultures, the Chinese way of correlative thinking is probably the most well developed, and it was deliberately applied to nearly every part of intellectual tradition throughout history.

5.1.2 Architecture without Scientific Revolution

In comparison with its Modern Western counterparts, the East Asian system of architectural knowledge can seem blandly rudimentary, particularly where scientific logic is concerned. The East Asian way of design was full of symbolic values until the end of the 19th century. However, it does reflect the development of science and technology in their own rights. This assertion inevitably begs the question of why a Scientific Revolution did not take place in East Asia, despite its highly advanced technology throughout its civilisation. In order to understand this extremely complicated historical phenomenon, one may assume that the modes of thought differ from one society to another not by the whole but by a part[9]. This provides an explanation why somehow East Asians do not think scientifically but have produced

[9] Wolfram, Sybil, "Basic Differences of Thought", in Horton, R. & Finnegan, R. (*eds.*), "Modes of Thought" Faber & Faber, 1973, pp. 364

scientific goods using high technology[10], or alternatively they think scientifically, but do not act so, being too tenacious to norm and custom. The mode of thought hence seems to guide the rule of conduct[11]. This can be proved by observing that Chinese people owe much to their tradition. Ardent tenacity to tradition can be good evidence for the rule of conduct generated by the non-scientific and less self-conscious mode of thought.

There hides, however, the most dangerous assumption when a scholar approaches this kind of research. It is a biased norm based on a Western intellectual framework. From the beginning, questions such as 'why a Scientific Revolution did not occur in East Asia?' or 'why a modern economic system did not emerge in East Asia?' are merely hypotheses legitimating Western stages of development as a norm that other civilisations should have followed[12]. This norm was indeed a core enquiry in academia until quite recently. Then, let us yet probe the discussion on the essential question why a Scientific Revolution indeed did not occur in East Asia. There have been a series of investigations on this subject producing two alternatives both of which should be refuted. One is the idea that China had a social condition that hampered the development of modern science in its religion, philosophy, etc. The other is that China does not possess an element essential to the development of modern science.

Let's consider once again what the prestigious Chinese philosopher Fung (1952) taught earlier in this chapter. He wrote that China may lack a formal system of philosophy or knowledge, but it does possess a real system, as having no system of philosophy means having no philosophy at all. As the utmost interest of the Chinese was a direct knowledge for the purpose of conduct, there was no need for an epistemology in pursuit of another knowledge. Perhaps because that what the Chinese wanted to know was to understand themselves, they did not need the power of science[13]. Gray (1985) also notices that "Chinese philosophy is nearer to poetry than to science; its mode of apprehension is mystical, but the truth which it seeks to

[10] See Needham, J., "Science and Civilisation in China", Cambridge Univ. Press, 1956 onwards for the reference of Chinese erudition.
[11] Wolfram, Sybil, *op. cit.*, 1973, pp. 372
[12] Ropp, Paul, *et al.*, "Heritage of China", University of California Press, 1990, pp. xix
[13] Fung, Yu-lan, "Why China has No Science", The International Journal of Ethics, April, 1922,

apprehend is not knowledge but reality. It is thus seeking the same end as the painter; there is no divergence of aim or of method to separate them"[14]. Despite Fung's claim that China needed no science, which is arguable to say the least, it appears pretty certain that it is a state of mind that prevented the growth of science[15]. With regard to the power of science, Sivin (1982) asserts that "the privileged position of the West comes from a head start in the technological exploitation of nature and the political exploitation of societies not technologically equipped to defend themselves"[16]. This line of thinking undoubtedly explains the modern de-humanisation and the idea that the pursuit of science would only bring exploitation of weak human beings.

As opposed to Western science, Sivin (1982) notes that, science in China was done on the whole by educated people, and was passed down in books, while technology was a matter of craft and manufacturing skills privately transmitted by artisans to their children and apprentices[17]. With this kind of social discourse, there appears to be no reason whatsoever to undergo a Scientific Revolution, as there exist no elements for change. Having such elements may indicate the instability of a society, perhaps even synonymous with an unbalanced development of human consciousness. This unbalance is easy to find throughout modern development. For instance, Sivin points out that "modern technology is clearly more powerful than that of traditional societies; but to a larger extent than we generally realise, its strength emerges in application to needs and expectations that do not exist until it generates them"[18].

Sivin (1982) notes that "the Scientific Revolution and its consequences cut across the boundaries of historical specialisations"[19], it is an 'abrupt halt' of tradition, perhaps if one prefers a more favourable term an 'abrupt leap' towards another tradition, or of continuous development in human consciousness and awareness. Moreover, behind this abrupt halt stands a conflict mechanism in the social network. Needham says that

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pp. 261

[14] Gray, Basil, "Studies in Chinese and Islam Art", Vol. I, The Pindar Press, London, 1985, pp. 1

[15] Jaki, Stanley, "Science and Creation: From Eternal Cycles to an Oscillating Universe", Scottish Academic Press, Edinburgh, 1974, pp. 25

[16] Sivin, Nathan, "Why the Scientific Revolution did not take place in China", Chinese Science, Vol. 5, 1982, pp. 52

[17] Sivin, Nathan, *op. cit.*, Vol. 5, 1982, pp. 46

[18] Sivin, Nathan, *op. cit.*, Vol. 5, 1982, pp. 53 also see Winner, Langdon, "Autonomous Technology: Technics-out-of-control as a Theme in Political Thought", Cambridge, Massachusetts, 1977

[19] Sivin, Nathan, *op. cit.*, Vol. 5, 1982, pp. 60

"between the first century BC and the fifteenth century AD, Chinese civilisation was much more efficient than occidental in applying human natural knowledge to practical human needs"[20].

It must be understood that the absence of a Scientific Revolution, which forced East Asian architecture to stay in the realm of the vernacular, is a historical phenomenon. The Scientific Revolution was the very turning point when Western Europe grew into a modern society in terms of politics, economics, society, culture, etc. The advent of the Scientific Revolution, however, is by no means a historical corollary, as refuted above. As discussed before, questions like 'why Western Europe entered into the modern scientific era' or 'why rest of civilisation did not' are useless arguments, at least in this thesis, for the debate would make a little contribution in understanding the emergence of modernism or the demise of the vernacular tradition.

This light-hearted caution derives from the facts that, first the amount of academic work undertaken on both sides is out of balance, second the nature of enquiry is too complex, and most importantly, it is a very recent phenomenon that scholars have paid serious attention to cross-cultural research. It would perhaps better remain as a matter of uncertainty until a significantly better human consciousness delivers clearer pictures, rather than to mislead whole institutional transformations by lack of balance. There is no need to create a chimera in such a crucial enquiry of human civilisation. It is, of course, a subject to be attempted and challenged over and over again, but from a cross-cultural point of view, it is not a useful theme for this dissertation. What is for sure, in the mean time, is that the Scientific Revolution upset not only economic activities that it was most dramatically expected to change, but also overall social institutions.

5.2 From a Liberal Art to a Science:
Architecture from the Medieval Ages to the Nineteenth Century in the West

Perhaps, the university organisations in medieval times would exemplify the Western notion of architecture and its evolution well within the overall Western classification

[20] Needham, Joseph, "The Grand Titration: Science and Society in East and West", University of Toronto Press, 1969, pp. 16 and 190

system. Just as in East Asia, the West did not have a crystal definition of the discipline of architecture in the Middle Ages. Although the term 'architecture' is used widely, its status and role were pretty much unorganised; this is indeed an endless rhetoric which contemporary architecture also faces in its dilemma of disciplinary autonomy. As a collective homogeneous cultural entity, the West, however, shows a consensus over the discipline of architecture in its geometric and mathematical nature. This can be clearly seen in the way university organisations have classified geometry and mathematics in relation to architecture.

Universities in the West, as the clearest manifestation of the divisions in the arts and sciences, originated in the Middle Ages roughly towards the end of the twelfth century. The emergence of the university is a significant phenomenon as it is the centre of the development of modern science. Universities as organised educational institutions were first formed in Bologna, Padua, Paris and Oxford, with different establishment backgrounds; i.e., the former two being formed and controlled by students, and the latter two sponsored by the church. Although it is hard to date when exactly these universities came into existence, it can be generally said that they grew slowly over the late twelfth century and early thirteenth century. Regarding the status of the university, Kibre and Siraisi (1978) wrote that "the term university (*universitas*) was originally applied to the totality of any group of persons with a common aim or function, such as a craft or merchant guild or a self-governing association of citizens organised as a legal entity with a right to sue or to be sued, under precepts derived from Roman law"[21]. Grant (1996) also notes that the term '*universitas*' is applied to a single group that formed a legally recognised self-governing association. Moreover, the term initially employed to encompass all of these individual, disparate universities was '*stadium generale*'. The term '*stadium generale*' was assigned either to the prestigious universities, such as Paris or Oxford, or large institutions comprised of more than three of the four traditional faculties, arts, theology, law and medicine, or both. Grant (1996) suggests that 'university' replaced '*stadium generale*' perhaps towards the end of Middle Ages[22]. Among the four major faculties of arts, theology, law and medicine, arts were classified as a lower faculty where architecture was

[21] Kibre, Pearl & Siraisi, Nancy G., "The Institutional Setting : The Universities", in D.C. Lindberg (*eds.*), "Science in Middle Ages", University of Chicago Press, 1978, pp. 120

[22] Grant, Edward, "The Foundations of Modern Science in the Middle Ages", Cambridge Univ. Press,

supposedly included. There is, however, no mention of architecture in major documents regarding the classification of university systems. What is close to architecture was geometry, that is part of the seven liberal arts. The basis of education in the early Middle Ages consisted of seven liberal arts; grammar, rhetoric and logic as the verbal arts (trivium), and arithmetic, geometry, astronomy and music as the mathematical arts (quadrivium).

Before these 'seven' liberal arts were established, architecture appears to have been one of the liberal arts at an early Roman period. The earliest Latin classification in the 'Disciplinarum IX' of Terence Varro (116-27 BC) seems to have incorporated architecture as one of the 'nine' liberal arts. According to Weisheipl (1978), Varro's compendium is believed to have comprised (1) grammar, (2) logic or dialectics, (3) rhetoric, (4) geometry, (5) arithmetic, (6) astronomy, (7) music, (8) medicine, and (9) architecture. Architecture and medicine, however, were later considered as mechanical or "servile" arts, so that they were dropped from the liberal arts[23]. Grant (1996) points that the curriculum of the medieval universities, in fact, was not developed to meet the practical needs of society, but to be studied for their inherent value[24].

These seven arts underwent an institutional shift due to the collapse of Greco-Roman political structure in Western Europe. These seven arts were hitherto taught in the imperial schools, and they then had to rely on the Roman church, whose conviction was that the Greco-Roman concepts were essential to bridge the gap between pagan and Christian doctrines[25]. This shift altered the characteristics of the seven liberal arts, making them much more ecclesiastical and functional rather than purely speculative. Overall education fell into the domain of the church, and architecture was no exception. Most importantly, the role of the monks became seriously involved with architecture, for they were not only in a position to offer the construction of major buildings, but also they could form an exclusive class of literati of the time. Allan Cunningham's book "The Lives of the Most Eminent British Painters, Sculptors and

1996, pp. 35

[23] Weisheipl, O. P., James A., "The Nature, Scope, and Classification of the Sciences", in D. C. Lindberg (*eds.*), *op. cit.*, 1978, pp. 469

[24] Grant, Edward, *op. cit.*, 1996, pp. 50

[25] Kibre, Pearl & Siraisi, Nancy G., *op. cit.*, 1978, pp. 122

Architects" (1831) would be a useful example for the conception of the architect in medieval times, in which he stated that,

"Before Architecture became a defined science, and had schools, professors, and disciples, a class of men existed in England, who, trained to other studies, and living in the daily discharge of devout duties, planned and reared edifices with a mathematical skill, a knowledge of effect, and a sense of elegance and usefulness which regular practitioners have never surpassed. The architects to whom I allude, were divines of the Roman Church..."[26]

There are oppositions to this stance, claiming that monks can be merely considered as great patrons of architecture, but nothing more than that[27]. Despite the suggestion regarding the role of monks as architects, that monks may have not been as serious as their image projects [Figure 5-1], their role in the Gothic period should be properly understood in line with the transformation of the socio-economic setting.

[Figure 5-1] An Image of Monk-Architect

(Source: A. W. N. Pugin, "True Principle of Pointed or Christian Architecture", 1895)

[26] Cunningham, Allan, "The Lives of the Most Eminent British Painters, Sculptors and Architects", Vol. 4, 1831, pp. 1

The shift of emphasis in the seven arts is clearly noticeable in the quadrivium. Arithmetic became a subject primarily in relation to calculation, which was formerly an essential element for the study of philosophy, while geometry became a useful instrument for land surveying or measurement for geography, surgery and architecture, not as an example of continuous magnitude without motion. Astronomy, the study of the courses of stars, became a practical means to calculate the time according to the phases of the moon, and lastly "music" was considered as an art to be performed, rather than as a philosophy of harmony or acoustics[28].

Geometry in medieval universities appears to be an instrument rather than a discipline in its own right. Geometry was an important subject as a useful instrument for the demonstration of theological truth, and for explaining the factual knowledge acquired through the physical sciences[29]. Architecture is undoubtedly an object of study for geometry, to be measured and drawn, although geometry was still a minor part of the arts. As Evans (1995) points out, the presence of geometry in architecture is assumed despite the fact that they were originally separate subjects. Evans compares the role of geometry in architecture to that of mathematics in physics[30]. Geometry, however, did not hold a significant position in the university. In fact, the art faculty itself was minor within the university system. In old universities in Paris and Oxford in the fourteenth centuries, these seven arts were regarded as the basis and the preparation for the higher three faculties of law, medicine and theology[31]. Nevertheless, it should be acknowledged that the scholarship devoted to liberal arts towards the end of the twelfth century was as important as theology, while they became clearly subordinated to the study of philosophy and theology with the rise of universities[32]. It was only with the Renaissance that architecture was granted an autonomous disciplinary status, rather than being regarded as an attachment to philosophy.

Euclid's Elements was the principal text for the study of geometry. "Elements" was written in the first half of the third century BCE by the Greek mathematician Euclid in

[27] Saint, Andrew, "The Image of the Architect", Yale University Press, 1983, pp. 31
[28] Kibre, Pearl & Siraisi, Nancy G., *op. cit.*, 1978, pp. 122
[29] Kibre, Pearl & Siraisi, Nancy G., *op. cit.*, 1978, pp. 129
[30] Evans, Robin, "The Projective Cast: Architecture and its Three Geometries", The MIT Press, 1995
[31] Kibre, Pearl & Siraisi, Nancy G., *op. cit.*, 1978, pp. 126
[32] Wagner, David L., "The Seven Liberal Arts and Classical Scholarship", in Wagner, L. W. (*eds.*), "The Seven Liberal Arts in Middle Ages", Indiana Univ. Press, Bloomington, 1983, pp. 24-25

Alexandria, Egypt. "Elements" was an important treatise which the Romans consulted for surveying or metrology, measuring fields or laying out towns, although it was forgotten along with the fall of Greco-Roman dominance around the fifth century CE and in the subsequent cultural crisis, which lasted for hundreds of years. The return of Euclid in the twelfth century coincides with the growth of towns. The unorganised compact urban structures of commercial towns called for an accurate means of surveying and settling off property lines as well as demands for accurate measurement of the volumes and heights of goods[33].

The first half of the twelfth century saw extensive translation work from medieval Arabic, and a pursuit of Greco-Roman scholarship. Many texts of classical Greek scholarship were translated from Arabic during the early Middle Ages. One of the most important figures of that time was Hugo of St. Victor, a theologian, who wrote a number of books on the liberal arts, recognising them as a preparation for the study of theology. Among other things he wrote, "*Practica Geometriae*" (Practice of Geometry), in which he divided geometry into theoretical and practical aspects, apparently inherited by an eminent scholar Boethius who divided philosophy into speculative and practical, and the latter into further three categories of altimetria, planimetria and cosmimetria. Manlius Severinus Boethius (c. 475-524) is known to be 'the last Roman and the first scholastic' as he established the foundation of Latin scholasticism in the early Middle Ages, especially through theology, while preserving the ideal of the classical Roman tradition when the Roman world drew to a close[34].

According to the translation of Hugo's division of theoretical and practical, the texts read "the entire geometry is either theoretical, that is, speculative, or practical, that is active. The theoretical is that which investigates spaces and distances of rational dimension only by speculative reasoning; the practical is done by means of certain instruments, and which makes judgements by proportionally joining together one thing with another"[35]. Furthermore, his three divisions of practical geometry are explained as "Altimetria is that which investigates heights and depths. ... It is called planimetria when one seeks to find the extent of plane. Cosmometria however takes

[33] Shelby, Lon R., "Geometry", in Wagner, L. W. (*eds.*), *op. cit.*, 1983, pp. 203
[34] Weisheipl, J. A., "Medieval Classification of the Sciences", Medieval Studies, Toronto, Vol. 17, 1965, pp. 58-59

its meaning from the word cosmos. Cosmos in Greek means the world; hence cosmometria is the measurement of the world, that is to say, it concerns the measurement of circumference, as in the motion of a heavenly sphere and of other heavenly circles, or in the globe of the earth and many other things which nature has placed in the round"[36]. Therefore, Hugo understood geometry as a discipline of surveying both terrestrial and celestial, and this definition was widely accepted as a standard work[37].

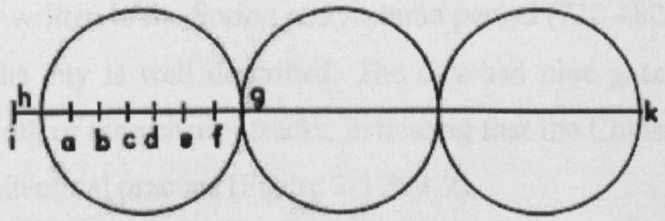
It is quite natural to observe a form of hybrid inclusive of geography, architecture and astronomy, for it is a common feature that a number of disciplines were inextricably fused with one another in ancient times, as well as being subordinated to philosophy or politics. Astronomy, for example, being a discipline to explain rationally the movements of heavenly bodies, was dependent on geometry, for geometrical principles can be applied to the quantitative aspects of celestial motions such as speed, size, distance and proportionality[38]. In "*De ortu scientiarum*" (On the Origin of Sciences), a work of Robert Kilwardby, an Englishman renowned for the mastery of arts at Paris around the middle of the thirteenth century, geometry, astronomy, perspective, music and arithmetic were put under mathematics as a branch of speculative philosophy[39]. This classification is no doubt from an assumption prevailing at the time that the divine truth could be found in mathematical rationality. This is parallel to the East Asian tradition of architecture, which was not transformed much after its initial establishment, leaving architecture as a mélange of arts and sciences subordinated to philosophy and politics.

Beyond the above two forms of geometry, there seem to have existed another form of geometry which may be termed as 'constructive geometry'. According to Shelby (1983), constructive geometry was not a subject of study in formal educational institutions, nor did scholars write treatises on it[40]. Shelby defines it as "not a deductive, logical, mathematical line of reasoning from axioms, postulates, and

[35] Shelby, Lon R., "Geometry", *op. cit.*, 1983, pp. 197
[36] Shelby, Lon R., "Geometry", *op. cit.*, 1983, pp. 198
[37] Shelby, Lon R., "Geometry", *op. cit.*, 1983, pp. 198
[38] Weisheipl, O. P., James, A., *op. cit.*, 1978, pp. 477
[39] Weisheipl, O. P., James, A., *op. cit.*, 1978, pp. 480, chart 6
[40] This is just like the attitude of the Chinese literati, who did not consider architect as an appropriate profession for the educated man. See Needham, J., "Science and Civilisation in China", Vol. 4, pt. 3,

theorems in Euclidean fashion", but "the physical manipulation of certain geometrical figures that allowed the masons to construct geometrical frames for the architectural design and construction of buildings"[41]. The most well known example of this kind is Matthias Roriczer's book of "*Die Geometria Deutsche*" (German Geometry), published in 1486-90. Roriczer was a master mason from Nürnberg, whose book reveals the nature of the mason's geometry as non-mathematical. Until then, the mason's know-how or geometry was not known beyond their own circle, as their society was a secret society whose proceedings are unrecorded[42]. In "*Die Geometria Deutsche*", Roriczer addresses himself in his dedication to a bishop for whom he had worked, claiming that all who are involved in building should fully understand the liberal art on which building depends[43], although his formula suggests that he hardly thought of it as a mathematical problem[44]. His explanation of making a circular line straight exemplifies this notion [Figure 5-2]. The text reads:

"If anyone wishes to make a circular line straight, so that the straight line and the circular line are the same length, then make three circles next to one another, and divide [the diameter of] the first circle into seven equal parts, with the letters designated *h a b c d e f g*. Then as far as it is from *h* to *a*, set a point behind [*h*], and mark an *i* there. The as far as it is from *i* to *k*, equally as long in its circularity is the circular line of one of the three [circles] which stand next to each other, as the figure stands made hereafter"[45]



[Figure 5-2] Excerpt from Mathes Roriczer's "*Die Geometria Deutsche*" (1486)

1971, pp. 80

[41] Shelby, Lon R., "Geometry", *op. cit.*, 1983, pp. 212

[42] Rykwert, J., " On the Oral Transmission of Architectural Theory", AA File, May 1984, pp. 15

[43] Rykwert, J., *op. cit.*, 1984, pp. 19

[44] Shelby, Lon R., "Geometry", *op. cit.*, 1983, pp. 211

[45] Shelby, Lon R., "Gothic Design Techniques: The Fifteenth-Century Design Booklets of Mathes Roriczer and Hanns Schmuttermayer", Southern Illinois University Press, 1977, pp. 121

The above three forms of geometry have always existed until nowadays, and they have established alternative traditions in architecture. The academic establishment of architecture and the development of representation skills have virtually granted architecture autonomy as a liberal art, but its established tradition of constructive geometry co-existed without serious conflicts. The different forms of geometry possess different modes of conception in geometry as well as in architecture, for building production involves diverse facets of arts and sciences. What is significant in the above separation is not what the objects themselves are, but what methods they - architects and builders for instance- have employed. The sciencisation of architecture, which regarded geometry as an instrument for representation, which occurs in the eighteenth and nineteenth centuries, is also a matter of choice of method to be used, and that is, of course, a manifestation of particular conceptions in architecture.

5.3 Architectural Practice in East Asia

Although East Asia did not develop the discipline of architecture as a liberal art, it achieved a sophisticated system of architectural practice. Systematisation of building practice in East Asia can be traced back to the Chou dynasty of China (1,030-722 BCE). About BCE 1,000, the Chinese already had a system of modules, executed under imperial supervision. In the "*Kao Gong Ji*" (The Rule of Workmanship) section of the book of *Chou li* (Chou Ritual), a book describing the administration system of the Chou dynasty written in the Spring and Autumn period (722-480 BCE), the spatial organisation of the city is well described. The city had nine gates with nine main roads with the width of nine chariot tracks, indicating that the Chinese had achieved a high level of architectural practice [Figure 3-1 & 3-2].

There also exists some evidence in the Tang dynasty (618-906 CE) of documents regarding building practice. The "*Ying Shan Ling*", meaning 'National Building Law', was composed and edited in the Tang dynasty, supposedly showing detailed building techniques and government involvement. The treatise is, however, unfortunately lost apart from the small fragment now known as the 'Tang Code'. One may find it curious to observe that the written evidence of architectural practice is included in the system of law. It is, however, misleading to read building practice as part of a system of law in East Asia. For, despite the citation being included in the 'code', its real form

is architectural knowledge. As the Tang code appears to be a reference to the "Ying Zhao Fa Shih", the oldest extant Chinese architectural treatise published in the early twelfth century, Guo (1998) suggests that the citation of building practice in the Tang code should be understood as a Chinese artisan guild system[46], which is subject to law.

The system of the Chinese artisan guild is integral to the Chinese family system whose occupation was not allowed to change. Artisans were registered by the state, and they served the state, subject to the law[47]. In general, registered artisans were not allowed to change their occupations, and they passed on specialised knowledge orally, often in a form of verse, from one generation to another[48]. The system of the corvée service to the state was maintained until the second half of the fifteenth century, when a dramatic social transformation occurred[49]. According to the Tang Code, artisans were allowed to adopt a son, if they did not have one, from the same class[50]. This illustrates the general social fabric of the Chinese family tradition as well as the transmission of practical knowledge and the security of artisan labour. The obvious question is: why does the code include architectural practice?. A possible answer is that architecture was a clear manifestation of imperial sovereignty. Another answer would be that architecture was underdeveloped to become an independent body of knowledge, acknowledging that architecture was used to consolidate imperial control. There is general consensus over the political presentation of architecture in all cultures, and East Asia is no exception.

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[46] Guo, Qinghua, "Yingzao Fashi: Twelfth –Century Chinese Building Manual", Journal of the Society of Architectural Historians of Great Britain, Vol. 41, 1998, pp. 3

[47] Johnson, Wallace, "The T'ang Code", Princeton Univ. Press, 1979, pp. 160

[48] Guo, Qinghua, *op. cit.*, 1998, pp. 3

[49] Ruitenbeek (1993:18) assumes that the corvée system may have influenced the wide-spread of architectural treatises such as Lu Ban Jing, and the unification of architectural style over the empire. The Chinese corvée system appears to be comparable to the '*tour de France des compagnon*' or the '*Wanderjahre*' of the artisan in Europe in the Middle Ages. Much earlier in date, Boerschmann (1912) noted that travelling is habitual for the Chinese. For the purpose of state examination, hundreds of thousands of students travelled annually to the capital. They acquired strange customs from various places and diffused them abroad. See Boerschmann, Ernst, "Chinese Architecture and its Relation to Chinese Culture", Annual Report of the Board of Regents of the Smithsonian Institution, Washington, 1912, pp. 545; According to The Oxford English Dictionary, the term "corvée" is explained as "Feudal Law; A day's work of unpaid labour due by a vassal to his feudal lord; the whole forced labour thus exacted; in France, extended to the statute labour upon the public roads which was exacted of the French peasants before 1776, see The Oxford English Dictionary (2nd Edition), Clarendon Press, Oxford, 1989, Vol. III, pp. 979

[50] Johnson, Wallace, *op. cit.*, 1979, pp. 198

Beyond the political subordination of architecture, there also existed a ritual dimension in East Asian architecture. Chinese architectural practice involved various kinds of conceptions, much more than mere technical matters. As buildings were regarded as living entities, rituals were emphasised, and building practice was protected as a secret within the circles of particular parties involved in business. Among the numerous treatises that mention buildings and other related issues, there appear to be two kinds of texts. One category is a general description of building practice from the literati's point of view, and the other is a type used by those involved in practice. The class of literati was dependent on the conceptual issues on architecture based on their philosophical knowledge, while feng shui masters or carpenters relied on practical books available within their own circles such as Lu Ban Jing. Parallel to the mason's secret code of practice, East Asian architecture carries a secret system of carpentry practice involving a numerical module system in association with rituals, symbolism, astrology, etc.

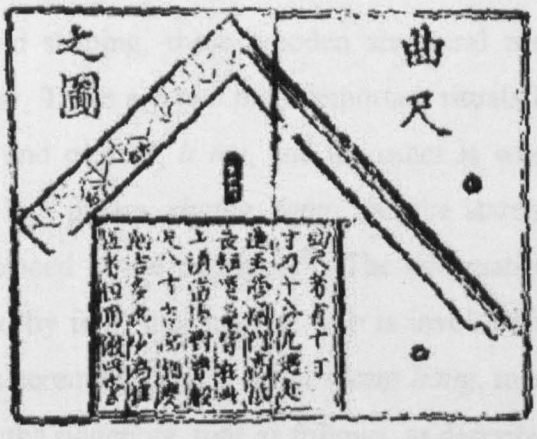
Despite it being a well established tradition that the skills of carpenters were handed down by apprenticeship, the secret manual of carpentry was supposedly kept in the hand of the most respected master, and it was not normally printed. It should be acknowledged that the gap between the scholarly knowledge and the practical one was so great, that neither literati nor carpenters fully apprehended both branches[51]. Among practical carpentry books, which supposedly unravel carpentry secrets, Lu Ban Jing is the best known carpentry manual. The origin of Lu Ban Jing may date back to the late Ming dynasty (1368-1644), although it is suggested it was compiled earlier, and it is mostly concerned with house construction[52]. "Lu Ban Jing", which literally means 'a Canon of Lu Ban', was named after a master craftsman in the fifth century BCE who was later considered the deity of carpentry. It is opposed to the "*Ying Zhao Fa Shih*", which appears to be a state sponsored formal record of building practice, Lu Ban Jing is a carpenter's secret handbook showing three different modular systems for building measurement at the practical level. Ruitenbeek (1986) suggested that the modular system is derived from "numero-logical and astrological

[51] Glahn, Else, "Unfolding the Chinese Building Standards: Research on the Yingzao fashi", in Nancy S. Steinhardt (*eds.*), "Chinese Traditional Architecture", New York, 1984, pp. 51

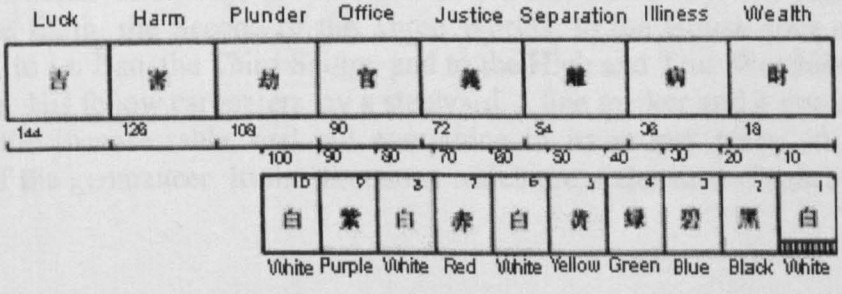
[52] For the history of Lu Ban Jing, see Ruitenbeek, K., "Craft and Ritual in Traditional Chinese Carpentry", Chinese Science, 1986, no. 7, pp. 13 or his entire translation of "Carpentry and Building in Late Imperial China", E. J. Brill, Leiden, 1993

concepts[53]. Moreover, Lu Ban Jing explicitly mentions the divinatory and supersitious dimensions in practice, also citing feng shui, which the current thesis examines in close detail in the next chapter.

According to Lu Ban Jing, the carpenter's business begins after the feng shui master and the house owner reach an agreement over the appropriate site and date of construction. After the stone plinths are placed on the site, carpenters begin to shape the wooden members in a certain order, using wooden trestles whose orientations are ritually important. According to Ruitenbeek (1986), the most important part of the carpenter's engagement in the construction is the measurement that is directly influential to the luck of dwellers of the house[54]. Moreover, Ruitenbeek regards Lu Ban Jing as a secret system of carpenters as only this book discusses Chinese carpenters' measures in length, although they are briefly mentioned in a number of books[55].



[Figure 5-3] Carpenter's Square as illustrated in Lu Ban Jing



[Figure 5-4] Foot-Ruler as illustrated in Lu Ban Jing

[53] Ruitenbeek, K., *op. cit.*, 1986, no. 7, pp. 7
[54] Ruitenbeek, K., *op. cit.*, 1986, no. 7, pp. 4
[55] Ruitenbeek, K., *op. cit.*, 1986, no. 7, pp. 6

Carpenters measured timber elements by using different foot rulers simultaneously to distinguish between auspicious inches and inauspicious inches. Each foot rule was divided into favourable and unfavourable inches, and two or more rules should indicate favourable inches when a carpenter wants to measure the timber elements. On all accounts, the favourable inches fall on the ends except with the carpenter's square which may get the favourable inches in the centre [Figure 5-3]. In the Lu Ban Jing, two different foot rulers are used. In the case of straight foot rulers, first one is divided into nine sectors indicated by colours; white, black, blue, green, yellow, white, red, white, and purple in sequence. Four white colours and the purple, to a certain extent, are favoured colours. The other foot ruler is longer and is divided into eight with eight different inscriptions on it; wealth, illness, separation, justice, office, plunder, harm and luck in sequence [Figure 5-4] [56]. It is pretty easy to recognise which inch falls into a favourable one in the practical measurement. Foot rulers are certainly connected with the Chinese cosmology in general[57].

After measurement and shaping, these wooden structural members are assembled subject to the ceremony. There are two most important rituals involved. One is when the pillars are placed and erected, *li mu*, and the other is when the main ridgepole (girder) is assembled into pillars, *shiang liang*, and the statement of the ceremony, *shang liang wen*, is placed in the ridgepole[58]. The designation of date and time is important, and decided by feng shui master, who is involved from the beginning. A passage regarding this ceremony, called *li mu shang liang*, meaning literally erecting the pillars and placing the ridgepole, runs as follows, as described in the Lu ban Jing.

"At the sacrificial ceremony, the foreman of the carpenters pays his regards to the Lord of the Earth, the Second of the Three Worlds, to the House gods of the Five Directions, to Lu Ban, the Third Squire, and to the High and True Worthies of the ten Extremities. His fellow carpenters lay a steelyard, a line marker and a square on a rice barrel on the incense table, and put everything in its proper place, including the compass of the geomancer. In the directions which are under the influence of the evil

[56] The detail of measurement is consulted from Ruitenbeek, K., *op. cit.*, 1983, no.7

[57] Chinese cosmology will be discussed in detail in the chapter 6 for the explanation of feng shui.

[58] This ceremony is regarded as the vital element of building construction of any kind in reality. Even in nowadays in East Asia, China, Korea, Japan, Taiwan etc, construction workers exercise an amended version of this ceremony. This is apparently due to the different material and construction method employed for the concrete structure or the steel structure.

ghosts of the stars Huanfu and Sansha, ghosts and evil influences are expelled. In this way the occupants of the house will lead a happy life forever"[59]

After all structural members of the house are assembled, carpenters begin to place windows and doors. An intriguing point that can be retrieved from Lu Ban Jing is that the carpenters regarded door placing as an especially significant matter, as the door is the passageway the 'chi' is supposed to come through. The concept of 'chi', whose origin dates back to the antiquity, is vital in understanding any branch of Chinese arts and sciences. As the building is regarded as a living organ, placing a door in the service of aspiration is undoubtedly a matter of importance, much more than an aesthetic quality. Although Ruitenbeek's careful study of Lu Ban Jing acknowledges this geomantic quality[60], he does not seem to have apprehended the role of feng shui in the overall network of architectural practice, nor understood feng shui as a serious body of knowledge equivalent to architecture in the West. Ruitenbeek (1986) wrote that "the first task of geomancy is to site houses and, more important, tombs in the landscape; it has no direct relation with architectural forms"[61]. He further wrote that "although geomancy is a separate profession and does not really form part of the building trade, it is closely connected with it"[62]. These statements are certainly not appropriate, as feng shui seriously governs built forms; the mass, the details of motifs, and spatial organisations. The role of feng shui masters, or geomancers, was pretty close to that of an architect in the Western tradition. Ruitenbeek added that "there is, however, a branch of geomancy which is specifically concerned with the layout and orientation of houses, and more especially with the distribution of doors... ...there was a certain degree of competition between the carpenter and the geomancer"[63]. Feng shui (or geomancy) indeed governs those matters, but its position is much more solid and influential. The carpenter's role and the house owner's engagement is pretty much subject to a feng shui master's guidance, which is nearly irrefutable as it has to do with the dweller's fate. A common reference to feng shui made available to the carpenters and the house owners, by means of Lu Ban Jing for the former and the popular almanacs for the latter, do not seem to have played a significant role in

[59] Ruitenbeek, K., *op. cit.*, 1986, no. 7, pp. 8
[60] Perhaps he used the term "geomancy" for the indication of feng shui as there exists no equivalent term for feng shui in English.
[61] Ruitenbeek, K., *op. cit.*, 1986, no. 7, pp. 10
[62] Ruitenbeek, K., *op. cit.*, 1993, pp. 5
[63] Ruitenbeek, K., *op. cit.*, 1986, no. 7, pp. 10

practising construction[64]. Lu Ban Jing and the almanacs rather appear to have consolidated people's belief in feng shui, and they indeed reflect people's reliance on it. Moreover, since the prescription of feng shui is supposedly in harmony with Heavenly principles whose parallel on the Earth should be in due order, it is hard to imagine that one would betray such a significant moral engagement. This assertion will be made clear in the next chapter, which attempts to establish feng shui as an alternative tradition in architecture.

Besides this practical concept of building tradition in China, a building treatise of twelfth century Song dynasty (960-1279), "Ying Zhao Fa Shih", is a remarkably well organised record of Chinese building practice. This treatise was forgotten for centuries until a handcopy of the 1145 edition was discovered in 1919 by Zhu Qiqian (also known as Zhu Xie), once acting Head of the Ministry of Inner Affairs between 1913 and 1916, at the Nanjing Provincial Library[65]. The "Ying Zhao Fa Shih", literally meaning 'Building Standards', is the oldest extant treatise on Chinese building practice, and comprises thirty four chapters ranging from literary sources to detailed techniques. The first two chapters deal with forty nine terms for construction quoted from literary sources as early as the Chou dynasty (1,030-722 BCE). The rest of the thirty two chapters can be divided into four sections of rules, labour, material and drawings. The first section, chapters 3 to16, is concerned with construction methods for the various structural members, and the second section, chapters 17 to 25, is concerned with the amount of the work for each of various different categories that a skilful artisan can undertake in a day. The third section, chapters 26 to 28, shows the amount of material needed for various types of building works and the formulation for combining materials, and the fourth section, chapters 29 to 34, comprises detailed representation of plans, and elevations of buildings as well as construction details. Each of those four sections divide into twelve sub-sections including moats, fortifications, masonry, carpentry, joinery, wood carving, turning and drilling, sawing, bamboo work, plastering, painting and decoration, brick work, and the manufacture of

[64] In the case of popular almanac, its role is nonetheless significant in the daily life. For the almanac is often the only book in the house, and it was used as a reference book for all purposes such as selecting an auspicious date for wedding or even just cleaning the house. Surely, for the purpose of construction, almanac was an important source for consultation where feng shui masters or professional carpenters are not available.

[65] Guo, Qinghua, *op. cit.*, 1998, pp. 9

tiles[66]. The book was compiled by a Director of the Board of Building and Construction, Li Chieh, in 1100, and published in 1103.

In order to understand the sound motivation of this great work, and also to be able to grasp a further layer of an institutionalised building tradition in China, the dramatic social change in the first half of the twelfth century, commonly known as Wang Anshi Reform (1069-74), needs to be understood. Behind the compilation of the "Ying Zhao Fa Shih" was a dramatic political reformation driven by the eminent statesman Wang Ah Shih (1021-86) who dramatically changed the institutions on building practice as well. As Wang tried to enrich the country in a brief period of time, he revised the state examinations for entry to office, emphasising the apprehension of every aspects of the specialised profession, and increased the number of state schools. His achievement includes a total restructuring of the fiscal system, changing tax assessment criteria, and introducing local militia in support of national defence system as well as converting labour service obligations to money taxes.

The change of the labour system, for the construction of roads, government buildings, and the maintenance of canals and so forth, hit building practice, for artisans were employed in government projects and were paid in cash. As stated above, labour service was hitherto compulsory for the registered artisans, and failing to perform one's duty resulted in a state punishment[67]. It was also in this period of the Sung dynasty that natural timber from the northern provinces could not be used as a result of the confrontation with the northern tribes. The depletion of resources and ever increasing labour costs brought Wang's attention to the need for a builder's guide for efficient building construction. It is tempting to speculate that Wang could have consulted Tang regulations on building construction. This assumption is quite feasible in the sense that Wang indeed consulted *Chou li*, Chou Rituals, in search of a blueprint for an integral program of speedy reformation. The proposed book was initially compiled between the 1070s and 1091, and it was titled the "Ying Zhao Fa

[66] The summary of Ying Zhao Fa Shih is taken from Glahn, Else, "Unfolding the Chinese Building Standards: Research on the Yingzao fashi", in Nancy S. Steinhardt (*eds.*), *op. cit.*, New York, 1984, pp. 48-49

[67] As their specialised profession is still needed in the service of state, their punishment was different from ordinary people. According to the Tang Code, if an artisan has committed a crime and punishable by life exile, they were, instead, struck with a heavy stick. For example, those who would be sent to 2,000 *li* will be hit one hundred blows, and 2,500 *li* would be one hundred thirty, and so

Shih". This version, however, was not to be published until Li Chieh was commissioned in 1097 in an imperial order of Emperor Zhe Zong to formulate the *new* "Ying Zhao Fa Shih", as the old version lacked detailed accounts of building craftsmanship.

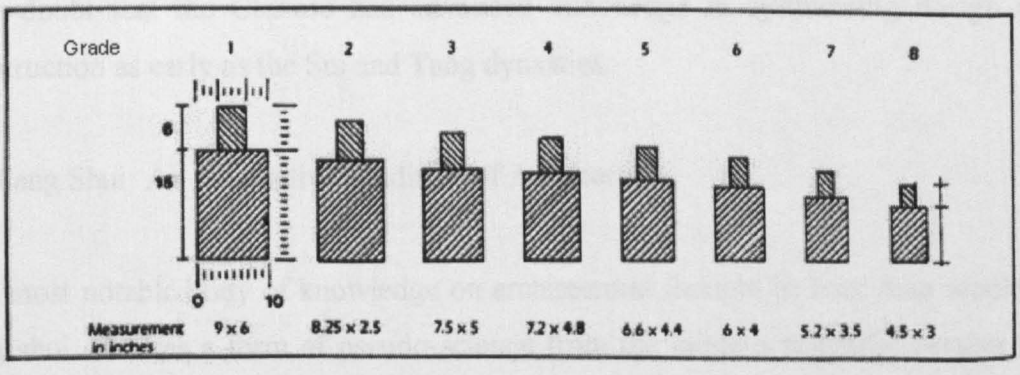
As Li Chieh was in charge of erecting palaces and government buildings, he was one of the most appropriate persons for this mission. In the preface of the "Ying Zhao Fa Shih", Li Chieh, being a high class state officer, explicitly admitted that he learned practical knowledge, transmitted for many years only by oral transactions from carpenters. Li Chieh completed the editing of the work in 1100, and the printing was undertaken in 1103. It would be useful to look at Li Chieh's career to further verify how important the publication was. Li's career is mostly related to the Board of Building and Construction. In 1102, Li Chieh was an Assistant Director of the Board of Building and Construction, being promoted to Director in 1109. During the preparation of publication, Li Chieh had a father who was ill for a long period. In 1103, Li petitioned the emperor to stay outside the capital in order to be near his father. Although this was accepted, he was recalled to the capital in the subsequent year. This obviously had to do with his involvement with the publication, as well as his role in the Board of Building and Construction. Li Chieh eventually retired on account of his father's death in 1108. During his father's illness, the emperor even sent an imperial physician to attend the ill old man, a significant expression of imperial favour. Moreover, the emperor gave a huge sum of money for the funeral expenses[68]. It is obvious, then, that the emperor regarded the publication of the "Ying Zhao Fa Shih" as a matter of great importance, and that Li Chieh was treated in a very respectful way.

The significance of the "Ying Zhao Fa Shih" for the current debate is that it contains a modular system of twelfth century carpentry. Called the 'Cai-Fen' system, this modular system certainly governed the scales and proportions of buildings. According to the "Ying Zhao Fa Shih", there are two ways of measuring. One is a measurement of length for both timber elements and completed building structures. The unit for

on. see Johnson, Wallace, *op. cit.*, 1979, pp. 161

[68] For more detailed career of Li Chieh and the history of Ying Zhao Fa Shih, see Yetts, Perceval W., "A Chinese Treatise on Architecture", The Bulletin of the School of Oriental Studies, London,

length was called 'cai', and consists of 15 fen. It has eight grades [Figure 5-5]. The other is the measurement of section comprised of a single standard unit, 'dan cai', 15×10 fen, and full standard unit, 'zu cai', 21×10 fen. The use of a particular unit is dependent on the size of structure. When a stiffener is placed on top of a unit, it makes a full unit of 21 fen, called 'zu cai', as a stiffener has a depth of 6 fen. Under this system, relationship between the modular system employed and the scale of building can be easily identified. Guo (1998) notices that, in Chinese architecture, structural design unified architectural design, and construction was carried out by assembling prefabricated standard components[69]. As structural design appears to have governed building design, building types are classified by structural types of buildings rather than by spatial organisation. The size of building is roughly the indication of the significance of the building or its owner.



[Figure 5-5] The *Cai-Fen* Modular System employed in "*Ying Zhao Fa Shih*" (1103)

Moreover, a striking record for the evidence of systemisation of design and construction in an earlier period of Chinese history, far in advance to the "Ying Zhao Fa Shih", can be found in the city of Chang-an, the capital in the dynasties of Sui (581-618 CE) and Tang (618-906 CE). According to Wright (1965:677), in the autumn of 654 CE, there is a record that the Board of Works hired 41,000 workmen to build a twenty-two mile long outer city wall and watchtowers with nine main gates. Surprisingly, it took only thirty days to complete the project. Even earlier in 643 AD, the emperor built a reception hall for a favourite minister who was ill, and it took only

Vol. IV, 1926-28, pt. 3

[69] Guo, Qinghua, *op. cit.*, 1998, pp. 7

five days to complete the building[70]. Wright points that there are numerous cases of this kind; most buildings are erected rapidly from readily available materials with little expectation that they would last more than a generation or so. A similar view was also suggested by Needham (1971) that it was not the nature of Chinese to build for eternity, that a house was seen as something temporary, like a piece of clothing[71]. Wright (1965:676-679) further argues that the Chinese architecture is an architecture of planned ephemerality (*urbs ephemera*) while that of Greek is an architecture of eternity (*urbs aeterna*). This is a rather provocative assertion in the sense that buildings were only built for such a short period of time. It is tempting to assume that the Chinese could have stored ready-made materials for future uses and that the way they were assembled in the construction site is therefore highly rationalised, standardised and systematised. As there is written evidence of registration of artisans under the Tang Code, inherited by Sung dynasty and subsequent dynasties, there is little doubt that the Chinese had advanced knowledge in systemising design and construction as early as the Sui and Tang dynasties.

5.4 Feng Shui: An Alternative Tradition of Architecture

The most notable body of knowledge on architectural thought in East Asia would be feng shui. It takes a form of pseudo-science from the modern scientific perspective. Despite the fact that many Western intellectuals considered feng shui as a kind of rudimentary science or superstition, it actually occupies a rather philosophical position in East Asian culture. In fact, when feng shui does accord with modern science on rare occasions, it almost inevitably turns out to be attached to the justification of beliefs. The contribution of feng shui to East Asian architecture stems from its origin and development process. In tune with the distinction, between vernacular and modern traditions, made earlier in the current dissertation, it is astonishing that the ancient civilisation had responded to the respectful reception of the nature with highly conscious schemata for the built environment. In spite of the characteristics that unself-conscious cultures possess in the way of a rich tradition of

[70] Wright, Arthur F., "Symbolism and Function", Journal of Asian Studies, Vol.24, no.4, 1965, pp. 677
[71] Needham, J., "Science and Civilisation in China", Cambridge University Press, Vol. 4, Part. 3, 1971, pp. 90-91

myth and rigidity of tradition[72], this does not necessarily mean that myth always played a non-scientific mystic role in the built environment.

As Guidoni (1975) argues that "the principal channel between architecture and society is the connection with 'history' and 'science' experienced in the guise of myth"[73], the tradition of myth is rather practical in many cases. In the case of East Asia, Oliver (1987) praises that "baffling in its complexity to all but a master, feng shui in application is often extremely practical, informed by centuries of accumulated wisdom"[74]. In the next chapter, feng shui is studied exhaustively in order that it can be constructed as an alternative institution in architecture and urbanism.

One important point may be addressed before more serious studies are presented. As it is human nature to give an order and get things organised, no exception is expected in the built environment. Whether tangible or intangible, cultural phenomena may have culminating parts where their supreme ideology is reflected or, at some points, completely forgotten. Even in supposedly culminating parts, it could be just coincidence or a mere permissive pattern of any possible structure. In applying feng shui to Chinese architecture, a phrase 'not everything that glitters is gold' may be an appropriate maxim.

Besides the enormous amount of work on feng shui done in China, Japan and Korea, Western scholars have also undertaken academic research for over a hundred years. Some looked at feng shui on the grounds that it is a form of religion, science, art or whatever, and some took an interest in architecture and the city without recognition of feng shui. Eitel (1873) and de Groot (1897) are the best known figures who recognised feng shui as a vital force in shaping the Chinese built environment, while a number of occasions appear to indicate that feng shui can also be found in indirect descriptions of Chinese architecture. Boerschmann (1912), for example, wrote that "one observes everywhere that industry and trade serve to strengthen and deepen the religious sentiments, because everything is brought into relation with the forces of

[72] Alexander, C., "Notes on the Synthesis of Form", Harvard University Press, 1964, Chapter. 3
[73] Guidoni, Enrico, "Primitive Architecture", Electa Editrice, Milan, 1975, p. 13
[74] Oliver, P., "Dwellings: The House across the World", Univ. of Texas Press, Austin, 1987, p.186

Nature, which are then personified as gods" [75]. Despite his picturesque document for the study of Chinese architecture, Boerschmann could only describe feng shui as 'the city relations to wind and water are perfect', understanding wind and water as the physical substances[76]. What follows in the next chapter is the theoretical conceptions in feng shui as well as an interpretation of feng shui as an alternative tradition in architecture and urbanism.

[75] Boerschmann, Ernst, "Chinese Architecture and its Relation to Chinese Culture", Annual Report of the Board of Regents of the Smithsonian Institution, Washington, 1912, pp. 541
[76] Boerschmann, Ernst, *op. cit.*, 1912, pp. 564

Chapter 6

Reading Feng Shui

6.1 Introduction to feng shui

This chapter intends to establish an epistemological account of feng shui with respect to architecture and planning both historically and critically. Despite the fact that feng shui has been a research subject for many years, the debate on the subject has become discursive, ill informed and seriously unbalanced. What is needed is an overview that systematically links feng shui with Chinese history and philosophy, in order to locate Chinese architecture and planning in the framework of Chinese thinking. In the past, the study of feng shui has often taken a form best described as an ideal form of geography, as if it existed in a dimension of reality independent from the rest of history. Especially misleading is the misconception of feng shui that has arisen as a result of the Western perspective and its classification systems. Feng shui is often misunderstood as a superstition, a religion or even an absurd belief, a farrago of nonsense, a kind of fortune telling. As will soon be evident, feng shui can properly be considered neither an art nor a science from the Western epistemological viewpoint. It is, rather, an unnameable discipline, a mélange of arts and sciences which governs diverse human interests inclusive of architecture and planning, but which is also the means to embody an ancient cosmology.

Due to its nature dabbling into a number of disciplines, studying feng shui entails a great amount of documentary work. In fact, there exists an overwhelming amount of written work in relation to feng shui from all periods of East Asian civilisation as well as modern Western scholarship. This research solicited any material available as far as they are relevant for the current debate on the reconstruction of feng shui as a discipline of architecture and urbanism. Earlier studies on feng shui could manage to read feng shui as a systematic body of knowledge, a parallel to the Western natural science. The first serious study of feng shui is that of Eitel (1873) who went to China as a missionary. He defined feng shui as "a system of superstition, supposed to teach

people where and when to build a tomb or to erect a house so as to ensure for those concerned everlasting prosperity and happiness ... ... feng shui is another name for natural science"[1]. Approached from a religious point of view, J. J. M. De Groot (1897) appears to have thought feng shui as an ambivalent body of knowledge. He defined feng shui as "a quasi-scientific system, supposed to teach men where and how to build graves, temples and dwellings, in order that the dead, the gods and the living may be located therein exclusively, or as far as possible, under the auspicious influences of Nature" while condemning it as "a mere chaos of childish absurdities and refined mysticism, cemented together, by sophistic reasonings, into a system, which is in reality a ridiculous caricature of science"[2]. Sarton (1927) also acknowledged feng shui as "a perverse application of physical and meteorological knowledge"[3]. Despite the above recognition, there undoubtedly existed conflicting views on feng shui as well as difficulty in finding an appropriate term or description of it. De Groot (1897) described feng shui as "a farrago of absurdities", Ball (1911) also described it as 'a farrago of nonsense', 'pseudo-science', 'geomancy', 'curious medley of superstition' and 'art of divination'[4]. The term 'geomancy' is often used, in place of feng shui, for no equivalent term or practice was found in the occident[5]. According to the Oxford English Dictionary (1989), geomancy is defined as,

"the art of divination by means of signs derived from the earth, as by the figure assumed by a handful of earth thrown down upon some surface. Hence, usually, divination by means of lines or figures formed by jotting down on paper a number of dots at random"[6]

As it will soon become evident, the use of term geomancy, in place of feng shui, is derived from its morphological similarity with esoteric diagrams of Ho-Tu and Lo-Shu as well as eight trigrams and sixty four hexagrams, despite the difference of core ideas.

[1] Eitel, Ernest J., "Feng Shui or the Rudiments of Natural Science in China", Trubner & co., London, 1873
[2] See De Groot, J.J.M., "The Religious System of China", Vol. III, Leiden, 1897, pp. 935-1,056
[3] Sarton, George, "Introduction to the History of Science", Vol. I, Baltimore, 1927, pp. 345
[4] Ball, J. Dyer, "The Chinese at Home or The Man of Tong and His Land", The Religious Tract Society, London, 1911, see chapter IV.
[5] Bennett, Steven J., "Patterns of the Sky and Earth: A Chinese Science of Applied Cosmology", Chinese Science, Vol. 3, 1978, pp. 1
[6] The Oxford English Dictionary (2nd edition), Vol. VI, Clarendon Press, Oxford, 1989, pp. 461

Considered as quasi-scientific system (De Groot 1897, Needham 1956, Anderson 1973, Thompson, 1989)[7], feng shui was also considered to possess a well structured system of practical principles. Needham acknowledged that "... in many ways feng shui was an advantage to the Chinese people, as when, for example, it advised planting trees and bamboos as windbreaks, and emphasised the value of flowing water adjacent to a house site"[8]. Oliver (1987) points out that feng shui contains a very good design solution for the natural environment of East Asia[9]. More importantly, there are a number of scholars who could recognise feng shui as an architectural institution. Anderson (1973) described feng shui as "the traditional Chinese science of site planning... ... an organised body of knowledge, intensely practised in application, and of specific in intent"[10], and Freedman (1968) acknowledged the nature of feng shui as "orientation is of the essence in feng shui, but its more dramatic feature is its concern with the forms of the landscape and buildings"[11]. More recently, Lung (1997) defined feng shui as "a set of principles governing site survey and selection, both for human habitation and burials"[12]. Lung suggested that "feng shui is not simply geomancy, or a collection of superstitions, but a philosophical and mathematical system to aid man his interpretation of nature"[13].

The significance of feng shui in relation to the built environment in East Asia is that its role is not limited to a certain social stratum, but it was exercised throughout society. It is true that feng shui is not regarded as a state cult in China. Yet its influence on the imperial government or its Confucian scholars for the siting and construction of graves and buildings is pretty clear[14]. Despite the general acceptance of feng shui as a driving force in shaping the East Asian built environment, it is hard to achieve a sound

[7] see De Groot, J.J.M., *op. cit.*, Vol. III, Leiden, 1897, pp. 935-937, Needham, J., "Science and Civilisation in China", Cambridge Univ. Press, Vol. II, 1956, pp. 359, Anderson, E. N., *et al.*, "Mountains and Water", Oriental Cultural Service, Taipei, 1973, Thompson, Laurence G., "Chinese Religion", Wadsworth Publishing Co., 1989, pp. 23-25

[8] Needham, Joseph, *op. cit.*, Vol. II, 1956, pp. 361

[9] See for example, Oliver, Paul, "Dwelling: The House across the World", University of Texas Press, Austin, 1987, pp. 168

[10] Anderson, E. N., *et al.*, "Mountains and Water", Oriental Cultural Service, Taipei, 1973, pp. 127

[11] Freedman, Maurice, "Geomancy", Presidential Address, Proceedings of the Royal Anthropological Institute of Great Britain and Ireland, 1968, pp. 5

[12] Lund, David, "Feng-Shui" in Oliver, P. (*eds.*), "Encyclopaedia of Vernacular Architecture", Vol. 1, Cambridge University Press, 1997, pp. 557

[13] Lung, David, *op. cit.*, 1997, pp. 558

[14] Yang, C. K., "Religion in Chinese Society", Univ. of California Press, Berkeley, 1961, pp. 263

understanding of it, not only because of its immense amount of documentary work, but also because of its secretive nature. De Groot (1879) pointed that "feng shui masters normally cited strange statements or classic wise phrases which can never be understood easily when conversing with the people"[15]. Meyer (1978) also notices the difficulty of studying feng shui due to its secretive nature, and deplored that "I think we (shall) never get to a full understanding of feng shui"[16].

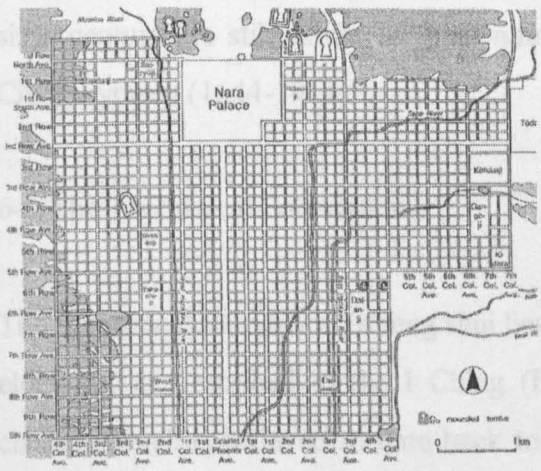
6-2 The Provenance of feng shui

The earliest record on design questions in architecture and planning is found in the 'Chou Li' (Book of Ritual in the Chou dynasty 1030-722 BCE), probably written during the Spring and Autumn period (722-480 BCE). In the chapter called 'Kao Gong Ji' (The rule of Workmanship), it states that a capital city should be laid out as a square of nine li (approximately three miles) and that there should be three gates on each side. There should be nine streets running north-south and nine east-west, each the width of nine chariot tracks. On the left (east) should be sited the Ancestral Temple, and on the right (west) the Altar of Earth. The court should lie to the south, and the market to the north[17]. Considered the prototype for East Asian city design, this conceptual plan seems to have been applied many times, notably to Chang-an, China and Nara, Japan, but the clearest example is Beijing, the capital from the Ming and Ching dynasties [see Figures 3-1, 4-11 & 6-1, 6-2].

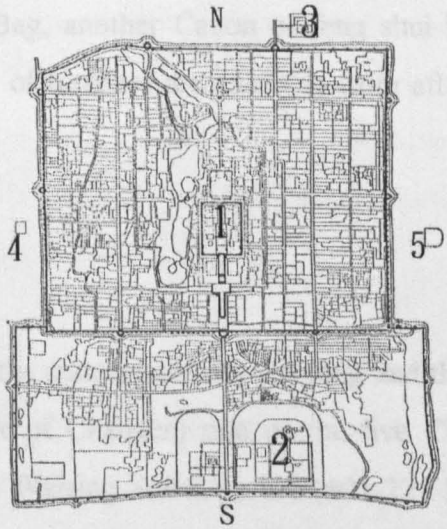
The schematic city plan in the Book of Ritual predates the first appearance of the term feng shui by hundreds of years. The term, literally meaning 'wind and water' first appears in the book Tsang-shu, literally the Burial Book, under the Chin dynasty (265-420). The writer, Gou Pu (276-324), said that 'chi', a vital cosmic energy which runs the universe, could be scattered when it meets wind and it could be stopped when it meets water. The key issue in feng shui is to obtain chi, a cosmic current meaning literally breath, whose nature is described in more detail below. Graham (1936) defined feng shui as "the art of adapting the residence of the living and the dead so as to

[15] De Groot, J. J. M., *op. cit.*, Vol. III, Leiden, 1897, pp. 1,010
[16] Meyer, J., "Feng Shui of the Chinese Cities", History of Religions, Vol. 18, no. 2, 1978, pp. 139
[17] Note that north is always represented at the bottom of Chinese maps.

cooperate and harmonise with the local currents of the cosmic breath"[18]. The term 'chi' was widely used for several centuries prior to the Gou Pu period, so it is likely that the Chinese had a concept of feng shui long before he cited it. Many people used alternative terms for feng shui, such as kan yu, literally 'cover and support' referring to 'Heaven and Earth' or di li, 'land pattern'.



[Figure 6-1] Nara, Japan (8th century)



[Figure6-2] Beijing in the Ming (1368-1644) and Ching (1644-1911) Dynasties

Crude conceptions of feng shui are found in many early texts, for example in the Kuan Tzu (c. third century BCE), the Tao Te Ching (Canon of the Virtue of the Tao, c. fourth century, BCE), the Shih Chi (Historical Records, 90 BCE), and the Huai Nan Tzu (139 BCE). In the Kuan Tzu, a compendium named after the historical figure Kuan Chung (c. 645 BCE), water is described as the blood and breath of the earth flowing and communicating within its body as if in sinews and veins. In the Tao Te Ching, a classic for the Taoist written by Lao Tzu, the terms *yin*, *yang* and *tao* are mentioned. In the Shih Chi, written by Ssu-ma Chien in 90 BCE, a class of diviners is called 'kan yu chia': 'kan yu', literally cover and support, is as mentioned above an alternative term for feng shui, while 'chia' means a man or the gentry[19]. In the Hui Nan Tzu, a book presented to emperor Wu by a group of scholars at the court of Liu-An

[18] Graham, David C., "Chinese Yinyang and Feng shui Conceptions", Chinese Recorder, Vol. 67, no. 3, January, 1936, pp. 170

[19] Needham, Joseph, "Science and Civilisation in China", Cambridge University Press, Vol. 4, pt.1, 1962, pp. 240

(180-122 BCE), a taxonomic system involving five elements is used to explain a range of phenomena from customs to government. The passages in Hui Nan Tzu are known to explain the origin of the Chinese concept of the universe clearer than any other writings. Liu-An was the second king of Huai-Nan and a grand son of Liu Pang, founder of the Han dynasty. More importantly, Huang Ti Chai Ching, lit. The Yellow Emperor's Housing Manual, a fifth century Canon of feng shui, and Ching Nang Ao Chih, lit. Mysterious Principles of the Blue Bag, another Canon of feng shui in the sixth century are still extant. A great number of treatises are available from after the Ching dynasty (1644-1911).

6-3 The Theoretical Foundation

The theoretical foundation of feng shui lies in the concepts of chi, yin/yang and the five elements, as described in the I Ching (Book of Changes) one of the five Chinese classics which is believed to date back to the Warring States period (403-221 BCE). The theories of yin/yang and the five elements seem to have developed separately during the Warring States period, becoming combined only during the subsequent Han dynasty (206 BCE-220 CE)[20]. These concepts were represented visually as the so called Ho-Tu and Lo-Shu diagrams in the Book of Changes. All conceptions of feng shui are based on these two symbolic diagrams, which can therefore be considered the theoretical root of architecture and planning in East Asia.

6-3-1 The concept 'chi'

The concept 'chi' is abstract and hard to grasp. Literally it means 'breath', but its usage should be understood under the correlative thinking of yin/yang and five elements. Instead of constituting their world out of physical substance or 'atoms', assumed by the Greeks and inherited by Western science, the Chinese saw it in terms of a flow of cosmic energy, termed 'chi', which is regarded as responsible for all activity in the physical world.

[20] Fung, Yu-lan, "A History of Chinese Philosophy", Princeton Univ. Press, Vol. II, 1953, pp. 8

A prominent philosopher of Han dynasty Tung Chung-shu (179 ?-104 ? BCE) conceptualised 'chi' in his book Chun-chiu Fan-lu (Luxuriant Dew of the Spring and Autumn Annals) that "within the universe exist the ethers (chi) of the yin and yang. Men are constantly immersed in them, just as fish are constantly immersed in water. The difference between them and water is that the turbulence of the latter is visible, whileas that of the former is invisible. Man's existence in the universe, however, is like a fish's attachment to water. Everywhere these ethers are to be found, but they are less viscid than water. For water, compared with them, is like mud compared with water. Thus in the universe there seems to be a nothingness and yet there is substance. Men are constantly immersed in this eddying mass, with which, whether themselves orderly or disorderly, they are carried along in a common current"[21].

The Chinese assumed that 'chi' formed a substance into a certain shape according to a metaphysical order called 'Li'. In short, 'chi' forms or changes the physical world, but its pattern is subject to the higher concept 'Li'. 'Chi' itself is not physical substance, but it is attributed to physical things. For instance, the physical substances of man and woman bear 'chi' of yang and yin character respectively. These metaphysical concepts of 'Li' and 'chi' are theoretically formed later by Chu Hsi (1130-1200), a key figure in Neo-Confucianism, in the Sung dynasty (960-1279). The metaphysical concept of 'Li' is parallel concept with 'Taichi' which is the 'Genesis' of 'chi', a visual manifestation created after the existence of 'Tao'.

6-3-2 Theory of yin/yang and the Concept of Tao

The concept of yin/yang is recorded in the Great Appendix of the Book of Changes, though its origin is unclear. In the Great Appendix, a statement "one *yang* one *yin*; that is the *Tao*" is found. This appendix is believed to date back from the Warring States period (403-221 BCE). According to philosophical tradition of China, the opposite couple of 'yin' and 'yang' came into being from the ultimate existence of 'Tao' at 'the beginning', which is symbolically visualised as 'Taichi'. Both yin and yang are then divided or generated into another yin and yang within each yin and yang forming four

[21] see Fung, Yu-lan, *op. cit.*, Vol. II, 1953, pp. 20

trigrams. These four trigrams are again divided or generated into eight trigrams, and subsequently sixty four hexagrams. With respect to the notion of generation or division in the emergence of more layers of yin and yang, Robinet (1990) points that there is engendering of yin and yang from Taichi rather than division, according to the term often used in many other systems of Chinese philosophy[22]. Each of these sixty four hexagrams contain its own meaning and nature. Each of these lines, forming a trigram which the name is derived from, is either continuous or broken. A continuous line symbolises yang, a broken line yin [Figure 6-3 & 6-4].

太極
Taichi

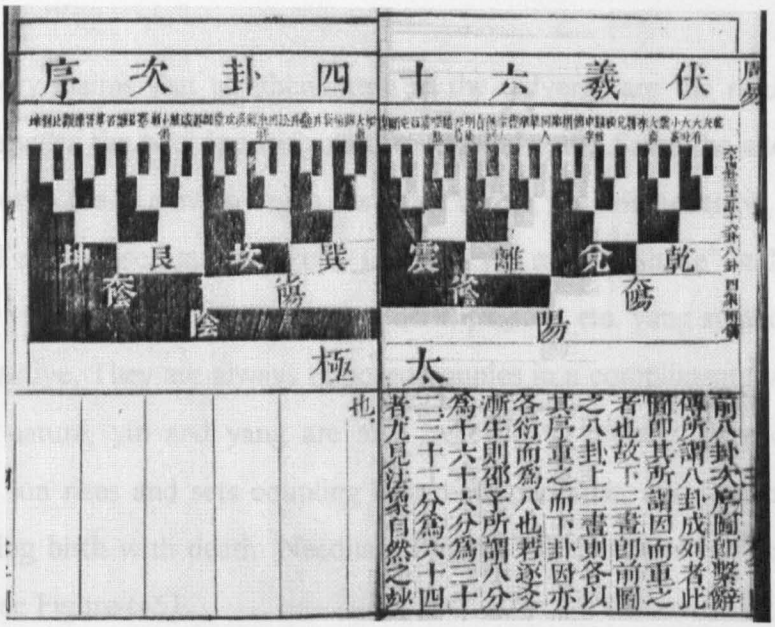
陽 *yang* 陰 *yin*

Greater Yang Lesser Yang Lesser Yin Greater Yin

乾 兌 離 震 巽 坎 艮 坤
Chien Tui Li Chen Sun Kan Ken Kun

[Figure 6-3] Taichi Symbol and the Division of Eight Trigrams
(Illustration by Author)

[22] Robinet, I., "The Place and Meaning of the Notion of Taiji in Taoist Sources prior to the Ming Dynasty", History of Religions, Univ. of Chicago Press, 1990, pp. 389



[Figure 6-4] Division of Taichi into Sixty-Four Hexagrams as described in the Book of Changes (1818) (Courtesy of Leiden University Library)

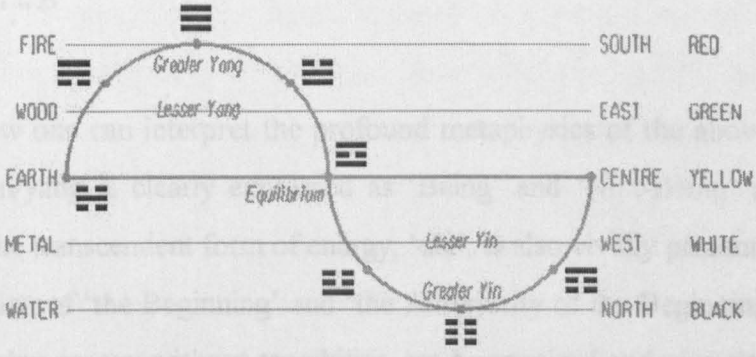
The concept of '*Tao*' is extremely significant in approaching the East Asian psyche which would form the very foundation of its civilisation *in toto*. The concept of Tao can perhaps be best viewed in '*Tao Te Ching*', the Taoist Canon attributed to Lao Tzu of the fifth century BC. The Canon begins as,

> The Tao that can be told of is not the eternal Tao;
> The name that can be named is not the eternal name[23].

Tao exists beyond perceptual reality as well as conceptual description. Its mode of existence is primordial in the sense it is the ultimate being creating what perhaps became available within the conceptual dimension of substances. Nuyen (1995) described the above paradoxical statements in the 'Tao Te Ching' as "a conscious attempt to speak the unspeakable, to name the unnameable". He explains that the difficulty of defining Tao was not the inadequacy of language, but the nature of Being, that of Tao, itself. The language of paradox in the Tao Te Ching was therefore "a device both to announce and to deal with the paradox that follows"[24]. As such is the nature, what is being discussed should be sensed in this metaphysical context.

[23] Translation by Chan, Wing-tsit, "The Way of Lao Tzu",
[24] Nuyen, A. T., "Naming the Unnameable: The Being of the Tao", Journal of Chinese Philosophy,

Yin/yang theory claims that all phenomena in the universe are the result of endless interaction between the two opposing natures yin and yang. Since the ancient Chinese regarded the universe as a living organ sustained by chi, the 'vital energy', yin and yang are described as opposed states of chi. Literally yin means 'shade' and yang means 'light'. While yin symbolises earth, woman, dark, passive, etc. yang symbolises heaven, man, bright, active. They are always opposed couples in a complimentary relationship. Observed in nature, yin and yang are also believed to proceed in succession. For instance, the sun rises and sets coupling light with darkness, and flowers bloom and wither coupling birth with death. Needham (1956:174) describes this as a wave-like succession [see Figure 6-5].



[Figure 6-5] The Synthesis of the Theories of yin/yang, Five Elements and the Eight Trigrams

Note that the five elements and the eight trigrams do not come to terms with the numerical property of a wave. The above schematic representation is intended to capture the transitional notion of Chinese metaphysics, as opposed to the static mode of the Greco-Roman tradition.

Another notable feature of the dichotomous theory of yin/yang is that neither yin nor yang is complete or pure in itself, for each includes the other's nature. In the yin/yang symbol, Taichi, there is a dot of the opposing colour in the middle of each current [see Figure 6-3]. The dot symbolises the inherent incompleteness of yin and yang without the other half. Only when two currents are combined is oneness or harmony of the two

Vol. 22, 1995, pp. 487-497 Nuyen attempts to parallel the concept of '*Tao*' and that of '*différance*' by Jacques Derrida on the account that both are seen as the primordial process with a creative force. Nuyen (p. 490) also notes that, for Derrida, "in every particular thing there is an absent presence of the trace. Thus, trace is paradoxical, and the process that is the "constituting causality"

achieved. The oneness so achieved is called the Tao, the term of supreme value in Chinese metaphysics. The phrase "one yang one yin; that is the Tao" is the key phrase of the Great Appendix, and it is this concept that has served as the core principle of East Asian metaphysics.

Perhaps, the cosmology explained in Hui Nan Tzu would be useful to gain a better understanding of the concepts of 'chi' and 'yin/yang'. In chapter two of Hui Nan Tzu, the origin of the universe is described as,

"(1) There was a beginning. (2) There was a beginning of an anteriority to this beginning. (3) There was a beginning of an anteriority even before the beginning of this anteriority. (4) There was Being. (5) There was Non-Being. (6) There was 'not yet a beginning of Non-Being'. (7) There was 'not yet a beginning of the not yet beginning of Non-Being'." [25]

No matter how one can interpret the profound metaphysics of the above passage, the concept of yin/yang is clearly expressed as 'Being' and 'Non-Being' as opposed to each other. The transcendent form of energy, 'chi', is also vividly presented in the form of a permutation of 'the Beginning' and 'the Anteriority of the Beginning'. Two forms of 'chi', complex energy without tangibility, are harmonised and give rise to a form of 'Non-Being' with another intangible trace of 'Being'. In summary, two opposing currents of yin and yang are generated from Taichi which is a visual manifestation of the ultimate truth with supreme value in East Asian philosophy.

6-3-3 Theory of Five Elements

The first literary source for the five elements is the Book of History, Shu Ching, believed to have been written between the fourth and third centuries BCE, though Confucius (551-479 BCE) wrote a commentary on what is supposedly an earlier version. The provenance of the theory of five elements is never explained, but in the Grand Norm section, Hung Fan, of the book, the five elements are listed in a row:

---

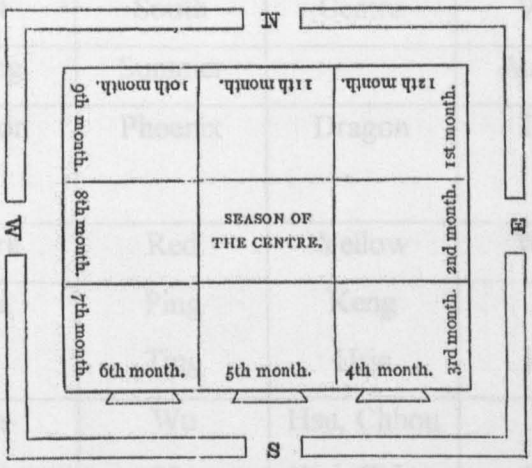
of traces is also paradoxical".

water, fire, wood, metal and earth. In eight parallel columns, relations are suggested between these elements and human abilities, government objectives, divisions of time, the state of royal blood, the virtues of the ruler, the examination of doubt (divination), the verification of meteorological phenomena, and the state of happiness. No direct association is described between the five elements and the constituents of the other columns, and some categories do not even comprise five units. The concept of five elements seems to have been relatively crude in the fourth century BCE when the book was written. Moreover, Nylan (1992) suggests that the five elements in the 'Great Plan' should not be interpreted as the cosmological term, as they appear to be resources of the empire[26].

In another early work of literature, Yueh Ling (the Monthly Commands), the structure of the universe is developed as a space-time model described in terms of five elements. The Monthly Commands is first found in the book Lu-shih Chun-chiu (Spring and Autumn of Mr. Lu), written in the late third century BCE and later embodied in the Li Chi (Book of Rites), one of the Chinese classics dating from before Confucius (551-479 BCE). The treatise is devoted to state affairs, but the underlying planning principle is dependent on an association with space configuration. In it, fire is attributed to the south and summer, for heat comes from the sun in the south. By the same token, water is attributed to the north and winter, for water is another form of ice and snow, and cold wind blows from the north. Wood is attributed to the east and spring, for seeds and plants (which become wood) begin to grow with the sun which rises from the east. Metal is attributed to the west and autumn, for it is a bleak time of the year and metal looks rough and hard, and the sun sets in the west. Earth is attributed to the centre. Some argue that it governs an intermediate season, but others insist that earth is not attributed to a season but is the sum of the four seasons[27]. In the Monthly Commands of the Book of Rites, the procession of the emperor is associated with time, cardinal points, colours, etc. [Figure 6-6] For instance, the details of the first month read as follows: "The son of Heaven occupies the apartment on the left of the Fane; rides in the carriage of phoenix (bells), drawn by the azure-dragon (horses), and carrying the

[25] For an interpretation of this passage, see Fung, Yu-lan, *op. cit.*, Vol. I, 1952, pp. 395
[26] Nylan, Michael, "The Shifting Centre", Steyler Verlag, 1992, pp. 14-15 see footnote
[27] see Fung, Yu-lan, *op. cit.*, Vol. II, 1953, pp. 23, also see Architectural Review, July, 1947, pp. 26

green flag; wears the green robes, and the (pieces of) green jade (on his cap and at his girdle pendant). He eats wheat and mutton. The vessels which he uses are slightly carved, (to resemble) the shooting forth (of planets)"[28].



[Figure 6-6] Reconstructed Schematic Plan described in the Book of Ritual
(Source : James Legge, "Li Ki", Oxford University Press, 1885, pp. 252)

When the correlation of five elements with four seasons and four cardinal points is understood, the theory of five elements can be seen as a system of classification [Table 6-1]. Rubin (1982) suggested that "classification by five is based on a spatial model, with its centre being its main point, placed at the intersection of the four cardinal directions of the compass"[29]. An early version of this classification system is already evident in the Grand Norm section of the Book of History. This is further verified in the Annals of Spring and Autumn in which sixty-five kinds of the five categories, starting with the elements, are defined. What can be better understood from comparing the two sources is that the five elements are not considered the permanent embodiment of substances, but rather a symbolic presentation of natural cycles like the seasonal cycle. The use of the term 'element' is therefore misleading if taken in the same sense as the four Greek elements or the elements of the Periodic Table as defined by Western science. In the original Chinese term 'wu hsing'; 'wu' means five, but 'hsing' means 'to act', 'to move' or 'to do'.

[28] Legge, James, "Li Ki", The Sacred Books of the East, Vol. XXVII, Clarendon Press, Oxford, 1885, pp. 251-252

[29] Rubin, Vitaly A., "The Concepts of Wu-Hsing and Yin-Yang", Journal of Chinese Philosophy,

Five Elements	Wood	Fire	Earth	Metal	Water
Directions	East	South	Centre	West	North
Seasons	Spring	Summer		Autumn	Winter
Celestial Emblems	Dragon	Phoenix	Dragon	Tiger	Turtle
Colours	Azure	Red	Yellow	White	Black
Heavenly Stems	Chia Yi	Ping Ting	Keng Hsin	Jen Kuei	Wu Chi
Earthly Branches	Yin Mao	Wu SSu	Hsu, Chhou Wei, Chhen	Yu Shen	Hai Tzu
Tastes	Salt	Bitter	Sweet	Acrid	Sour
Animals	Sheep	Fowl	Ox	Dog	Pig
Numbers	Eight	Seven	Five	Nine	Six
Planets	Jupiter	Mars	Saturn	Venus	Mercury

[Table 6-1] The Symbolic Correlations of the Five Elements*

Source : The rand Norm section of the Book of History and the Monthly Commands in the Book of Rites

This transitional concept of five elements appears to have been applied to a political purpose as early as the Chin dynasty (221-207 BCE). According to the Record of History, Shih Chi, completed by Ssu-ma Chien in 91 BCE, Chin Shih Huang Ti, the first emperor of the Chin dynasty, subscribed to the theory of five elements. Ssu-ma Chien wrote what the Emperor, did in chapter six of his Record of History. The text runs as follows.

"Shih-huang advanced the theory of the cyclic revolution of the Five Powers, and believed that, as the Power of the Chou had been that of fire, the fact that Ch'in

Vol. 9, Hawaii, 1982, pp. 151

* In the Monthly Commands, twelve branches are not stated. Above correlation, however, is a

replaced the Power of Chou, followed from the latter's inability to prevent the beginning of the Power of water of the present age... ...He honoured black as the colour for clothing, and for pennons and flags. He made six the standard number. Contract tallies and official hats were all of six inches, while the chariots were six feet. Six feet made one pace, and each equipage had six horses. The (Yellow) river was renamed the Powerful Water (*te shui*), because it was supposed that this marked the beginning of the power of the element water. With harshness and violence and an extreme severity, everything was decided by the law. For by punishing and oppressing, by having neither benvolence (*jen*) nor kindliness, the ties of friendship nor social relationships (*i*), there would come an accord with the numerical succession of the Five Powers"[30].

The reason why the emperor decided that Chin must have the power to vanquish Fire as successor to the Chou dynasty (1,030-722 BCE), which was under the power of Fire, was partly from the political turmoil after the demise of Chou dynasty. After the collapse of the Chou dynasty, China suffered from numerous emergences and collapses of dynasties over the periods of the Spring and Autumn (722-480 BCE) and the Warring States (480-221 BCE) until the Chin dynasty made the first unification. At this point, the cycle of five elements seem to be autonomous and also an inevitable process in its own right, not dependent on the moral degeneration of the previous regime or the virtuous conduct of the founder of the new sovereignty. Rubin (1984) points out that it is the influence of Chou Yen, who combined the two theories of yin/yang and the five elements that Legalist took the synthesis as the political doctrine with cosmological and philosophical foundations[31].

This concept of transition in the theory of five elements is further extended to eight trigrams whose relationship with yin/yang and five elements is firmly established over the discourse of Chinese philosophy. Wilhelm (1951) points out that "the eight trigrams are symbols standing for changing transitional states; they are images that are

widely accepted norm. see Fung, *op. cit.*, Vol. II, 1953, pp. 15

[30] Bodde, Derk, "China's First Unifier: A Study of the Ch'in Dynasty, As seen in the life of Li Ssu (280?-208 BC)", E. J. Brill, Leiden, 1938, pp. 113

[31] Rubin, Vitaly A., "Ancient Chinese Cosmology and Fa-chia Theory", JAAR Thematic Studies, Vol. L, No. 2, Scholars Press, Chico, California, 1984, pp. 97

constantly undergoing change... ... the eight trigrams therefore are not representations of things as such (in the occident) but of their tendencies in movement"[32]. In this sense, two chains of cycles, productive and destructive, can be identified by simply changing permutation. In the productive cycle - Water-Wood-Fire-Earth-Metal- each element gives birth to the next, i.e., water produces wood (for water grows a tree), wood produces fire (for it burns) and so on. In the destructive cycle - Water-Fire-Metal-Wood-Earth- each element is destroyed by the preceding one, i.e., fire is put out by water, metal is melted by fire and so on. The productive cycle is regarded as auspicious and the other is inauspicious. These two orders are among 36 possible combinations and permutations of the five elements. Since mountains surrounding a tomb site or a housing site can often be identified with some of those possible correlative chains, obtaining a productive relation among them is of importance. A well known principle of "East-Azure Dragon, West-White Tiger, South-Red Phoenix, North-black Turtle" is based on the five elements theory. For these sacred animals are also believed to be the emblems of the celestial bodies, another correlation on the basis of the same classification schemata of yin/yang and five elements, feng shui site therefore becomes the centre of the universe.

Since the two theories of yin/yang and five elements can correlate any phenomena without being taken as absolute, it was only to be expected that a synthesis should be made. This seems to have been achieved by the end of third century BCE by Chou Yen, and the new theory is termed 'Wu te'[33]. The synthesis of the two theories can be illustrated as in Figure 6-5. Tung Chung-Shu (179?-104?BC) describes this synthesis in his book "Luxuriant Dew of the Spring and Autumn Annals" that "the ethers (chi) of the universe constitute a unity; divided, they constitute the yin and yang; quartered, they constitute the four seasons; (still further) sundered, they constitute the five elements. These elements represent movement. Their movements are not identical. Therefore they are referred to as the five movers (wu hsing)"[34]. Thus the theories of yin/yang and five elements combine.

[32] Wilhelm, Richards, "I Ching or Book of Changes" (Third Edition), Arkana & Penguin Books, London, 1989, pp. *l*

[33] Needham, Joseph, *op. cit.*, Vol. II, 1956, pp. 232

6-4 *I Ching* or The Book of Changes

The Book of Changes is an ancient classic of Confucianism dating from no later than fifth century BCE. By tradition, the authorship of the book goes to the King Wen of the Chou dynasty who invented the sixty four hexagrams. Occasionally it is attributed to Confucius (551-479 BCE), but the consensus is that he contributed only a few commentaries, some of which were compiled posthumously by his pupils. The Book of Changes contains essential information on the two esoteric diagrams of Ho-Tu and Lo-Shu, as well as the eight trigrams from which they are constituted.

6-4-1 Ho-Tu and the "Diagram of Former Heaven"

Ho-Tu, literally meaning River Chart, and Lo-Shu, literally meaning Lo Writing [Figure 6-7 & 6-8] are the earliest visual representations of the theories of yin/yang and five elements. According to myth, Ho-Tu was born on the back of a imagery dragon horse in the reign of the legendary king Fu Hsi (2953 BC?). The Ho-Tu diagram is accompanied in the Book of Changes by a parallel representation in the form of a ring of eight trigrams called the "Diagram of Former Heaven" [Figure 6-9]. Some say that Ho-Tu already contained the delineation of the eight trigrams, but others argue that it merely provided the data with which Fu Hsi was able to construct the eight trigrams[35]. The ancient historian Ssu-ma Chien claimed that the eight trigrams and sixty four hexagrams were formulated by King Wen, one of the founders of the Chou dynasty, but Wang Pi, the famous commentator of the Book of Changes, said they were made by Fu Hsi himself[36]. In any case, the nature of the eight trigrams makes sense, and the diagram works.

The Ho-tu diagram is a device for relating spatial order to numerical order, while also assigning yin and yang values to the numbers. North is bottom, and numbers indicated by white dots are odd and yang, while those indicated by black are even and yin[37]. The

[34] Fung, Yu-lan, *op. cit.*, 1953, Vol. II, pp. 21
[35] Fung, Yu-lan, *op. cit.*, 1953, Vol. II, pp. 8 see footnote
[36] Fung, Yu-lan, *op. cit.*, 1952, Vol. I, pp. 379
[37] Cross consult a reconstruction of Ho-Tu in the Figure 6-13 as a white dot (one) is missing in the Figure 6-9. It is, however, described in Chinese at the bottom in association with the five elements.

numbers one to four are assigned to north, south, east and west respectively, while five is in the middle. The values of the outer numbers arise through adding the central five to those assigned to the inner cardinal points. Thus one of the north is added to the central five to make six, shown in the outer line of black dots on the north side, and so on. A passage in the Book of Changes would be of use to further verify this coupling concept of yin and yang in the Ho-Tu diagram.

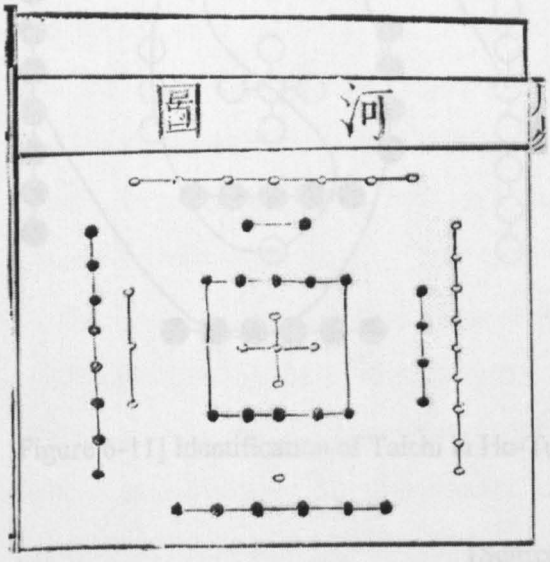
> "heaven is one, earth is two; heaven is three, earth is four;
> heaven is five, earth is six; heaven is seven, earth is eight"

In other words, heaven numbers are odd while earth numbers are even. Water in the north, which is heaven, is complemented by the six of earth to produce a harmony or perfection. East of three, which is also heaven, is complemented by eight of earth to gain the same relationship. Other combinations use the same logic. The yin and yang relationship is then found either in a north-south coupling or within the south (two with seven) or north (one with six).

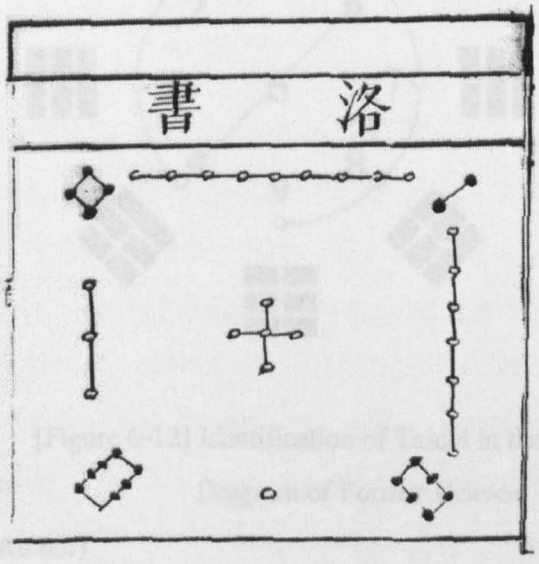
The "Diagram of Former Heaven" traces a parallel relationship among eight trigrams. These are figures made of three bars, each representing yang if unbroken, yin if broken. In the round of eight, three full bars are fully yang and three broken bars fully yin, with various combinations in between. From the south to the north, the trigrams diminish into yin from yang clockwise, and from yang to yin anti-clockwise; alternatively, the same logic can be applied to anti-clockwise and then clockwise. In this system, the pattern of change in the diagram symbolises natural phenomena such as the passages of the sun and moon. Three unbroken bars symbolise the summer solstice, three broken bars the winter solstice. Between solstices are spring and autumn equinoxes.

An association between Ho-Tu and the "Diagram of Former Heaven" can be observed if one imposes the virtual line of the Taichi symbol on the configuration of Ho-Tu. When the black dots (even numbers) and the white dots (odd numbers), symbolising yin and yang, are connected in sequence starting in the centre, they form the Taichi symbol [Figure 6-11]. Moreover, if a sequence of numbers is assigned to the division

of trigrams from 1 (Chien) to 9 (Kun) leaving out 5, then again the line followed produces a figure similar to the Taichi symbol [Figure 6-3, 6-4 & 6-12].

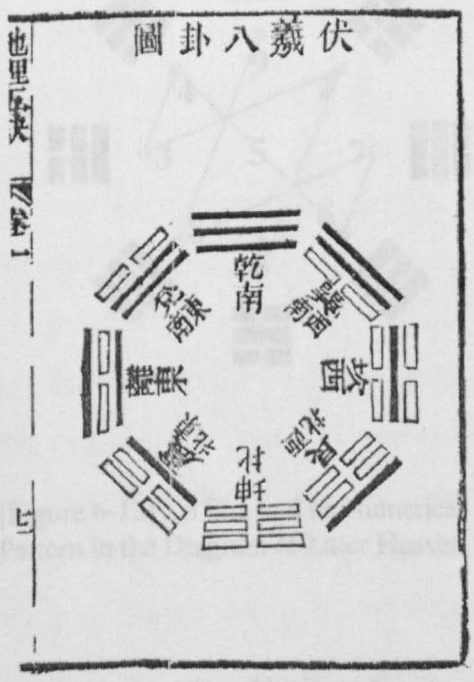


[Figure 6-7] Ho-Tu (River Chart)

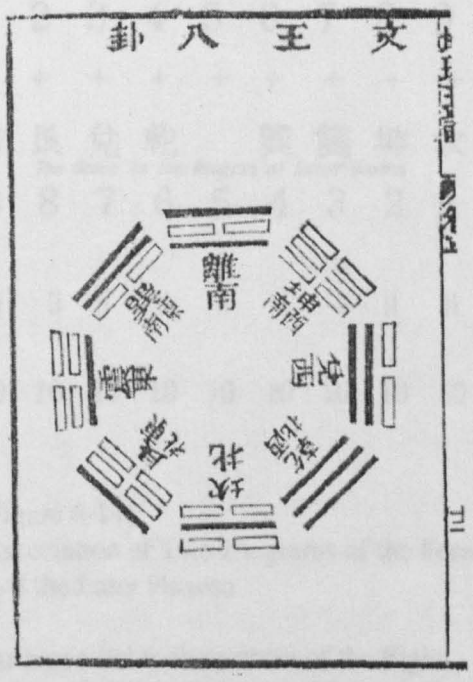


[Figure 6-8] Lo-Shu (Lo Writing)

Source : Book of Changes (1818) Courtesy of Leiden University

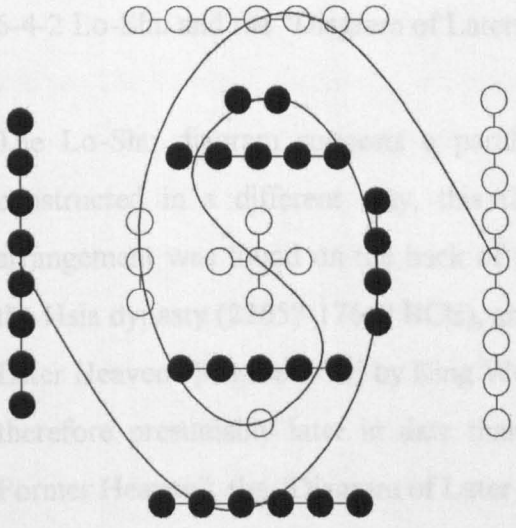


[Figure 6-9] Diagram of Former Heaven

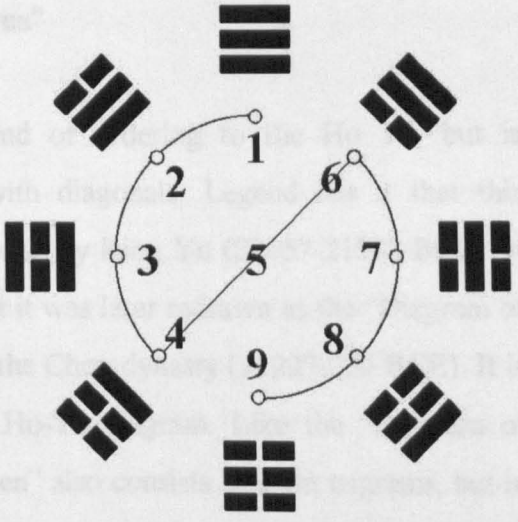


[Figure 6-10]Diagram of Later Heaven

Source : "Ti Li Wu Cheuh" (Five Methods of Feng Shui) (1806)

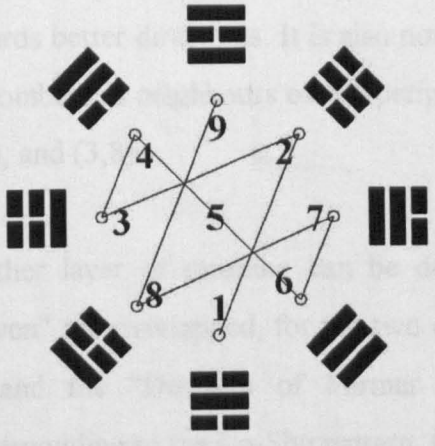


[Figure 6-11] Identification of Taichi in Ho-Tu



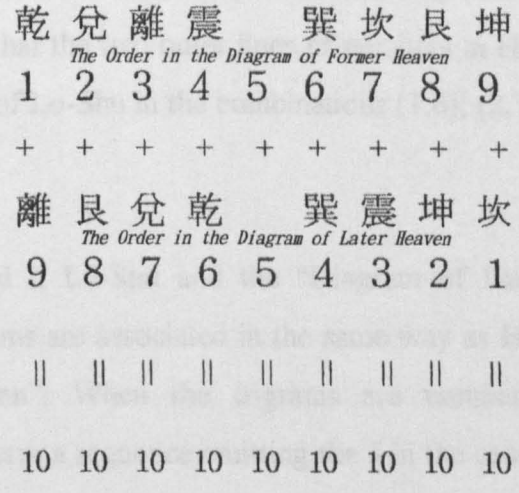
[Figure 6-12] Identification of Taichi in the Diagram of Former Heaven

(Source: Author)



[Figure 6-13] Lo Shu and its Numerical Pattern in the Diagram of Later Heaven

As Lo-Shu was found by King Yu, its zig-zag pattern of numerical change is called 'Yu-Bu'(The Steps of Yu)



[Figure 6-14]
Association of Two Diagrams of the Former and the Later Heaven

As a parallel to the pattern of the Eight Trigrams in the "Diagram of Former Heaven" which is regarded as the Heavenly principles, the "Diagram of Later Heaven" is deliberately invented in order to provide an Earthly version of the Eight Trigrams.

(Source: Author)

6-4-2 Lo-Shu and the "Diagram of Later Heaven"

The Lo-Shu diagram suggests a parallel kind of ordering to the Ho Tu, but is constructed in a different way, this time with diagonals. Legend has it that this arrangement was found on the back of a tortoise by King Yu (2205?-2198? BCE) of the Hsia dynasty (2205?-1766? BCE), and that it was later redrawn as the "Diagram of Later Heaven" [Figure 6-10] by King Wen of the Chou dynasty (1122?-256 BCE). It is therefore presumably later in date than the Ho-Tu diagram. Like the "Diagram of Former Heaven", the "Diagram of Later Heaven" also consists of eight trigrams, but in a different order. In the Lo-Shu diagram, five is in the centre, one north and three east as in the Ho-Tu, but the arrangement of the other values is different. Lo-Shu numbers make a magic square, for the sum of each line makes fifteen, including edges and diagonals. In this arrangement, odd numbers are allocated to the four cardinal points, even numbers to the corners. Traditionally, the diagonals which run through corners are not regarded as propitious directions, hence odd numbers are hierarchically placed towards better directions. It is also notable that the two outer lines of numbers in Ho-Tu combine as neighbours on the periphery of Lo-Shu in the combinations (1,6), (2,7), (4,9), and (3,8).

Another layer of meaning can be detected if Lo-Shu and the "Diagram of Later Heaven" are overlapped, for the two diagrams are associated in the same way as Ho-Tu and the "Diagram of Former Heaven". When the trigrams are numbered corresponding to the Lo-Shu pattern, they form a sequence omitting the 5 in the centre [Figure 6-13]. In order to decipher this numerical pattern, an association between the diagrams of Former Heaven and Later Heaven can be established in advance if the two sequences are juxtaposed. Added to one another, they form the number 10 indicating they are parallels to each other [Figure 6-14]. This suggests that the "Diagram of Later Heaven" was deliberately invented in order to provide an Earthly version of the eight trigrams. As introduced earlier, Heaven and Earth form a couple of yin and yang, and their mutual response is desired in order to achieve harmony or perfection. It explains why the "Diagram of Former Heaven" is easily understood in its own terms, while the "Diagram of Later Heaven" does not reveal how it is arranged.

In the same way, Lo-Shu corresponds to Ho-Tu. In Ho-Tu, there are five white dots and ten black dots in the centre, while there are only five white dots in Lo-Shu. Again, when these two are overlapped, they form 10 black dots and 10 white dots. The difference in the arrangements can be legitimated in the sense that they represent different patterns. The "Diagram of Former Heaven" symbolises the pattern for Heaven which is permanent and eternal, and the "Diagram of Later Heaven" for the Earth which changes endlessly and is also destined to die, because all earthly things perish. Saso (1978) also notes that "Ho-Tu is a symbol of permanence while the Lo-Shu is a chart of change"[38]. Under this context, in Lo-Shu, ten black dots are missing to Ho-Tu, which are elements of earth, therefore the pattern of change in Earth is subject to Heaven. This is why Ho-Tu is normally drawn in a round form found imprinted in rafters and roof tiles, while Lo-Shu is in a square form and normally found in floor arrangements or the ordering of floor tiles[39].

6-5 Methodologies of feng shui

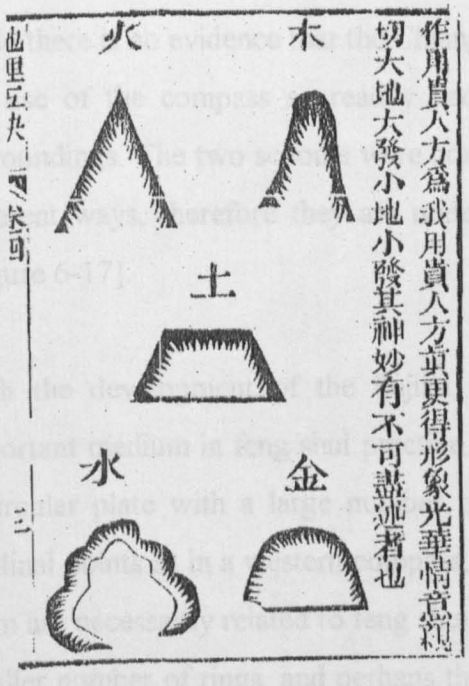
6-5-1 Searching for Natural Form

Following the ideas of Guo Pu, the Chiangsi school was founded by Yang Yun-Sung (fl. 874-888), which applied the method of feng shui for seeking auspicious morphological sites until the use of the compass led to the formation of another school. The Chiangsi school method involved metaphorical creatures such as the azure dragon (east), white tiger (west), black tortoise (north), and red phoenix (south), but the underlying principles are the theories of chi, yin/yang and five elements. The method of finding an ideal feng shui site for placing a house or a tomb involved topography and water courses and the definition of the special feng-shui spot. In the Figure 6-16 of a particular feng shui site for a tomb, the site is enclosed by mountains with the opening towards the south. The feng shui spot, 'hsueh', is the very place where chi is clustered thus a house or a tomb is erected, and the courtyard in front of the spot is called ming-tang, literally meaning 'a bright house' where chi comes through. Nature was seen as a

[38] Saso, Michael, "What is Ho-T'u?", History of Religions, Vol. 17, Nos. 3-4, University of Chicago Press, 1978, pp. 402

[39] Saso, Michael, *op. cit.*, 1978, pp. 402-403

living organ, and the configuration of the topography was classified in accordance with the yin/yang and five elements. For example, a water course is regarded as yang, and mountains are regarded as yin. The latter is further classified into five categories. A fire mountain was one that looked like a burning flame, and a water mountain was one with a flowing shape, and so on. A mutually productive relation among the mountains was sought [Figure 6-15]. Following the rules in The Burial Book, introduced earlier in this chapter, major concerns in this method were protecting the site from wind, and obtaining fresh water. A horse-shoe shaped topography represents an ideal configuration for an auspicious site [Figure 6-16]. A water course is supposed to flow from an auspicious direction towards an inauspicious direction, symbolising sweeping bad things away.



[Figure 6-15]
Classification of Mountain Shape
Source: "Ti Li Wu Cheuh"
(From Top Left to Bottom Right:
Fire, Wood, Earth, Water and Metal)

[Figure 6-16] A Feng Shui Site
An illustration in the eighth century
feng shui manual "Shih-erh Chang Fa"
attributed to Yang, Yun-Sung (fl. 874-888)
(Method of Twelve Chang)

The site found by this feng shui method is supposed to be the place where chi from the Heaven and Earth meet, and it is therefore symbolically centered in the cosmos. Its graphic representation [Figure 6-16] appears vaginal, and the character used to

describe it also refers to this[40]. The symbolic site of feng shui is thus both the womb of the earth and an East Asian version of the *axis mundi*.

6-5-2 The Use of the magnetic Compass

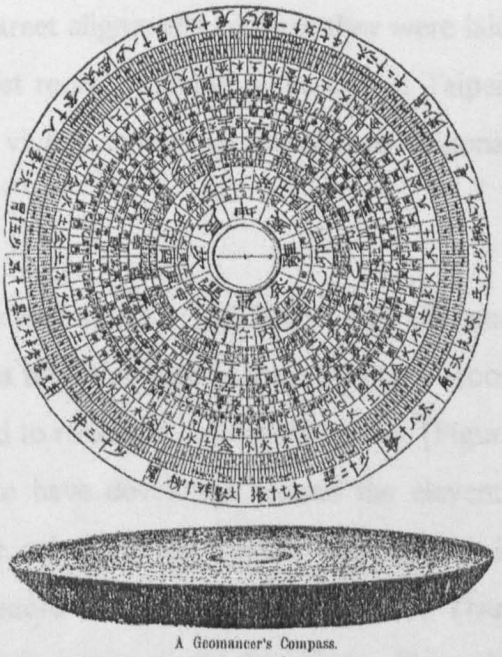
There is no doubt that the observation of magnetic polarity and of declination (the varying position of the magnetic pole) made a great impact on feng shui application, for while the topography-based Chiangsi school continued, a new school developed in parallel with it called the Fujian school. The adherents of this school followed Wang Chi (c. 990-?), who stressed the numerical importance of the trigrams in the Book of Changes. Associated with Chu Hsi (1130-1200), a great philosopher in the Sung dynasty (960-1279), the Fujian school paid great attention to the use of the compass, while there is no evidence that the Chiangsi school consulted it[41]. Perhaps they adopted the use of the compass so readily because they lacked mountains in their natural surroundings. The two schools were considered to be practising the same discipline in different ways, therefore they are understood as two versions of the same concept [Figure 6-17].

With the development of the Fujian school, the use of the compass became an important medium in feng shui practice. The central swinging needle is surrounded by a circular plate with a large number of inscribed rings, which denote not only the cardinal points as in a western compass, but many other categories of things, not all of them are necessarily related to feng shui practice. Early versions of the compass have a smaller number of rings, and perhaps there is no set number: more can be inscribed as new associations become established. Some literature on the compass illustrates a rather a large number of rings, such as the Lo Ching Chieh or the Lo Ching Tou Chieh. In the Lo Ching Chieh, literally meaning "an anatomy of the compass", written by Wu Wang Kang in the Ming dynasty (1368-1644), the compass described has 38 rings and in the Lo Ching Tou Chieh, literally meaning "a clairvoyant anatomy of the compass", written by Wang Tao Heng in the late 18th century, it has 36. Both these described

[40] Terminology used in feng shui often involves sexual implications. The feng shui spot, "hsueh", meaning a hole, indicates a vagina, while a form of the surrounding topography "chun-zhan", meaning lotus petals, denotes a pudenda. Although the concept of yin/yang suggests sexual intercourse with the notion of fertility, these explicit terms have never been taken too literally.

compasses and the vast majority of known compasses contain characters and orderings referring to yin/yang, the five elements, Ho-Tu, Lo-Shu, and the two arrangements of trigrams [Figure 6-18 & 6-19]. Generally, three rings of the twenty four directions set at different angles signify declination [Figure 6-20][42].

[Figure 6-17] A Presentation of feng shui Consultation, Late Ching Dynasty.
(Source: After Needham, J., *op. cit.*, Vol. II, 1956, pp.362)
The knowledge on feng shui was to a great extent oral, hence the profession of feng shui was secular in the hope of keeping the knowledge secret, and at the same time they invited suspicion.



[Figure 6-18] A feng shui Compass depicted in de Groot's seminal book
Source: de Groot, J. J. M., *op. cit.*, 1897, Plate XXVI.

[41] Needham, Joseph, *op. cit.*, Vol. 4, pt. 1, 1962, pp. 242, 282
[42] For a reference for the discussion on the compass, see Needham, Josoph, *op. cit.*, Vol. 4, pt. 1, 1962 and also see Feuchtwang, S., "An Anthropological Analysis of feng shui", Vithagna, Laos, 1974

Needham (1962) wrote that "the two main subsidiary circles were introduced in the Thang and Sung (dynasties) respectively to allow for the declinations of the magnetic needle which were then observed, and that the geomantic compass thus still contains these old observations in fossil form"[43]. Heavenly Stems, Earthly Branches and four of the eight trigrams are combined in order to form twenty four directions[44]. The compass is used to attain a proper correlation between a location and the categories inscribed in it, and it may relate to any kind of information developed under the classification system of the current cosmology. The influence of declination in feng shui practice can be found in many cities which show different street alignments because they were laid out in different periods [Figure 6-21]. The most recent example is the city of Taipei. The last castle of imperial China, built in 1878, vividly shows that the original diagonal layout of the city wall was rotated [Figure 6-22][45].

The invention of the compass dates back to the Han dynasty (202 BCE – 220 CE) and its use began with feng shui. The early compass took the form of a rudimentary spoon shape made from lodestone, which was allowed to rotate on a polished surface [Figure 6-23]. The modern Chinese compass seems to have developed around the eleventh century (c.1080), and maritime use was made only after the twelfth century both in China and Europe. In the East the earliest record of it is the Meng Chhi Pi Than, written by Shen Kua in about 1088, while its first mention in the West is by Alexander Neckam in 1190. In the Arab world, it first occurs in a collection of anecdotes by Muhamad al-Awfi dating from about 1232[46]. Shen Kua's book includes even a description of declination, which in the West begins with Columbus in 1492[47].

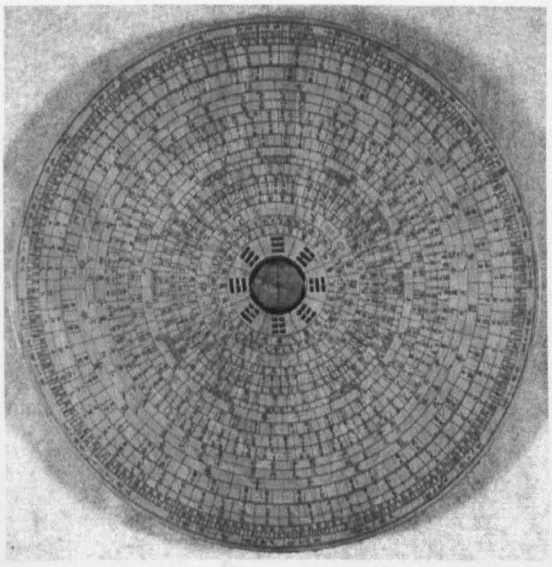
[43] Needham, Josoph, *op. cit.*, Vol. 4, pt. 1, 1962, pp. 299

[44] In relation to correlation of five elements, twelve Earthly Branches are not stated in the Monthly Commands. There is, however, a widely accepted norm of correlation.
See Fung, Yu-lan, *op. cit.*, 1953, Vol. II, pp. 15

[45] For the history of Taipei city wall, see Lo, Shih-Wei, "A Palimpsest of *Faits Urbains* in Taipei", Journal of Architectural Education, Vol. 52, No. 2, November 1998, pp. 68-75

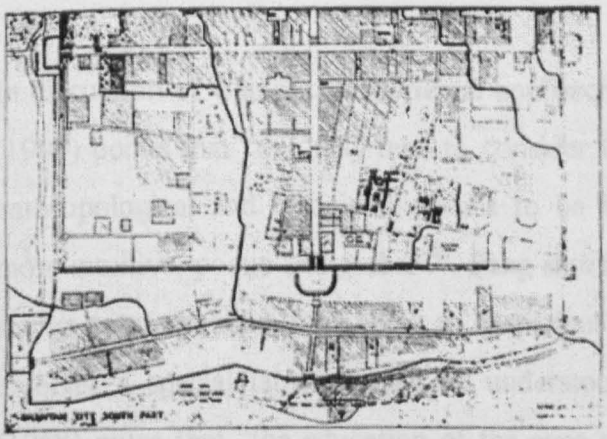
[46] Needham, Josoph, *op. cit.*, Vol. 4, pt. 1, 1962, pp. 246-247

[47] Needham, Josoph, *op. cit.*, Vol. 4, pt. 1, 1962, pp. 230

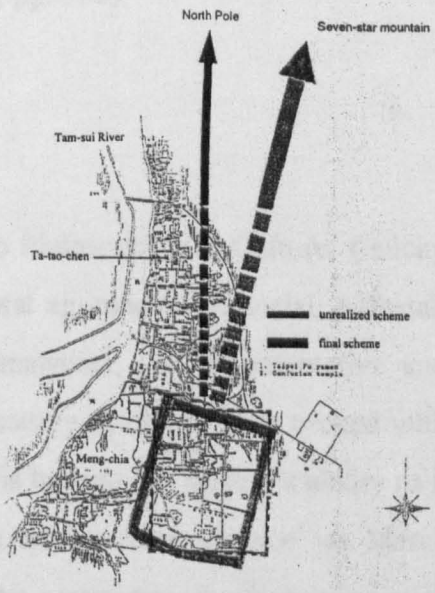


[Figure 6-19] A feng shui Compass
Courtesy of Whipple Museum of History of Science, Cambridge University

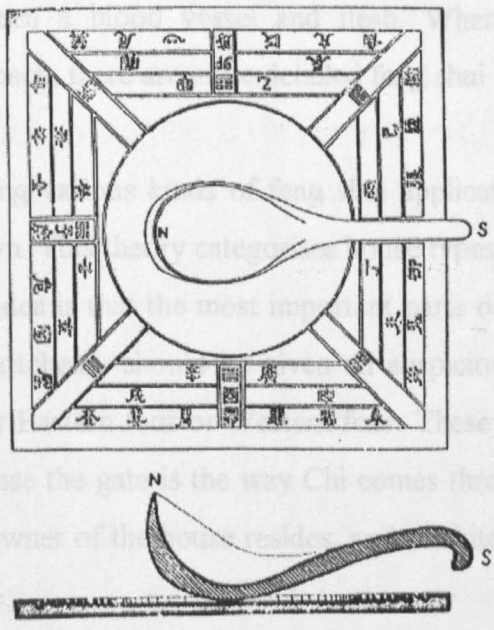
[Figure 6-20] The Observation of the Declination. Note the changes in alignment of characters in the different rings.
Source: Needham, J., *op. cit.*, Vol. 4, part 1, 1956, pp. 304



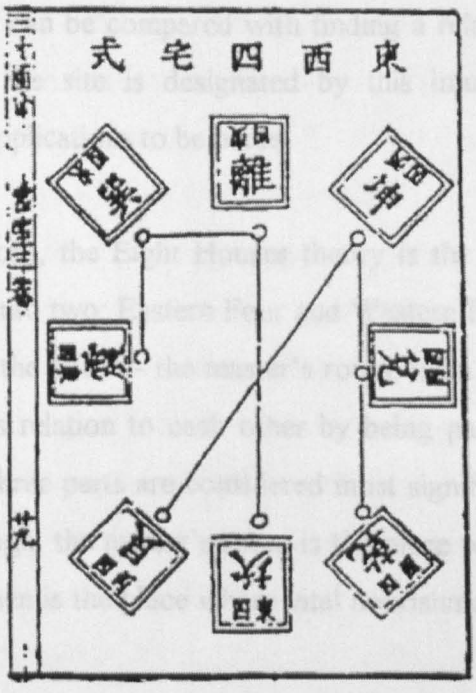
[Figure 6-21] Plan of the southern part of the city of Shantan. Two traces of street alignment are found within the wall.
(Source: Needham, J., *op. cit.*, Vol. 4, 1962, pp. 313)



[Figure 6-22]
Two Traces of the Layouts of Taipei City
(Source: "Record of Taipei City", Vol. 3, 1970)



[Figure 6-23] Reconstruction of Early Compass
(Source: Wang, Chen-To, after Needham, J., *op. cit.*, Vol. 4, part 1, 1956, pp. 266)



[Figure 6-24] Schematic Diagram of Eight Houses
(Source : after Lee, Sang Hae, *op. cit.*, 1986, pp. 306)

6-6 A feng shui Practice

In discussion of Chinese and Oriental approaches to Philosophy and Culture, Cauchy (1994) points that "one may tend to consider Oriental approaches to social, political, anthropological and cosmic questions to be less analytical, less argumentative and more intuitive, poetic and global"[48]. Feng shui is precisely an object to be probed with such a nature in mind, for finding an auspicious site is beyond the layman's ability as it involves a special talent. It can be understood as an 'intuitive practice' as March (1968) notes that "the education of the eyes and the sentiments, familiarization with the local terrain, and at the same time an initiation, this discipline is an indication of the primary place of immediate experience in geomancy (feng shui)"[49]. One must remember that this intuitive practice is to find a site where 'chi' gathers. This intuition,

[48] Cauchy, Venant, "Chinese and Oriental Approaches to Philosophy and Culture", Journal of Chinese Philosophy, Vol. 21, 1994, pp. 61

[49] March, Andrew, "An Apprehension of Chinese Geomancy", Journal of Asian Studies, Vol. 27, March, 1968, pp. 259

in finding a place by looking at topography, can be compared with finding a relation between a blood vessel and flesh. When the site is designated by this intuitive approach, there are more detailed feng shui applications to be made.

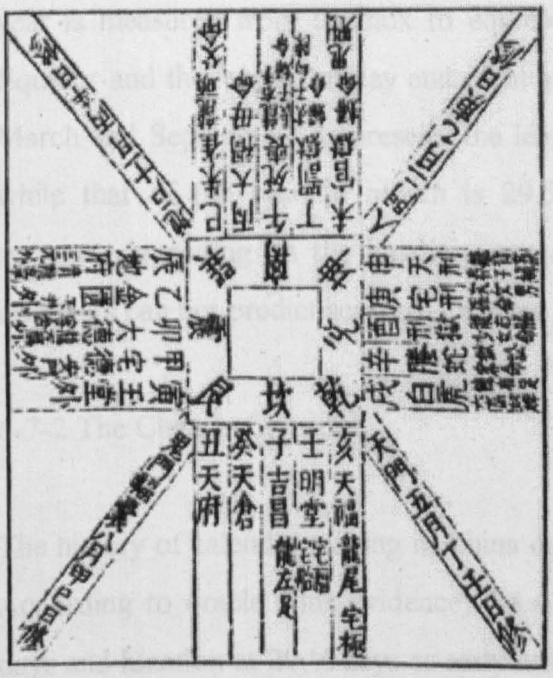
Among various kinds of feng shui applications, the Eight Houses theory is the best known. This theory categorises house types into two; Eastern Four and Western Four. The idea is that the most important parts of the house - the master's room, main gate and kitchen - should be given an auspicious relation to each other by being part of either Eastern four or Western four. These three parts are considered most significant because the gate is the way Chi comes through, the master's room is the place where the owner of the house resides, and the kitchen is the place where vital nourishment is made.

According to 'Yang Chai San Yao', which literally means 'Three Conditions for a House', written by Chao ting-tung in the late eighteenth century of Ching dynasty (1644-1912), the Later Heaven arrangement is used to determine the house type. This is due to the fact that the Later Heaven arrangement is considered appropriate for Earthly patterns of changes. It was indeed deliberately created for the purpose of visualising Earthy changes as opposed to that of Heaven. From the Later Heaven Arrangement, Northwest, West, Southwest and Northeast belong to Western Four house type while North, South, East and Southeast belong to the Eastern Four. If the master room, the main gate and the kitchen are allocated on one of the Western Four directions, the houses is regarded an Western Four House type. The same applies to the Eastern Four house type.

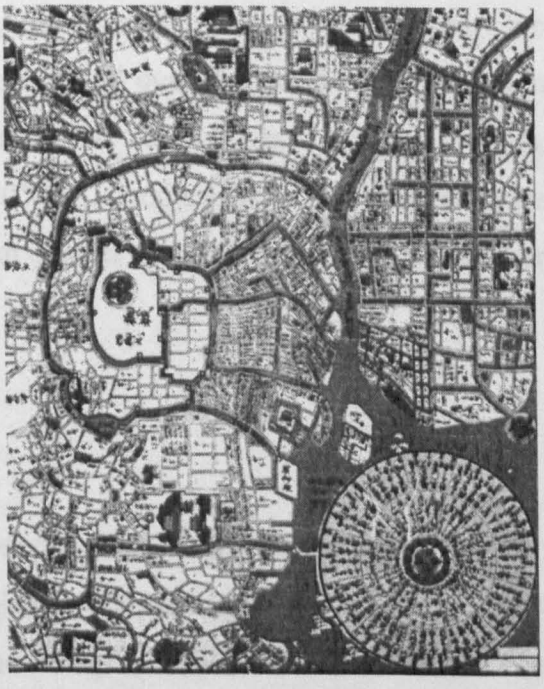
Theoretically, each direction is assigned to one of the five elements as well as combinations of yin and yang [Figure 6-24]. In the case of Western Four house type, Northwest and West are assigned to the element of Metal while Southwest and Northeast are Earth. The Western Four directions thus share a productive relation in terms of the five elements. Moreover, in terms of theory of yin/yang, Southwest has full yin and Northwest has full yang which balance each other. West has 2/3 of yang and Northeast 1/3 of yang which also compensate each other for balance. The same logic applies to the Eastern Four house type as well. The sum of yin and yang elements

from each two trigrams among four generate the symbolic harmony or equilibrium. It must be noted that there are two house types of yin and yang, this method belonging to the latter. According to the Huang Ti Chai Ching (Yellow Emperor's Dwelling Canon), written by Wang Wei in the fifth century CE, there are two types of siting; yang houses are for the human habitation, and yin houses are for the dead (graves).

Furthermore, feng shui practice was not only used for architectural purposes, but also urban design and planning. Wang Wei's illustration of the combination of twenty four directions in the fifth century treatise is identical to the compass index of the eighteenth century Japanese map drawn for the city of Tokyo [Figure 6-25 & 6-26]. A similar map of eighteenth century Kyoto, Japan is also kept in the Oriental and India Office of the British Library. They have not been yet systematically studied, but they exemplify that there is much in feng shui for the better explanation of architecture and urbanism in East Asia.



[Figure 6-25]
Combination of Twenty-Four Directions
(Source: "Huang Ti Chai Ching")
(Yellow Emperor's Dwelling Canon)
Fifth century CE



[Figure 6-26] An Eighteenth Century Map of Tokyo, Japan
(Source: Barthe, Roland, "L'empire des signes", Genève, 1970, pp. 45, originally from the collection of Nicolas Bouvier)

6-7 The Use of Almanac as a feng shui Reference

6-7-1 The Incommensurability of Calendar Making

Needham (1959) notes that the whole history of calendar-making is that of successive attempts to reconcile the irreconcilable natural phenomena, as the complexity of the calendar is due to the incommensurability of fundamental periods on which they are based[50]. The measurement of time is based on the time taken by the earth to rotate on its axis (day); by the moon to revolve round the earth (month); and by the earth to revolve round the sun (year). As these are incommensurable, neither a tropical year nor synodic months being divisible by the length of the day, certain average or mean intervals have been adopted for ordinary use[51]. The incommensurability of calendar-making is that the supply of light by the two great luminaries is governed by the periods known to astronomers as the solar year and the synodic month, while the return of the seasons is dependent on the tropical year[52]. The tropical or equinoctial year is measured from equinox to equinox, the point at which the sun crosses the Equator and the lengths of day and night are equal all over the world which occurs in March and September. At present, the length of the tropical year is 365.24219 days, while that of the synodic month is 29.5305879. Tropical year or Solar calendar systems, depending on the lunation, can not predict the full moon, while the lunar calendars can not predict seasonal changes.

6-7-2 The Chinese Calendar

The history of calendar making in China dates back as early as fourteenth century BC. According to oracle bone evidence, the Chinese established the solar year at 365 ¼ days and lunation at 29 ½ days as early as the Shang dynasty (1520-1030 BCE)[53]. The Chinese calendar year is comprised of six 30-day months and six 29-day months in order to make full days in each month. As a result, the calendar makes only 354 days in

[50] Needham, J., " Science and Civilisation in China", Vol. III, Cambridge Univ. Press, 1959, pp. 390
[51] For the detail, see either Whitaker's Almanack (129th edition), J. Whitaker and Sons Ltd., London, 1997, pp. 81 or Britannica Encyclopaedia, Vol. 2, 1985 (15th edition), pp. 740
[52] Fotheringham, J.K., "The Calendar", Nautical Almanac, 1929(1931), pp. 734 (After Needham)
[53] Encyclopedia Britannica, "The Chinese Calendar", CD ROM, 1996

total leaving approximately ten to twelve days short each year. Thus it was inevitable to involve an extra month, either 30 days or 29 days, every two to three years in order to bring the calendar in line. The Chinese seem to have known that the cycle of sun and moon in nineteen years returned to their relative positions, making 235 lunations, involving seven extra months for the perfection of the calendar. This discovery was about hundred years earlier than the Athenian Meton (fl. 432 BCE). It is, however, termed the 'Metonic Cycle' as there exists no record of the Chinese astronomer in the 'Spring and Autumn' period (722-480 BCE) when the discovery supposedly occurred.

chia	*i*	*ping*	*ting*	*wu*	*chi*	*Keng*	*hsin*	*jen*	*kuei*

(a) Ten Heavenly Stems

tzu	*chhou*	*yin*	*mao*	*chhen*	*ssu*	*wu*	*Wei*	*shen*	*yu*	*hsu*	*hai*

(b) Twelve Earthly Branches

[Table 6-2] Sixty day cycle is composed by permutation of (a) and (b)

According to Needham (1959), the ancient Chinese day-count did not depend on the sun or moon at all. It is a sexagesimal cyclical system in which a series of ten characters are combined with a series of twelve characters in sequence [Table 6-2]. The ten characters are *chia, i, ping, ting, wu, chi, keng, hsin, jen, kuei* called as 'Tien Kan' meaning 'Heavenly Stems', and the twelve characters are *tzu, chhou, yin, mao, chhen, ssu, wu, wei, shen, yu, hsu, hai* called as 'Ti Chih' meaning 'Earthly Branches'. It was only in the first century BCE of the Han dynasty that these two series of characters were first used for counting the years, and since then they have been commonly used in China. It must, however, be noticed that the invention of the calendar in China is traditionally ascribed to Huang Ti (c. 2637? BCE), a legendary Yellow Emperor, by whom a calendar was commissioned. Therefore although the current sexagesimal cycle is believed to have come much later, the history of calendar making dates from much earlier than one expects. Before the first century Han dynasty, the Heavenly stems seem to have been used for names for the days in a ten-day week, while the Earthly Branches were applied to the lunations of the tropical year as well as serving names for the twelve azimuth directions and the double-hours of a sidereal day.

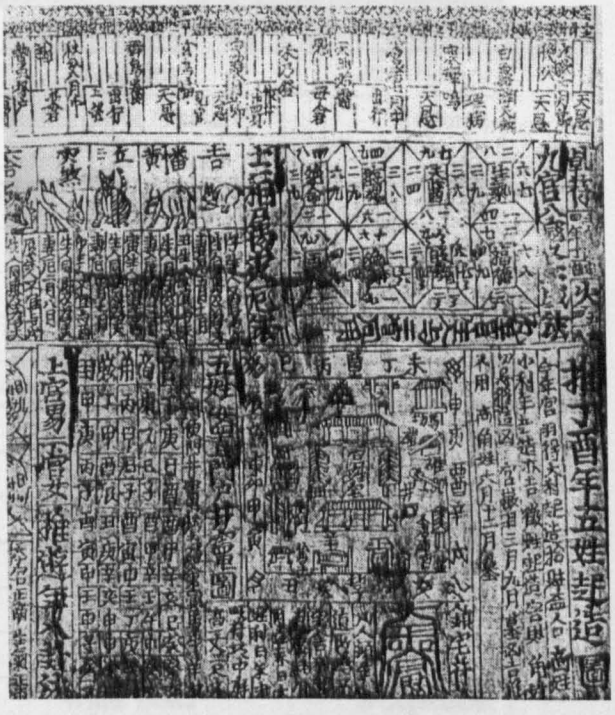
A sixty-day cyclical system looks useful, as six times the cycle nearly matches a tropical year. The ancient Chinese divided the sixty days into six ten-day weeks, and there were two lunations. In Chinese, the word 'yueh' was used for the month ideographically meaning the moon. This twelve-fold division is later further related to a cycle of twelve animals (rat, ox, tiger, dragon, pig, sheep, monkey, hen, dog, serpent, horse, hare), though the etymology of these characters is lost in the mist of antiquity. The Chinese used a ten-day week system which is still extant in rural China. Twelve Earthly branches seem to have correlated with the cycle of Jupiter which must have drawn attention at a very early date on account of the fact that the sidereal period of Jupiter is nearly twelve years (actually 11.86 years), and about twelve lunations (actually 12.37). Jupiter is often written as "the year-star" or wood star in Chinese, the latter obviously being correlated with the five elements.

The twelve months of the tropical year is then divided into twenty four fortnights, of which a half are classified as 'chung chi', meaning 'chi-centre' and the other are 'chieh chi', meaning 'chi node', about third century BC [Table 6-3]. Each of the twenty four corresponds to the motion of the solar ecliptic by fifteen degrees. They signify the changes in nature as time goes by. For example, the first of them is 'Li Chun', in the Table 6-3, meaning 'beginning of Spring', is approximately 5th of February, indicating to farmers that it is time to plough [Figure 6-27], and followed by 'Yu Shui', meaning 'rain water', indicating there would be no more snow as the temperature became warm enough. Another layer of the calendar is the time of a day. The Chinese divided time with twelve earthly branches covering two hours each [Table 6-4].

Needham (1959) accurately envisages this sexagesimal system in the image of two enmeshed cogwheels; one having twelve and the other ten teeth, so that not until sixty combinations have been made will the cycle repeat[54]. The Chinese celebrate a sexagesimal cyclic year for one's major birthday event; undoubtedly extremely few people can enjoy their second cyclical birthday. The seven day week, which is originally Hebrew, was introduced to China no earlier than the Sung dynasty (420-479).

[54] Needham, J., " Science and Civilisation in China", Vol. 3, Cambridge Univ. Press, 1959, pp. 397

[Figure 6-27]
Description of Li-Chun in one of the popular almanacs
(Source : Palmer,M., *op. cit.*, 1986, pp.44)



[Figure 6-28] The Oldest Chinese Almanac (877)
(Courtesy of British Library)

In the Figure 6-27, text on the sides of the picture reads as (from right to left),
"During this Yi Ch'ou year, in the springtime, things will not go well. This is the season for crop farming and rearing livestock. If the family is not well behaved during spring, then the people of the country will not have good yields. You will frequently see sickness amongst the livestock. Because of this you will have to work even harder to rear your livestock. If you plant early and work hard, you will still only get 80 per cent of the fruits of your labour. The most you will collect this year is half your grain harvest. You will have more containers empty than full."

This printed almanac for the year 877 was among the great cache of documents found in a cave temple of Dunhuang. The almanac shows what to do and what to avoid on particular days (presented in columns). A vivid house plan indicates spatial organisation of the 9th century domestic life as well as its association with twenty-four directions to elements of a house, i.e., main gate, well, stable, storage, etc. Note the twenty-four directions presented in this almanac are identical to the Figure 6-25 (fifth century CE).

	Name of 24 fortnights	Translation	Beginning Date
1	Li Chhun	Beginning of Spring	5 February
2	Yu Shui	The Rains	20 February
3	Ching Che (or Chih)	Awakening of Creatures (from Hibernation)	7 March
4	Chhun Fen	Spring Equinox	22 March
5	Chhing Ming	Clear and Bright	6 April
6	Ku Yu	Grain Rain	21 April
7	Li Hsia	Beginning of Summer	6 May
8	Hsiao Man	Lesser Fullness (of Grain)	22 May
9	Mang Chung	Grain in Ear	7 June
10	Hsia Chih	Summer Solstice	22 June
11	Hsiao Shu	Lesser Heat	8 July
12	Tai Shu	Greater Heat	24 July
13	Li Chhiu	Beginning of Autumn	8 August
14	Chhu Shu	End of Heat	24 August
15	Pai Lu	White Dews	8 September
16	Chhiu Fen	Autumn Equinox	24 September
17	Han Lu	Cold Dews	9 October
18	Shung Chiang	Descent of Hoar Frost	24 October
19	Li Tung	Beginning of Winter	8 November
20	Hsiao Hsueh	Lesser Snow	23 November
21	Tai Hsueh	Greater Snow	7 December
22	Tung Chih	Winter Solstice	22 December
23	Hsiao Han	Lesser Cold	6 January
24	Tai Han	Greater Cold	21 January

[Table 6-3] The Twenty-Four Fortnight Divisions of the Calendar Year

Tzu	*chhou*	*yin*	*mao*	*chhen*	*ssu*	*wu*	*wei*	*shen*	*yu*	*hsu*	*hai*
23-01 *hrs*	01-03	03-05	05-07	07-09	09-11	11-13	13-15	15-17	17-19	19-21	21-23

[Table 6-4] A Division of Time

6-7-3. The Use of the Almanac as an Identification of being Chinese

Almanacs appears to have played a 'role model' for the Chinese people in general[55], and have contributed to institutionalise certain values and customs such as filial piety, Confucian morality, ritual etiquette and so on. The Chinese took the meanings attributed to each day and time in the calendar rather seriously. They refrained from any activity from marriage, house-building to trivial things such as sweeping the floor or taking a bath, without consultation of the calendar[56]. In fact, the Chinese communities overseas such as in Manchester or in San Francisco show a keen interest in exercising feng shui[57]. Maybe the sad story of early Chinese migration to the United States explains part of their tenacious belief on feng shui[58].

Calendar making in China was a manifestation of sacred power and state authority[59]. This is due to the fact that the Chinese faithfully sought the pattern of change in Heaven, for they believed social order to be parallel to that of Heaven, and that they should accord each other. This faith can be clearly demonstrated at the beginning of Ming dynasty (1368-1644), founded by Chu Yuan-Chang. Chu already had established his own Astronomical Bureau before he overthrew the Yuan dynasty (1260-1368), founded by Mongols, in order that the new calendar should be ready when he took control of the country[60]. Moreover, as calendar making was exclusively a matter for the state, republication of the calendar was strictly forbidden[61]. In the dynasties of Ming and Ching, the official editions of the calendar carried explicit warnings of

[55] Palmer, Martin (*eds.*), "T'ung Shu: The Ancient Chinese Almanac", Century Hutchinson Ltd., London, 1986, pp. 40

[56] Smith, Richard, J., "Chinese Almanacs", Oxford University Press, 1992, pp.18

[57] see Davisson, Richard Jr., "The Dragon and San Francisco", Landscape, Vol. 17, No. 2, 1967

[58] For the brief description of Chinese built environment in association with their migration to California, see Yip, Christopher L., "California Chinatown: Built Environments Expressing the Hybrid Culture of Chinese Americans", IASTE Working Paper, Vol. 80, *op. cit.*, 1996

[59] This is a parallel concept to that of Western calendar system. As early as the Roman period, the calendar was reformed by Julius Caesar in 46 BC as it was hopelessly confused due to negligence and political interference. The Julian year of 365.25 days, however, produced another gap with the tropical year of 365.242199. The yearly difference of 11 minutes and 14 seconds became full ten days by 1545, and not rectified until 1572 when Pope Gregory issued a Papal Bull drawn by the Jesuit astronomer Christopher Clavius. See Britannica Encyclopaedia, Vol. 2, 1985 (15th edition.), pp. 740

[60] Ho, Peng-Yoke, "The Astronomical Bureau in Ming China", Journal of Asian History 3, 1969, pp. 137

[61] Bredon, J. & Mitrophanow, I., "The Moon Year: A Record of Chinese Customs and Festivals", Paragon Book, New York, 1966, pp. 5

decapitation for those who forge copies and rewards for reporting them[62]. In the Ching dynasty (1644-1911), the state-issued calendar was not only expensive, but also hard to obtain. Therefore, all sorts of almanacs, despite the warning, as opposed to the official calendar, were available in the market. The almanac is in principle a calendar, but designed for practical and informal usage. The concept of the almanac was in fact similar to that of an encyclopaedia, not that of modern calendar.

As Fei (1947) and Smith (1992) note, almanacs were not in any sense sacred in the fashion of State calendars, though people assumed that they possessed some sort of magical power[63]. The almanac was, in fact, much more popular than the state-issued official calendar, as the latter was too expensive, besides the fact that the former contained additional information, which was practically useful, such as excerpts from a prognostication pertaining to agricultural prospects as well as various kinds of medical prescriptions[64]. Chinese almanacs are still widely used in Chinese communities, and the characters reflect a modern urban orientation, including charms, talisman, feng shui, divination, fortune-telling while omitting agricultural information[65]. Even after the birth of the Republic in China, despite the Gregorian calendar being introduced, almanacs remained popular as in the imperial period[66]. A field study of Fei (1947) shows clearly the nature of the almanac and its involvement in everyday life. People in a village near Yang Tzu valley did not know how their calendar was arranged, yet followed the published almanac unconsciously, which was often the only book in a household. They did not know where the almanac was issued, or the restriction of the traditional calendar imposed by the government, whose reason for the prohibition was to expel evil superstition, apparently different from that of the imperial period. The restriction

[62] Smith, Richard, J., *op. cit.*, 1992, pp.7

[63] Fei, Hsiao-Tung, "Peasant Life in China", Kegan Paul, London, 1947, pp. 150, and also see Smith, Richard, J., *op. cit.*, 1992, pp.19

[64] The Chinese almanac manifests a clear correlative thinking on the fertility of the sacred mother land and that of woman. One of the almanacs found in South China includes a section for "the production of children" involving explicit explanation of menstruation, times and frequency of sexual intercourse, and the preparation for pregnancy. It reads that in order to bear a male baby (classified as yang), a couple should choose certain day (yang) and quiet time (yang) for intercourse, and that the woman should lie on her left side (yang). See Smith, Richard, J., *op. cit.*, 1992, pp.20-22

[65] Palmer, Martin (*eds.*), *op. cit.*, 1986, pp. 10

[66] In the course of political instability soon after the Republic was founded, various almanacs bore images of a number of leaders in politics and the military in order to associate themselves with the power. For the detail, see Smith, Richard, J., *op. cit.*, 1992, pp. 44-45

was of no use in reality, as the almanac was the only practical guidance for them[67]. In fact, almanacs were the only feng shui reference for house owners and carpenters in the execution of buildings in China, aside from a feng shui expert's advice. In Hong Kong, a new almanac, of a traditional kind, was still presented to the British Governor at the beginning of each year as a sign of political authority.

The demise of feng shui, along with various other kinds of divination, superstition, etc., in mainland China is also seriously related to reform of the calendar. During the Cultural Revolution (1966-1976) in China, the almanac castigated feng shui as a counter-revolutionary vehicle. According to Smith (1992), one of the almanacs published in 1966 contained a couple of pages proclaiming feng shui as utterly unworthy of belief. It ridiculed the esoteric language of feng shui practitioners, labelling it as a sarcastic ditty drawn from the monarchy. The excerpt reads "geomancers are accused to talking nonsense, pointing north, south, east and west. If mountains have sites that will produce noble rank [in the future], why don't they bury their own fathers in these places?" [68]. Nonetheless, almanacs are still widely used in Chinese communities all over the world, and its influences can be observed at all levels including feng shui. Chinese communities overseas such as in Manchester or San Francisco continuously show a keen interest in exercising feng shui[69]. It is obvious that feng shui works in the Chinese mind through the use of the almanac without conscious recognition of its systematic involvement. Smith (1992) points out that the Chinese almanacs have provided a convenient means of becoming 'modern' yet remaining Chinese[70].

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[67] See Fei, Hsiao-Tung, *op. cit.*, Kegan Paul, London, 1947, pp. 150 and also for the exercise of feng shui in a rural province of China, see Yang, Martin C., "A Chinese Village: Taitou, Shantung Province", Kegan Paul, London, 1947, pp. 88

[68] see Smith, Richard, J., *op. cit.*, 1992, pp. 56

[69] See He, Xiaoxin, *et al.*, "Feng Shui: Memory, Folklore, and Identity in a Chinese Community in Manchester", IASTE Working Paper, Vol. 80, Univ. of California, Berkeley, 1996 and also see Davisson, Richard Jr., *op. cit.*, 1967

[70] Smith, Richard, J., *op. cit.*, 1992, pp. 83
Under the Chinese correlative thinking, a person's birthday is inextricably associated with the concepts of yin/yang, five elements and so on, hence an almanac shows a personified version of those associations. A new-born-child is automatically attributed to one of the twelve zodiacal animals, and one of the sixty sexagesimal calendar years. Moreover, more precise data, 'sizi' literally meaning four characters indicating year, month, date and time of birth, can be used for more important cases such as marriage, burial and of course the rituals of building construction, the beginning or opening. The almanac contains a highly personified system for such occasions by calculating four elements of birth information, year, month, date and time.

6-8 Summary

Because architectural employment was not considered a suitable occupation for a Confucian scholar[71], architecture in China has never been an autonomous discipline. It was therefore subordinated to other disciplines such as politics, philosophy and medicine. Through critical and historical study, feng shui has become established as an ancient theory of architecture and planning.

The epistemological basis of feng shui lies in the theories of yin/yang and the five elements as described in the Book of Changes. In ancient China, two opposing currents of the cosmos were assumed, which combined with the classification system of five elements forms a coherent cosmology. This cosmological system runs through every part of the Chinese intellectual tradition. The patterns of changes in time and space are presented in the esoteric diagrams Ho-Tu and Lo-Shu along with the two arrangements of trigrams, Former and Later Heaven, with which the diagrams accord. The Chinese compass was invented and developed as a miniature of the cosmos, comprised of sets of information in accordance with the theories of yin/yang, and five elements, the two diagrams, and the two arrangements of eight trigrams. It is used as the medium for feng shui practice. The Chinese compass originated as an instrument for divination, and the observation of declination influenced the use of the compass at different periods. The significance of feng shui lies in attaining harmony of these patterns of changes in the symbolic realm of the cosmos, buildings and settlements, enabling East Asians to identify themselves in time and space.

The aim of feng-shui is a harmonious or auspicious existence, which for a believer in the cosmological system is obtained by working in harmony with it. The satisfaction of so-doing would be felt as an aesthetic pleasure, because it would confirm one's activities to be in harmony with the universe. But the adoption of elements detached from the feng-shui system for use by people living under a different world-view is likely to reduce it to an empty stylistic gesture.

[71] Needham, Joseph, *op. cit.*, Vol. IV, pt. 3, 1971, pp. 80

The role of feng shui was much more intense than one might have thought about yet. As Anderson (1973) notes, in rural provinces where the literate populace is sparse and Imperial control is weak, the need for a planner and co-ordinator must have been great. Hence, feng shui appears to have involved in the maintenance of community solidarity and authority[72]. The popular almanac is also a vital instrument for the folk culture whose authority and order is co-ordinated by feng shui. The almanac originates as an illegal copy of the State calendar, but its proliferation among the vast majority of Chinese was no doubt a significant force in shaping the Chinese mind over the exercise of feng shui. The use of the almanac is also an answer for the institutionalisation of Chinese identity in overseas Chinese communities. Through a close examination of the history and theory of feng shui, its role and meanings in shaping the Chinese built environment are clearly demonstrated, and feng shui is evidently worth further scrutiny in search of attaining richer architectural culture.

[72] Anderson, E. N., *et al.*, *op. cit.*, 1973, pp. 136

Chapter 7

Emerging Modern Traditions in Architecture

7-1 Conceptions in Modern Architecture

Modern architecture was born out of a number of significant socio-economic conditions that have shaped modern society. Despite the fact that architecture was historically conditioned by politics and economics, the dramatic transformation in the late 19th century after the Enlightenment and the Industrial Revolution in Western Europe led to an unprecedented change in almost all aspects of architecture. From the outset, modern architecture appears to have produced two opposing currents: the utopian avant-garde and the anti-utilitarian Romantic Christian attitude. French modern architects like Ledoux and Boulée were the pioneers of utopianism, while French theorist Viollet-le-Duc and an English architect Pugin advocated a Gothic Revival. For Pugin, it was a true expression of Christian ethics. For Viollet-le-Duc, it was a synthesis of structure and programme. In an effort to understand these dynamic phenomena of the development of modern architecture, it is, however, essential to consider the complex context from which they emerged. Middleton and Watkin (1977) noted that those well known figures are often upheld as extraordinary visionaries who owed nothing or nearly nothing to their predecessors or to the society in which they lived[1]. Over the hundred years, before and after the turn of the nineteenth century, modern architecture has largely developed in the incessant reconciliation between these two attitudes in the midst of conflicting ideas about an ideal future and of material reality.

The history of 'modern' perhaps date back much further in time, but only after the Renaissance would the transformation in architecture and urbanism be more appropriate under the context of this thesis. Claude Perraut's challenge to the Vitruvian proportional system in the 17th century could be cited as a breaking point of modern tradition. Perrault's challenge initiated different kinds of conceptions in

[1] Middleton, R. & Watkin, D., "Neoclassical and Nineteenth Century Architecture", Electa Editrice, New York, 1977, pp. 359

architecture. Frampton (1985) notes that "he (Perrault) elaborated his thesis of positive beauty and arbitrary beauty, giving to the former the normative role of standardisation and perfection and to the latter such expressive function as may be required by a particular circumstance or character"[2]. Since the Renaissance saga had lost its authority, there emerged a number of attempts in quest of new architectural thoughts and forms in the vacuum of an absolute authenticity. They have generated a chaotic milieu in the architectural discipline in general, and there flourished numerous styles and 'isms' devoid of genuine creativity. It was only the turn of the twentieth century that have authentic forms of architecture come into being in an appropriate sense of modern architecture. There still existed a considerable amount of doubt among architects about the proper appearance of new architecture. Neo-classicism, Gothic Revival, Art Nouveau, Arts and Crafts, and Chicago School were among those in pursuit of a modern authenticity. These ideas all co-existed, sometimes in tune, and sometimes in conflict each other. As all these show conflicting values and attitudes, it is essential to look beyond mere physical presentations of form and space to the ideas that have shaped them.

Modern architecture involved a new conceptualisation of its appearance in association with the emergence of new mode of production, inclusive of new material, new construction methods and division of labour, initiated by the Industrial Revolution. Rapid industrialisation divided the conventional discipline of architecture between art-architecture and engineering, and brought the new task of creating new building types for both offspring. The railway station, factory, museum, law court, opera house, urban houses, banks and prisons as well as skyscrapers are all modern creations that produced a new pedigree in architectural theory and practice without reference to the past. Without authoritative references, these new-born building types naturally generated a desire for a new form, but the domination of tradition at the time left a due crisis in architecture. If architectural theory is conceived as an ordering device for architectural practice to avoid the arbitrary imposition of an individual sensibility, the lack of consensus in shaping primary principles for the new forms as a container of new contents appears to be pretty natural. It is because an established theory would generate collective exercise and it might prove to be devoid of attached meanings as

[2] Frampton, Kenneth, "Modern Architecture: A Critical History" (2nd edition), Thames and Hudson, London, 1985, pp. 14

well as significant historical implications thereafter. This dilemma was the beginning of the separation of theory and practice, and the unlucky proliferation of 'styles' in the twentieth century certainly exemplifies it. Building processes would occur anyway with or without the provision of a theory, but an inappropriate provision would bring unexpected disturbance in the socio-economic context, as the International Style and its subsequent styles have already shown.

The collapse of the vernacular tradition was a corollary of speedy industrialisation, and it involved utilitarian objects of mechanisation and standardisation. Mid-nineteenth century English moralists such as A.W.N. Pugin, John Ruskin and William Morris saw that this instrumental mode of production would produce a deterioration of living conditions as well as the degradation of overall humanism. The aggravation of living conditions in cities was, in fact, becoming worsened, and it led to dramatic contrasts between 'the haves' and 'the have-nots'. This materialistic environment was the setting of architectural development over the early twentieth century, with modern architecture directed towards the hope for a more humane society. In search of this humane world, modernists looked both backwards and forwards; for example, Pugin's discovery of the Gothic in the Middle Ages in opposition to his contemporary degraded and ephemeral society, and Fourier's future utopia. In response to the demoralisation of industrial society, an ideal that those Romantics sought was an integration of art and utility, to promote human values as well as producing high quality goods. The Arts and Crafts movement developed as a result, and the intensification of crafts was a condition for this moral approach. It was just an untimely moral that this naïve dream was an illusion for those who dreamt of a nostalgic utopia, ending eventually in a negotiation between the mechanistic mode of production and the new forms of a new age.

In the mid nineteenth century, the French architect and theorist Eugene Viollet-le-Duc was aware of the need to formulate the impact new materials and new construction methods in an effort to create a new form of architecture. His approach bore a fruitful model for the history of architecture in search of new forms on the basis that tradition can contribute to the way new form is generated. Despite his solution for a new form not being clear, the idea he suggested was justifiable in terms of a theoretical

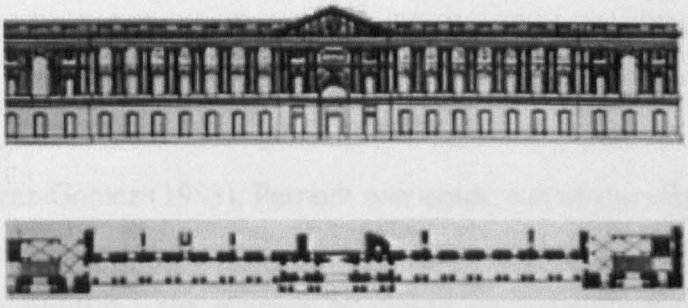
formulation. Viollet-le-Duc wrote in his book of "Entretiens sur l'architecture (Discourses on Architecture)" that

"In architecture, there are two necessary ways of being true. It must be true according to the programme and true according to the methods of construction. To be true according to the programme is to fulfil, exactly and simply, the conditions imposed by need; to be true according to methods of construction is to employ the materials according to their qualities and properties ... ... purely artistic questions of symmetry and apparent form are only secondary conditions in the presence of our dominant principles"[3]

Viollet-le-Duc thought that the appearance of tradition should be traced further back into deeper layers of principles and processes that had produced them. Unlike Viollet-le-Duc, Abbé Marc-Antoine Laugier, a Jesuit monk, tried to return to the origin of architecture, emphasising primary needs and the functions of architecture. Laugier's conviction, known as 'primitivism', led him to a primitive hut conceived as the beginning of architecture [Figure 7-1]. He conceived the beauty of building in terms of three issues; accuracy of proportions, elegance of forms and choice and distribution of ornaments[4]. His idea about a return to nature led a tendency that architecture should imitate nature, on the grounds that nature provides essential authenticity in architecture. According to Herrmann (1962), it was Laugier's taste rather than his principles that became the formative elements of his Essai. He looked for and found principles to suit the vision of a new style to his taste, which became the theoretical foundation[5]. Laugier's taste is nevertheless by no means trivial in understanding his contemporary social prejudice. According to Bourdeau (1994), preferences in particular genres in music or painting are conditioned by educational level and social origin. Hence, taste functions as a maker of classes[6]. In this context, as Laugier was an educated Monk of the time, his taste perhaps mirrored what those literate class of his contemporary presumably preferred. Herrman's point is precisely that the theory is based on a prejudice, hence it became a justification for Laugier's classical preference.

[3] Viollet-le-Duc, Eugene, "Discourses on Architecture", London, 1877, originally published in French as "*Entretiens sur l'architecture*", Paris, 1863
[4] Laugier, Marc-Antoine, "An Essay on Architecture" (trans. by Wolfgang and Anni Herrmann), London, 1977, pp. 62, originally published in French as "*Essai sur l'architecture*", Paris, 1753
[5] Herrmann, W., "Laugier and Eighteenth Century French Theory", Zwemmer, London, 1962, pp. 19
[6] Bourdeau, P., "Distinction-A Social Critique of the Judgement of Taste", Routledge, London, 1994

[Figure 7-1] "A Primitive Hut", Laugier, Abbé Marc-Antoint,



[Figure 7-2] Claude Perrault, "Louvre's East Façade"

Despite the easy conflicts among possible styles derived from nature, this tendency was accepted by a number of key architects. As a strong reaction to the classical tradition of Beaux-Arts, Art Nouveau attempted a fresh invention of light and soft texture, retrieved from new materials of glass and metal, and subsequent new construction methods in the pursue of natural motifs and images. Victor Horta, Antonio Gaudi, Charles Rennie Mackintosh were among key Art Nouveau architects, and their approach implemented Viollet-le-Duc's ideas of new material and new construction.

7-2 Modern Science and Architecture

An architectural theory which engendered buildings and cities in the early modern period was formulated through the rational methods of science which were not known in the Renaissance or older worlds. It was Galilean science which started to dissolve traditional images of the world, and other associated items such as values, beliefs by establishing rather progressive form of epistemology, for positivism was not yet established in the seventeenth century[7]. Positivism, clearly apart from Cartesian conceptual philosophy, sought perceptual truth and became a European tradition through the seventeenth and eighteenth centuries. It was in seventeenth and eighteenth century France, where the rationalisation of architecture developed, initially beginning with Alberti, that the profession of architects replaced the positions of builders, promoting to another dimension. A number of architects raised questions on the classical proportions in architectural geometry. Among them, Claude Perrault and François Blondel are worthy of close consultation. Although the use of numbers in a purely technological way began after the Industrial Revolution, the numerical connotations already started to lose their status in the seventeenth century along with Perrault.

According to Pérez-Gómez (1983), Perrault was conscious of the scientific revolution giving numbers a totally different role, using it as an operational device, as a positive instrument for simplifying the process of design or avoiding the irregularities of practice[8]. François Blondel, Perrault's intellectual contemporary, on the other hand, seems to have had different attitude to the use of numbers. According to Pérez-Gómez (1983), it seems that he was unable to discern the difference in use between mere technical use and symbolic presentation[9], unable to recognise a difference between true physical cause and illusion, between magic and an effective technique[10]. Perhaps, Blondel's stance would be better understood in terms of reconciling the present and the past. Blondel appreciated antiquity, being the source of modern excellence, and

[7] Pérez-Gómez, Alberto, "Architecture and the Crisis of Modern Science", MIT Press, Cambridge, Massachusetts, 1983, pp. 19
[8] Pérez-Gómez, A., *op. cit.*, 1983, pp. 38
[9] Pérez-Gómez, A., *op. cit.*, 1983, pp. 42
[10] Pérez-Gómez, A., *op. cit.*, 1983, pp. 47

praised all beautiful things in spite of their time, place and builder, upholding the perfection of both his time and the past[11].

As always, it is difficult to apply new ideas to the established world. Like Galileo or Copernicus in their own time, Claude Perrault's contribution to "the process of mathematization of architectural theory" was almost totally ignored in the eighteenth century[12]. His contribution to the science of architecture can be found in his two writings, one in the form of a preface and notes to his translation of Vitruvius' "Ten Books of Architecture" in 1684, and the other in his own treatise "Ordonnance des Cinque Espèces de Colonnes" of 1683. In his notes in "Les Dix Livres de l'Architecture de Vitruve", he made his pursuit of modern architecture clear by citing his response to Blondel's criticism regarding the Louvre's column design, arguing that the habits of ancient architects can be abandoned [Figure 7-2][13]. His idea of modern architecture, being rational, can also be found in the preface of his other book "Ordonnance" citing that the principles of architecture have yet to achieve perfection[14]. Although the above evidence suggests that he basically tried to rely on reasoning, he also showed his theoretical division between science and myth as between reason and faith[15]. As he never questioned the role of the column itself or its symbolic connotations while he created a rational proportional system, it was a transitional moment of achieving higher rationality along with conventional beliefs. Theological belief was another realm for him. His theory of architecture, which oscillated between conceptual and perceptual dimensions, taking traditional built forms for granted and abandoning symbolic significance of the use of numbers, clearly confirms this.

Perrault's ambition to achieve a universal system of proportion was realised by manipulating one third of a diameter of a column, instead of the traditional semidiameter, as a regulating dimension in the elements of pedestals, shafts, capitals and entablatures in sequence, achieving dimensions consisting of natural numbers, and at the same time, practically easy to remember and apply in design and practice.

[11] Pérez-Gómez, A., *op. cit.*, 1983, pp. 44
[12] Pérez-Gómez, A., *op. cit.*, 1983, pp. 18
[13] Perrault, Claude, " Les Dix Livres de l'Architecture de Vitruve", Paris, 2nd eds., 1684, pp. 78-79
[14] Perrault, Claude, "Ordonnance des Cinq Especes de Colonnes selon la Methode des Anciens", Paris, 1683, pp. XXIV

This *a priori* system, called *petit* module, however, meant abandoning the divine use of numbers in favour of numerical co-relation among important parts of the building. It forced Perrault to disregard traditional proportional system and the symbolic connotations which they carried[16].

7-3 Two Strands of Modernism

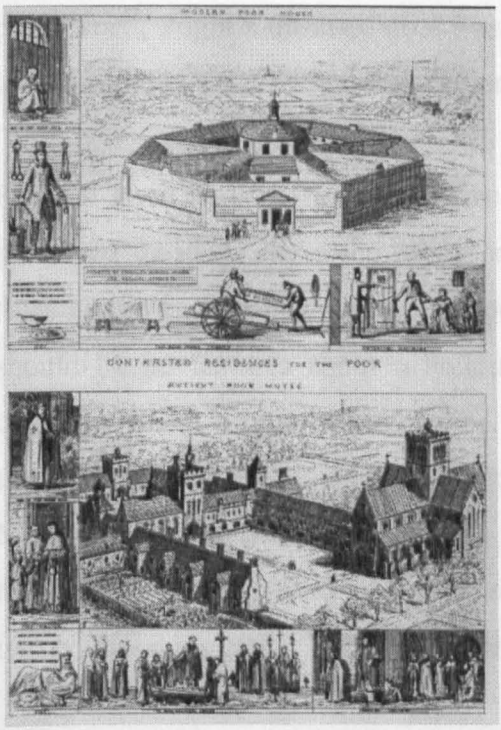
7-3-1 Romanticism

7-3-1-1 The Gothic Revival: Pugin and Viollet-le-Duc

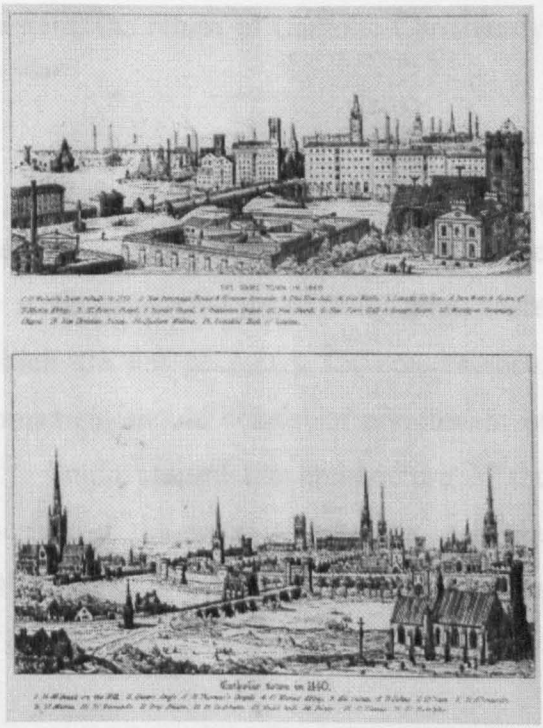
The Gothic Revival had begun long before its principal English adherent A. W. N. Pugin (1812-1852) and French one Eugène Emmanuel Viollet-le Duc (1814-1879) appeared on the scene. Augustus Welby Northmore Pugin, a talented British architect and designer, born of a French father and English mother, was an architect, architectural theorist and critic. As a catholic convert at the age of twenty three in June 1835, his catholic ethics and conviction undoubtedly framed his activities over his short life span of forty years between 1812 and 1852. Within this period of time, he published eight major architectural books, and designed over a hundred buildings. His dedication to catholic belief is immersed in his critical judgement of the Gothic style as a true expression of universal validity. In his first publication "Contrasts" of 1836, Pugin wanted to exhibit the works and practices of Catholic antiquity which he believed that no modern productions could possibly equal [Figure 7-3 and 7-4][17]. What Pugin sought was again quite clearly expressed in 1840 as,

"I seek antiquity, and not novelty. I strive to revive not invent and when I have done my best and when compared with the puny and meagre abortions of the day I have produced a sturdy effect yet how terribly do my best efforts sink when tested by the scale of ancient excellence"[18]

[15] Pérez-Gómez, A., *op. cit.*, 1983, pp. 23-25
[16] Pérez-Gómez, A., *op. cit*, 1983, pp. 31
[17] Pugin, A. Welby, "Contrasts" (Second Edition), London, 1841, pp. 15
[18] Quotation from Stanton, Phoebe, "Pugin", Thames and Hudson, London, 1971, pp. 11



[Figure 7-3] A. W. N. Pugin, "Contrasts" (1836)



[Figure 7-4] A. W. N. Pugin, "Contrasts" (1836)

Faced with exotic styles of architecture brought into Britain due to an increased international trade as an Imperial Power, Pugin's stance in the "Contrasts" may appear to be an attempt to revive national identity on the basis of Catholic ethics. One significant occurrence at this time was an attitude towards the alternative systems of ornaments, such as Gothic or Chinese, in France and England[19]. Pugin affirms this on his writing that "the erection of Parliament Houses in the national style is by far the greatest advance that has yet been gained in the right direction"[20]. Watkin (1977) wrote, however, that "it is one of the curiosities of the history of taste to find an architect, half a French man, arguing for the adoption of a style of French origin as part of a recovery of nationalist feeling in England"[21]. It was indeed his conviction about Catholicism rather than national spirit that he wanted to restore. His attack on modern paganism and the morality of Henry VIII with respect to the Reformation clearly shows his Catholic conviction. Although his accusation of the Protestant principle as destructive principle, being responsible for disastrous effects on Catholic arts and architecture in England, is slightly redirected against Renaissance

[19] Pérez-Gómez, A., *op. cit.*, 1983, pp. 35
[20] Pugin, A. W. N., "An Apology for the Revival of Christian Architecture in England", 1843, pp. 10
[21] Watkin, David, "Morality and Architecture", Clarendon, Oxford, 1977, pp. 20

paganism[22], Pugin's ultimate goal was consistent; the return of Catholic Christianity to which the Gothic Revival was dedicated.

Pugin's later book "The True Principles of Pointed or Christian Architecture", published in 1841, states the two great rules for design, accusing the lack of these rules as the cause of all bad contemporary architecture. He stated that, "first, there should be no features about a building which are not necessary for convenience, construction, or propriety and second, all ornament should consist of enrichment of the essential construction of the building"[23]. Pugin praised the architecture of the Middle Ages on account of natural properties of the various materials, and the mechanism that was used as a vehicle for their art[24]. In fact, Pugin advocated these two points in his earlier book of "Contrasts" as

"the great test of architectural beauty is the fitness of the design to the purpose for which it is intended, and that the style of a building should so correspond with its use that the spectator may at once perceive the purpose for which is was erected" [25]

His repeated appeal for Gothic Revival seems only to be an attempt to convince those who were not moved by his earlier anti-Protestant assertion[26]. Despite the uncertainty of whether Pugin was aware of Viollet-le-Duc's idea of programme and construction process, his search for true principles of architecture exemplifies a strong parallel to that of Viollet-le-Duc.

Viollet-le-Duc (1814-1879), renowned for his famous ten volume dictionary of medieval architecture which appeared between 1854-61, published a number of influential articles as well as leaving enormous restorative works including Nôtre Dame in Paris. His writing is often cited as the basis of modern architecture on the account of its approach in interpreting Gothic architecture. Hearn (1990) pointed out

[22] Hitchcock points out that one must turn to Pugin's later writings in order to grasp his fully developed ideas as Pugin makes emendations which considerably change the character of the work. Hitchcock described Pugin's "Contrasts", edition of 1836, as a mere manifesto with a historical importance. See Hitchcock, H. R., Introduction of Pugin's "Contrasts", *op. cit.*, 1969

[23] Pugin, A. W., "The True Principles of Pointed or Christian Architecture", Edinburgh, 1895, pp.1 (originally published in London in 1841)

[24] Pugin, A. W., *op. cit.*, Edinburgh, 1895, pp.2

[25] Pugin, A. W., "Contrasts" (Second Edition), London, 1841, (Reprinted by the University of Leicester Press in 1969), pp. 1

[26] Watkin, David, *op. cit.*, 1977, pp. 19

that Viollet-le-Duc considered the principles underlying Gothic architecture were those most appropriately applicable to a yet-to-be invented modern architecture[27]. According to Watkin (1977), Viollet-le-Duc took it for granted that every feature of Gothic architecture had a functional or technological origin and justification, reflecting the French tradition of rationalist architectural theory. This conviction was the basis of a scientific exposition of French Gothic and it was used as propaganda to justify a new style for a new nineteenth century architecture[28]. Viollet-le-Duc argued that "we must be true in respect of the programme, and true in respect of the constructive processes"[29], which suggests strong parallels with those principles of A. W. N. Pugin. Viollet-le-Duc identified three significant modes of production in the history of architecture; Greek, Roman and Gothic. Hearn (1990) pointed out that, for Viollet-le-Duc, Greek architecture was shaped in accordance with its structural integrity, citing the assembly of the Doric order. His notion, however, shows that, for the Greeks, the mode of assembly takes precedence over the purpose of the building. In the case of Roman architecture, on the other hand, it can be epitomised for its functional program. Two virtuous characteristics of Greek and Roman, as opposed and complimentary to each other, are then found in the late twelfth and thirteenth century Gothic architecture in which Viollet-le-Duc attempted to find all necessary elements, as fully rational structure conceived to fulfil a functional program, of his theory of architecture[30]. He found in Gothic architecture the apparent principle of how buildings are programmed and executed, not a rule of thumb that artisans obediently follow.

In his "Histoire de l'habitation humaine depuis les temps préhistoriques (1875)", Viollet-le-Duc rationalised the origin and development of architecture with a story of an "intelligent man" building a primitive hut for a shelter [Figure 7-5][31]. He then moved on to an explanation of how the Greek Doric order is assembled, and how spatial organisation is planned in accordance with functional requirements of Roman architecture and how the vault is achieved, etc. Hearn (1990) noted that Viollet-le-

[27] Hearn, M. F., "The Architectural Theory of Viollet-le Duc: Readings and Commentary", The MIT Press, 1990, pp. 115
[28] Watkin, David, *op. cit.*, 1977, pp. 23
[29] Viollet-le-Duc, E., "Entretiens sur l'architecture", Vol. 1, Paris, 1854, pp. 448
[30] Hearn, M. F., *op. cit.*, 1990, pp. 8-9
[31] Viollet-le-Duc, E., "Histoire de l'habitation humaine depuis les temps préhistoriques", Paris, 1875 (translation read from Hearn, M. F., *op. cit.*, 1990)

Duc regarded Gothic architecture as a synthesis of the Greek genius for structural formulation and the Roman gift for programming planning[32], while recognising neither principle as superior to the other, but together they were taken to represent the two possible approaches to the design of buildings[33]. In the "Entretiens sur l'architecture (1872)", Viollet-le-Duc wrote that "the architecture of the thirteenth century is a real architecture; it is applicable to all purposes, because its principles proceed rather from a course of reasoning than from a form"[34]. He also stressed the importance of the education of architects with reference to drawing which is one of the key elements in the development of modern architecture. Hearn (1990) mentions that, for Viollet-le-Duc, "to draw what one observes is to become fully conscious of what one looks at and to make it memorable. Having remembered it clearly one is able to reflect on it analytically and propose solutions to problems"[35]. More importantly, Viollet-le-Duc was aware of the importance of the cultivation of reason for architects' training, not rote exercises, the purposes of which were never explained[36].

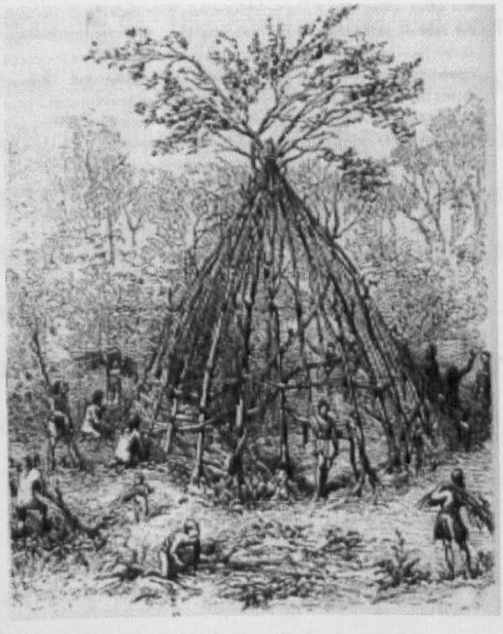
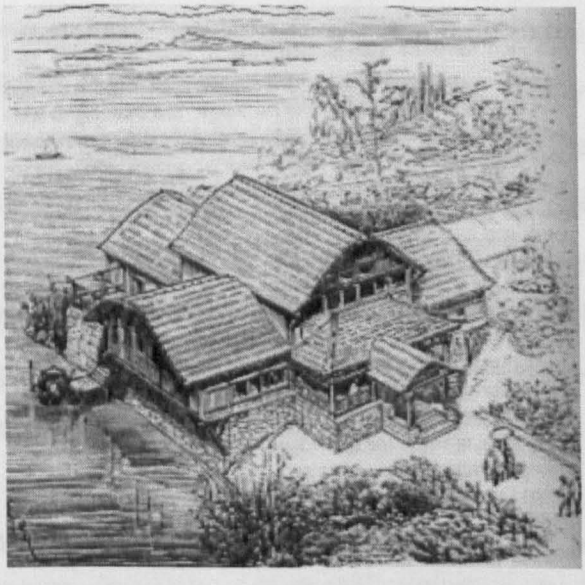


Figure [7-5] Viollet-le-Duc "A Primitive Hut"



[7-6] Viollet-le-Duc "A Chinese Bamboo House" (Perspective)

[32] Hearn, M. F., *op. cit.*, 1990, pp. 86
[33] Hearn, M. F., *op. cit.*, 1990, pp. 39
[34] Viollet-le-Duc, E., "Entretiens sur l'architecture", Paris, 1872, Chap. VII (translation read from Hearn, M. F., *op. cit.*, 1990, pp. 91)
[35] Hearn, M. F., *op. cit.*, 1990, pp. 134
[36] Hearn, M. F., *op. cit.*, 1990, pp. 120

Viollet-le-Duc's advocacy of structure and of program refers to the process of building production as a whole. He sharply points that "the creation of a modern architecture was hampered (in the nineteenth century) not by the lack of new materials or even new technology but by the lack of a design method that would make it possible to integrate all capabilities"[37]. It is indeed true that it was underdevelopment of design method that caused an abyss in the creation of modern way of building, not materialistic hardware nor technological development. Technological triumph in mid-twentieth century modernism shows a clear example of this assertion. Modern architecture could not provide quality habitation in the cities, but only resulted in ephemeral, discontinuous life in both architectural contexts and new urban settings. Bleak, dilapidated modern housing blocks that one can easily find in the cities well represent this problem.

Viollet-le-Duc's idea on the process of building also has to do with ornamentation. He essentially does not object to ornamentation, but argues it must form a part of the building process. An interesting point is that he cites a Chinese bamboo house as an example for this construction and commented that "...all the parts of this house are held together in combinations naturally suggested, and requiring little intellectual effort" [Figure 7-6]. The figure that Viollet-le-Duc has shown does, however, clearly reveal a symmetrical structure orientated to four cardinal points which suggests the tempting hypothesis that it is under the influence of the Chinese system of spatial organisation described in chapter six of this dissertation. If it is, then it is not only functionally honest structure, but also an important manifestation of an intellectual exploration reflecting the ontology of a particular culture. Be that as it may, Viollet-le-Duc's idea on ornamentation is clear enough in terms of its structural integrity.

Among the important theorisation of modern architecture, the development on the notion of "restoration" is in the centre of Viollet-le-Duc's contribution. Viollet-le-Duc wrote that "the term restoration and the thing itself are both modern. To restore is not to preserve it, to repair it, or rebuild it; it is to reinstate it in a condition of completeness that could never have existed at any given time"[38]. Faced with a number

[37] Hearn, M. F., *op. cit.*, 1990, pp. 143

[38] Viollet-le-Duc, E., "Dictionnaire raisonné de l'architecture française du XIe au XVIe siècle", Vol. 8, Paris, 1854-1868, (translation by Hearn, M. F., *op., cit.*, pp. 269)

of dilapidated buildings across France, Viollet-le-Duc formulated principles for their rational restoration according to structural unity, replacing new materials for the removed parts of the buildings while maintaining the vestige of an original architectural arrangement. On the restoration of the Cathedral of Notre-Dame de Paris, Viollet-le-Duc sustained his program for construction in the sense that its original structure must be sustained as a priori while attempting to fulfil the program of the cathedral architecture.

Despite the similarity in Britain and France in the admiration of Gothic architecture, their motivation appears opposite. Pevsner (1969) contrasted the difference between English and French apprehension of Gothic architecture. He wrote that Ruskin admired the Gothic building as alive with the life which the carver gives it who, loving his work, endows it with beauty, while Viollet-le-Duc admired the designer for his grip on the logic of rational construction[39]. Viollet-le-Duc was indeed an agnostic revealing that "it is as ridiculous to pretend that there is a God as it is impertinent to maintain that there is none"[40]. Pevsner concluded that the English Gothic Revival represented by Ruskin, was based on feelings (emotion) while the French Gothic Revival, represented by Viollet-le-Duc, was based on reasoning (rationality)[41].

It can be quite vividly represented by their approaches to new building types and the use of new materials such as iron. While Viollet-le-Duc envisaged how iron could be used for a great assembly room and a market place [Figures 7-7 & 7-8], in his "Entretiens sur l'architecture", Ruskin condemned all those new things, especially the train station. Ruskin said that "Better bury gold in the embankment than put it in ornament in the stations ... ... no one would travel in that manner who could help it"[42]. With such obvious contrasts, Pevsner sketches two figures as "Viollet-le-Duc

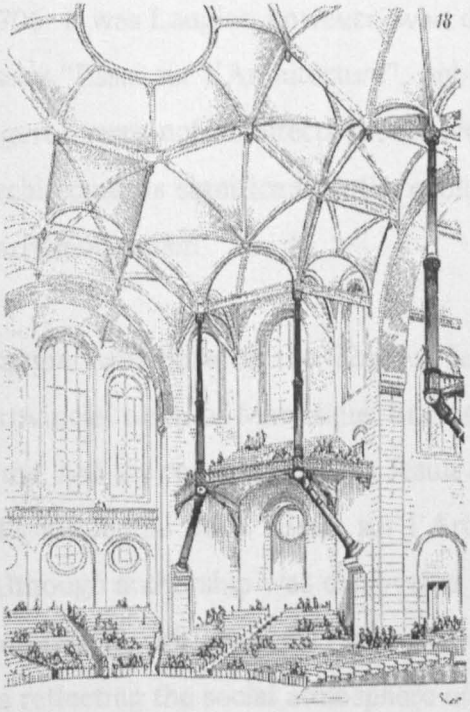
[39] Pevsner, Nikolaus, "Ruskin and Viollet-le-Duc: Englishness and Frenchness in the Apprehension of Gothic Architecture", Thames and Hudson, London, 1969, pp. 18

[40] Gout, Paul, "Viollet-le-Duc", 1914, pp. 64 According to P. Gout (*op. cit.*, pp. 70), there was no priest at his funeral. He left his body to the Autopsy Society and his brain to a museum (recitation from Pevsner, N., *op. cit.*, 1969, pp. 16)

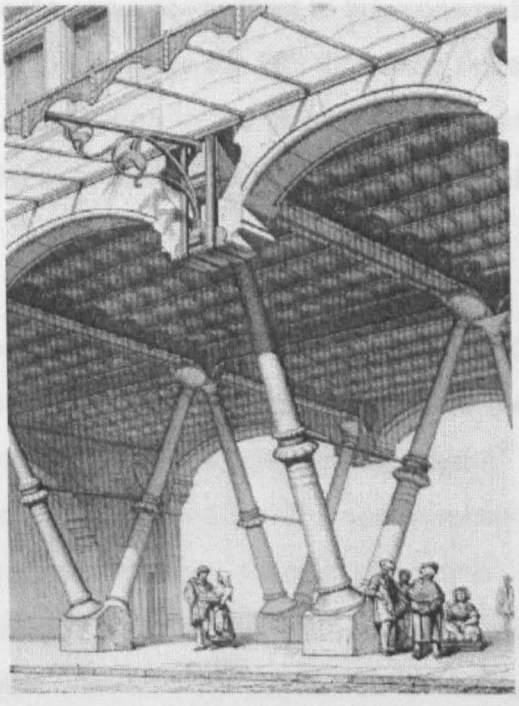
[41] Pevsner, N., *op. cit.*, 1969, pp. 24 & 42 It should be noted that Ruskin and Pugin do not accord with each other in terms of their favoured Gothic styles. Pugin took early English Gothic churches as his favoured model for the revival, while Ruskin favoured the Venetian Gothic.
See Pevsner, N., *op. cit.*, 1969, pp. 28

[42] Ruskin, John, "Seven Lamps of Architecture", 1856, pp. 159-160
(recitation from Pevsner, N., *op. cit.*, 1969, pp. 33)

wholly forward looking, Ruskin wholly backward looking"[43]. Further more, as opposed to Viollet-le-Duc's involvement in restoration, Ruskin wrote that "restoration ... ... means the most total destruction which a building can suffer"[44]. While Viollet-le-Duc still proceeded with restoration, surely being aware of this objection, Ruskin was promoting preservation of buildings enabling his pupil William Morris to found the Society for the Protection of Ancient Buildings in 1877.



[Figure 7-7] Viollet-le-Duc, Eugène
"Great Assembly Room"



[Figure 7-8] Viollet-le-Duc, Eugène
"Market Place"

[43] Pevsner, N., *op. cit.*, 1969, pp. 37
[44] Ruskin, John, "Seven Lamps of Architecture", 1856, pp. 242
(recitation from Pevsner, N., *op. cit.*, 1969, pp. 38)

7-3-1-2 Primitivism: Marc-Antoine Laugier

It was Michel de Fremin who first advocated a mechanistic type of building. In his book "Mémoires critique de l'architecture, contenans l'idee de la vraye et de la fausse architecture", published in 1702 in Paris, Fremin praised Gothic architecture in response of the function as opposed to classical architecture in an attack on ornament. Abbé de Cordemoy agreed with Fremin in "Nouveau traité de toute l'architecture" in 1706. It was Laugier, however, who developed the argument furthest in his renowned essay "Essai sur l'Architecture", published in 1753. Despite the fact that these three figures were not architects themselves, their contribution to the creation of modern architecture is significant as the evolution of ideas counts, especially in the period of early modernism.

Laugier was born on the 22nd of January in 1713 in an affluent family in the old provincial town of Manosque, France. He received the best possible education at the time, and the records from his Jesuit school prove that he was extremely intelligent[45]. His influential book "Essai sur l'Architecture" first appeared in 1753 anonymously. Although authorship was discovered not long after publication, Laugier's intention of publishing with anonymity represents his drifting away from the Jesuit order as well as reflecting the social atmosphere of France just a few decades before the Revolution in 1789. Laugier put his name to an enlarged second edition in 1755 and seems to have enjoyed some fame. Although he disagreed with the Society of Jesus, he was a sincere priest until he died, which is obvious from his unfailing commitment towards scholarship.

Laugier's second book on architecture was motivated by the redecoration of the cathedral at Amiens. The commission given to Laugier to set a new guidance for Amiens led him to speculate on the conflicting values and aspects of Classical and Gothic architecture. His speculation on the reconciliation of the Gothic and Classic architecture is documented in his "Observations sur l'Architecture", published in 1765.

[45] Herrmann, W., "Laugier and Eighteenth Century French Theory", Zwemmer, London, 1962, pp. 2

Laugier accepted the transcendent gift of talent and taste given to artists while attempting to install a rational judgement, made by man. He wrote that "The idea, held by many people, that in matters of taste there is no need for the application of a severe rational taste, is the most fatal of all prejudices"[46]. Laugier, therefore, always sought rational theories and principles as the foundation of architectural forms. Watkin (1986) notes that "the combination of reason and romance, of sophistication and rusticity, lies at the heart of eighteenth century classicism"[47]. Watkin (1977) also notes that Laugier's mechanistic and primitive interpretation could play a stylistic role in transforming Baroque to Neo-Classical as he lived in an age which did not question the supremacy of the Classical style or antiquity[48]. The equation of architectural beauty with structural honesty led to a serious investigation of Gothic architecture which culminated in the nineteenth century in the work of Viollet-le-Duc (1814-1879)[49].

7-3-2 Instrumentalism: Avant-Garde Movement

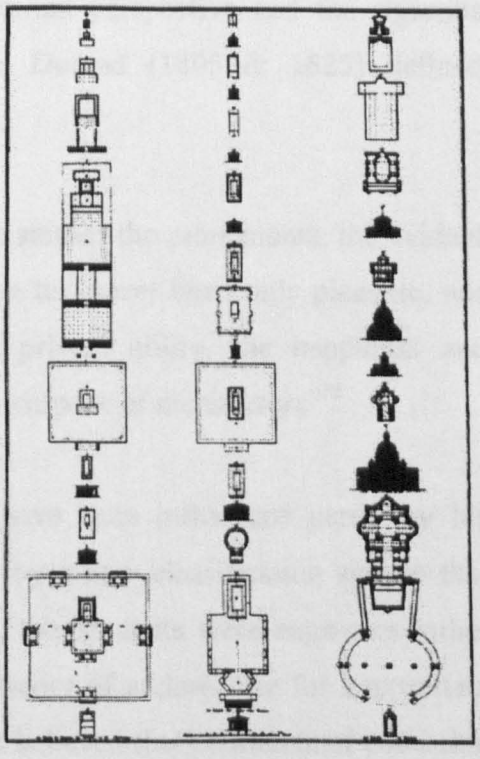
7-3-2-1 J. N. L. Durand and the Science of Architecture

The rational approach of those Romanticists culminated in the work of Jean-Nicolas-Louis Durand (1760-1834) although he was not interested in Gothic architecture[50]. Although architecture was nothing more than the rational solution for practical problems for Durand[51], he was aware of the significance of historical discourses as well as vital changes in the atmosphere of the time. As a disciple of Boullée and Leroy, he was led into a synthesis of past and present. Leroy had measured and drawn the classical monuments of Greece, and the new archaeological discoveries began engendering more stimulating writings on architecture by Durand's contemporaries. Durand's illustrations of "Recueil et Parallèle des Édifices de tout genre" showed a number of different building types from all over the world, encompassing Egypt, Greece, Rome, China, India, and also throughout time from Greco-Roman and Gothic to contemporary French architecture [Figure 7-9]. This coverage tended to generate

[46] Laugier, A., "Essai sur l'Architecture", Paris, 1753, pp. 38
(translation by Herrman, W., *op., cit.*, pp. 20)
[47] Watkin, D., "A History of Western Architecture", Laurence King, London, 1986, pp. 333
[48] Watkin, David, *op. cit.*, 1977, pp. 2
[49] Watkin, D., "The Rise of Architectural History", The Architectural Press, London, 1980, pp. 23
[50] Watkin, David, *op. cit.*, 1980, pp. 23
[51] Watkin, David, *op. cit.*, 1980, pp. 24

the criticism that Durand maybe viewed as a mere eclectic theorist. This view is, however, misleading, for what Durand tried to do was to employ a comparative method in quest of authenticity in architecture. Villari (1990) points that the comparative method could only guide judgement and reasoning for the purpose of the book as a reference work[52], and that Durand aimed to conceive architecture as a model of functional organisation for human activity[53]. Villari further notes that "Recueil et Parallèle" represented pure architectural states without a seductive appeal – no sentimental historicist representation of ruins consumed by time, no picturesque or sublime landscapes, no exoticism, no concessions to folklore, nor to the singular or extraordinary[54].

[Figure 7-9] J. N. L. Durand
Front piece of "Recueil et Parallèle" (1801)



[Figure 7-10] Illustration from
"Ruines des plus beaux monuments
de la Gréce" Leroy (1770)

[52] Villari, Sergio, "J. N. L. Durand: Art and Science of Architecture", Rizzoli, NY, 1990, pp. 54
[53] Villari, Sergio, *op. cit.*, 1990, pp. 55
[54] Villari, Sergio, *op. cit.*, 1990, pp. 56

Often Durand is classified along with Boulée, as Durand was Bouleé's most important disciple, but Durand differs from his teacher in the sense that he did not subscribe to any of the transcendental symbolic ideas that Bouleé held. Durand rejected the conventional belief in Vitruvian principles and Laugier's fairly recent idea of the primitive hut. Durand subscribed neither to the human body as a significant system or model for architecture, nor did he accept the necessity of myth.

His theory can be summed up in two treatises; the "Recueil et Parallèle des Édifices de tout genre, anciens et moderns" (between 1799 and 1801) and "Précis des leçons d'architecture données à l'École polytechnique" (two volumes in 1802 and 1805 initially and then three more editions in 1817-19, 1823-25 and 1840-the latter posthumously). With the recognition of a utilitarian perspective and the rigorous advocacy of scientific method in architecture, Durand (1805 & 1825) defined architecture as,

"whether one consults the faculty of reason or examines the monuments, the evident result is the same: the purpose of the architecture has never been only pleasure, nor architectural decoration its object. Public and private utility, the happiness and preservation of individuals and society are ... the purpose of architecture"[55]

Durand's approach to architecture appears to have been influenced partly by his teaching at the École Polytechnique, and partly by a new classification system that dominated his contemporaries. First, as most of his students were engineers rather than architects, there was a need to develop a theory of architecture for appropriate teaching. Madrazo (1994) points out that Durand believed that architectural education should be based on the study of general principles, not on the study of particular buildings or styles[56]. Durand (1819) wrote that "it is not in such a manner that one should study architecture... ... a man who plans a career as a playwright does not learn how to do this or that tragedy; a musician this or that opera; a painter this or that painting. Before composing, in whatever genre, one must know what one composes

[55] Durand, J. N. L., "Précis des leçons d'architecture données à l'École Polytechnique", Vol. 1, Paris, 1823, p. 18, recitation from Villari, Sergio, "J. N. L. Durand: Art and Science of Architecture", Rizzoli, New York, 1990, pp. 36

[56] Madrazo, Leandro, "Durand and the Science of Architecture", Journal of Architectural Education, Vol. 48, No. 1, 1994, pp. 12

with"[57]. In order to work his assertion out, he had to rely on logical steps that components of buildings in the past possess, and on how they can be re-organised in terms of common features.

Classification systems that are used to explain biological evolution in plants or animals were useful to Durand in forming a general principle of architectural theory. Biological classification systems were, in fact, used before him by his teacher Leroy in his book of "Ruines des plus beaux monuments de la Gréce" in 1758 [Figure 7-10]. Leroy showed the continuity of development and progress, from the simple to the complex, from ancient to modern[58]. The only difference between classifications in biology and architecture was the objects; species in natural sciences, and types of buildings in architecture. Madrazo therefore points out that "classification was a technique for extracting general principles from particular cases (in architecture)"[59]. The typology of architecture is not, of course, exclusive to Durand. It serves in our contemporary architectural practice as well to form a better integration between the present and the past. The emergence of modern building types such as law court and hospital is a product initiated from new needs that are imposed on to the old buildings at first, followed by a reconciliation process to combine the old with the new contents. Steadman (1979) remarks that "the practical purpose of classification in architecture, beyond historical description and scientific analysis, lies in the hope that out of an ordering of the variety of buildings of the past will come theoretical principles, which may be applied in designing new buildings, of new forms, to answer new programmes and new circumstances"[60].

Durand's effort, however, is significant in the sense that he consciously attempted to extract general principles from a building, even by elaborate modification of the plans to make them appear more regular and geometric than they actually were[61]. His attempt at reduction is shown in the comparison between St. Peter and his own plan;

[57] Durand, J. N. L., "Précis des leçons d'architecture données à l'École Polytechnique", Vol. 1, Paris, 1819, Paris, p. 28, translation from Madrazo, Leandro, *op. cit.*, 1994, pp. 12

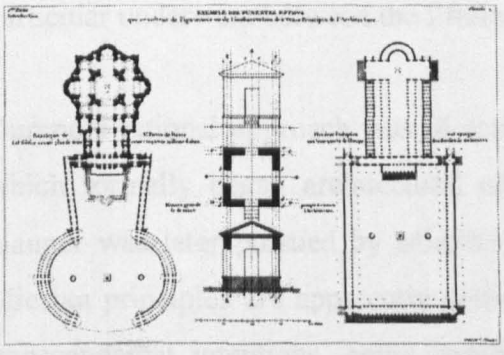
[58] Szambien, Werner, "Durand and the Continuity of Tradition" in "The Beaux-Arts and Nineteenth Century French Architecture" (ed. by R. Middleton), Thames and Hudson, London, 1982, pp. 27
It is an interesting to notice that Leroy succeeded J. F. Blondel as a Professor of Architecture at École des Beaux-Arts in 1773 although he was more an archaeologist than an architect.

[59] Madrazo, Leandro, op. cit., 1994, pp. 13

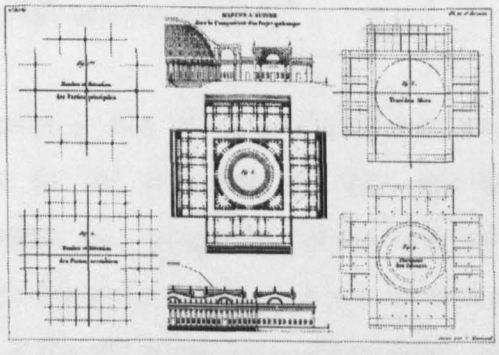
[60] Steadman, Philip, "The Evolution of Designs", Cambridge University Press, 1979, pp. 29

[61] Madrazo, Leandro, *op. cit.*, 1994, pp. 13

Durand attempted to achieve his reduction by simplification and regularisation of principles [Figure 7-11]. His procedure of reduction can be perhaps best viewed in his illustration of the evolution of building. Despite his illustration being intended to show the evolution from a rough scheme to a detailed representation of a building, it can also be understood as the opposite procedure. He starts with a complete plan and section of a building, moving to elements like walls, columns, portico, stairs, etc, on to walls and columns only, then a grid of axes, and finally to the layout of the principal axes [Figure 7-12]. This dialectic denotes that the abstract architectural form as a mere geometric scheme becomes the beginning of the creative design process[62].



[Figure 7-11] J.N.L. Durand
Basilica of St. Peter's in Rome, from Recueil



[Figure 7-12] J. N. L. Durand
Five Steps from Recueil

Durand's approach to architecture, of reductive method, involved a discovery of typology in buildings. Despite Durand's intention to reduce architectural form to a geometric figure, the geometric scheme became a generator of the architectural form[63]. Despite the fact that Durand never used the term 'type', his uses of the term 'genre' is equivalent to the word 'type' as used by Durand's contemporary Quatremére de Quincy[64]. As Argan (1963) argues, "the type is formed through a process of reducing a complex of formal variants to a common root form... ... (the type) has to be understood as the interior structure of a form or as a principle which

[62] Madrazo, Leandro, *op. cit.*, 1994, pp. 17 & 19
[63] Madrazo, Leandro, *op. cit.*, 1994, pp. 18
[64] Madrazo, Leandro, *op. cit.*, 1994, pp. 19
Mallgrave (1989) summarises Quatremère de Quincy's theory that he formulated a theory of architecture in 1785 based on three primordial types, the cave, the tent, and the hut. His three types are derived from the Egyptians, the Chinese, and the Greeks representing hunters, shepherds, and farmers. (recitation from Mallgrave, H. F., "Gottfried Semper", 1989, pp. 20 also see Lavin, Sylvia, "Quartrémere de Quincy and the Invention of a Modern language of Architecture", The MIT Press, Cambridge, MASS, 1992

contains the possibility of infinite formal variation and further structural modification of the type itself"[65], Durand's method can be interpreted as a typology of architecture.

As seen hitherto, Durand approached architecture with a rational typological method, but acknowledging artistic realms. He wrote in 1819 that "architecture is a science and an art all at the same time: like a science, architecture demands knowledge; like art, it requires talent"[66]. For Durand, the science of architecture was to extract general principles for the creation of architectural form, and his rational procedure has been by far the most explicit advocacy[67]. Moreover, Madrazo (1994) asserts that "Durand's theoretical system expresses the changes that science in general and architecture in particular underwent between the fifteenth and eighteenth centuries"[68].

Durand's rational approach was directly opposite to that of École des Beaux-Arts, which formally began architectural education for the first time in 1819, and his manner was later pursued by Miesian modernists as a pragmatic modus operandi. Miesian principles are apparently derived from Durand's theory that was devoid of transcendental intentions, being reduced to a formal game of combinations, but meaning was supposedly created within the system. For Durand, architecture became a language whose possible meaning depended entirely on syntax, and absolute semantic relations were obviously beyond positivistic reason[69]. Pérez-Gómez (1983) has noted earlier that "architectural theory during the nineteenth century would be founded on the belief that all the variables of the real world can be reduced to the conceptual realm and the resultant of any architectural problem is a direct "function" of the combination of these variables"[70].

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[65] Argan, Giulio Carlo, "On the Typology of Architecture", Architectural Design, Vol. 12, London, 1963, pp. 565, (translated by Joseph Rykwert)

[66] Durand, J. N. L., "Précis des leçons d'architecture données à l'École Polytechnique", Vol. 2, Paris, 1819, Paris, p. 1, translation from Madrazo, Leandro, *op. cit.*, 1994, pp. 20

[67] Despite Italian architect Andrea Palladio (1508-80) had pursued the same goal of general principle of architecture in his book of "Quattro Libri dell' Architettura (1570)", his approach is in principle antithetical to that of Durand. Palladio first searched for the general principles while Durand began with the complete built form and then reduces them into elements. See Madrazo, Leandro, *op. cit.*, 1994

[68] Madrazo, Leandro, *op. cit.*, 1994, pp. 21

[69] Pérez-Gómez, A., "Architecture and the Crisis of Modern Science", The MIT Press, 1983, pp. 304

[70] Pérez-Gómez, A., *op. cit.*, 1983, pp. 322

7-3-2-2 Gottfried Semper (1803-79)

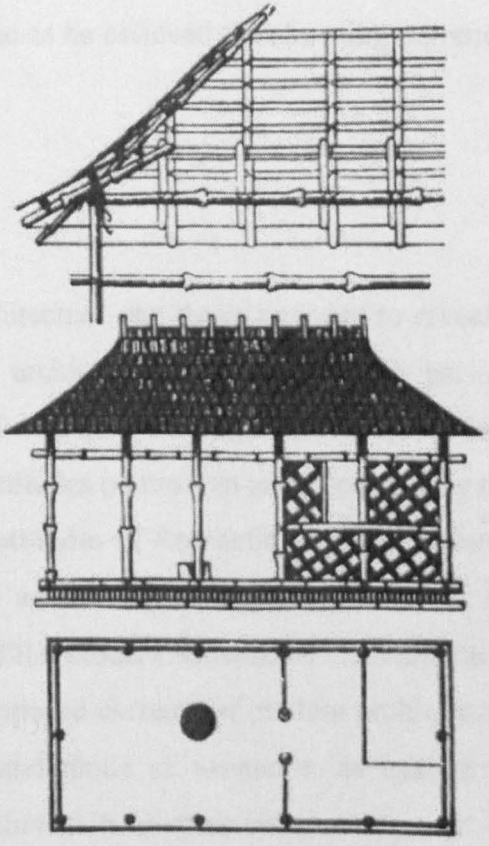
The significance of Gottfried Semper is his eclectic understanding of the inherent conflicts in the conditions of modernity; a dilemma of the continuity of tradition versus a genuine creativity. Semper's ideas were close to Viollet-le-Duc's organic approach in the sense that both emphasised principles of architecture; Semper attempted to rationalise architectural principles in a pretty similar fashion. What Semper was strongly influenced by at the time was biology, which made a great development by then. Classification of prehistoric animals by Baron Cuvier in the Jardin des Plantes in Paris was, for him, a clear idea of function of the parts making a whole, not a morphological resemblance which does not seemingly perform a continuous process. Despite his recognition of the function of architecture, which he admitted as the earlier achievement of J. N. L. Durand, he also subscribed to the importance of an aesthetic dimension. Watkin (1980) notes that "(Semper) firmly believed that religious and political ideals, no less than functional requirements, can shape architecture", and that Semper was under the influence of a Darwinian perspective[71], gradually leading towards Cuvier's scientific biology. Semper was indeed well aware of the fact that monumental architecture has always served as the symbolic dress of the prevailing social and political institutions, used and manipulated by leaders to stabilise, develop, and expand their power and the power of the system, while individuals can modify or overturn the tradition which he found in the form and logic of Roman Empire[72]. This is reason why he produced both Neo-Gothic and Neo-Baroque buildings.

Semper's idea is well documented in his two publications among others; (1) Die vier Elemente der Baukunst (The Four Elements of Architecture, 1851), and (2) Der Stil in den technischen und tektonischen Kunsten, oder praktische Aesthetik (Style in the Technical and Tectonic Arts or Practical Aesthetics, 1859). Watkin (1986) summarises the contents of these works as the reduction of every significance in the origin of architecture, art and crafts into four fundamental processes of making and

[71] Watkin, David, *op. cit.*, 1980, pp. 9
[72] Mallgrave, Harry Francis "Gottfried Semper: The Four Elements of Architecture and Other Writings", Cambridge University Press, London, 1989, pp. 40

their associated materials[73]. In "Der Stil", Semper divided the work into four parts of textile (weaving), ceramics (moulding), tectonics (carpentry) and stereotomy (masonry). Metal was before then excluded as Semper thought 'types', that he believed were basic forms prescribed by needs, existed when metal came available. Certainly, new needs made the use of new material (metal) more popular, and in the fifth chapter, which Semper added later, metal is included. In order to understand what Semper has actually written, it is important to notice that the German word 'Elemente' is not pretty much the same as English 'element', but as 'motives' or 'ideas', as technical operations based in the applied arts[74]. His four processes are then hearth, roof, enclosure and mound.

[Figure 7-13] Gottfried Semper
'Wreath'



[Figure 7-14] Gottfried Semper
'Caribbean Hut'

Semper advocated that ornament is not always superseded by structure, but it does have an a priori significance which he exemplified in the funeral wreath as well as in

[73] Watkin, David, *op. cit.*, 1986, pp. 422
[74] Mallgrave, Harry Francis "Gottfried Semper: The Four Elements of Architecture and Other Writings", Cambridge University Press, London, 1989, pp. 24

the weaving pattern in the Caribbean hut [Figure 7-13 & 7-14]. Hvattum (1995) argues that Semper embodied an essential tension between his sensitive recognition of the symbolic significance of architecture, and proto-positivism[75]. For Semper, style was a core idea of artistic significance, and that he believed it can be changed in accordance with materials, tools as well as local character such as place, climate, custom and the like. Semper explicitly expressed his conviction about a new mode of production and a new architecture, seeing devaluation of material, labour, and also of time and space. He wrote that "everything can be made everywhere, and it is made by machine and not by hand ... Even whole houses can be bought ready-made in the market... ... there is the speculator instead of the patron. The artist becomes the slave of the employer and of the fashion of the day"[76]. His stance on modern architecture and modern modes of production was optimistic as he believed the changing currency would eventually benefit the public.

7.4 Summary

As opposed to the East Asian paradigm in architecture, the thesis intended to reveal a historical meaning of modern traditions in architecture in its emerging period, examining exactly how the dynamic forces of modern architecture could thread into Western modernism in general. A number of attitudes on modern architecture after the Renaissance are looked at and two opposing attitudes of Romantic and Avant-Garde are identified. The Puginian Gothic Revival and the Instrumentalism of J. N. L. Durand are considered as emerging currents of the Modern Movement in architecture. They are constructed as complementary yet opposed currents of modern architecture; an attitude still subscribing to a transcendental mode of existence, as against an opposing current which takes scientific rationality as its ultimate virtue.

[75] Hvattum, Mari, "Gottfried Semper: Towards a comparative science of architecture", Architectural Research Quarterly, Vol. 1, No. 1, London, 1995, pp. 68

[76] Semper, Gottfried, "Kleine Schriften", Berlin and Stuttgart, 1883 (recitation from Pevsner, Nikolaus, "Some Architectural Writers of the Nineteenth Century", Clarendon Press, Oxford, 1972, pp. 259

Chapter 8

Conflicts of the Modern Movement in Architecture

8.1 An Approach to Modern Architecture

In order to better conceive the historicity of progressiveness of architecture, it is essential to assess modern architecture as a whole embracing ideas hitherto not very much deeply appreciated. It is rather urgent in the sense that, after the flourish of a number of '~isms', such as Functionalism, Modernism, Post-modernism, De-constructivism, there still lies a question of what modern architecture was all about. As a critique to what is known as the prevailing Modern Movement, this chapter attempts to verify what modern architecture essentially attempted, and how varying dynamics within the Modern Movement were reduced to the "International Style". The most important claim in this chapter is that Modern Movement involved a number of dynamic attitudes and values, and that Modern Movement is not a moribund body of theory mistakenly reduced to a single 'style'. Looking back with more balanced eyes will find Modern Movement as a vision, which may serve as a way out of the contemporary abyss of architectural 'styles'.

Modern Movement at its public debut is first of all in question, for the whole phenomenon of Modernism appears to be unbalanced from its outset. St. John Wilson (1995) noted that "...the Modern Movement did not die but rather that its authority was usurped, right at the moment of its emergence into public identity at the foundation of the International Congress of Modern Architects. It is not so much that 'the good intentions of modern architecture' were not fulfilled but rather that they were abandoned at birth"[1]. Until quite recently, the alternative ideas, which were firmly theorised and pursued by many other architects, were not given an appropriate attention for their authentic values and the potential contribution towards the refined modern architecture.

[1] St. John Wilson, Colin, "The Other Tradition of Modern Architecture: The Uncompleted Project", Academy Editions, London, 1995, pp. 6

In the course of debate in the establishment of modern architecture in the early twentieth century, a number of different sets of approaches emerged over new conditions of modern society. Those varying sets of approaches, however, had only one mission which was to provide a new architecture for a new era. Zevi (1950) described the need for a new kind of architecture as follows;

"The owner of a limousine that looked like a stage-coach would be ashamed of it: on the other hand the owner of a new house with a Tudor or a Queen Anne façade is still only too often very satisfied with his acquisition. Our houses, no less than our clothes or our means of transport, ought to be different from those of our ancestors, to be more convenient and simpler"[2].

Among the different sets of values and principles pursued by diverse groups of architects, two major streams may be identified, i.e., International Style and Organic Movement as opposed to each other, the former derived from machine aesthetics and the latter inherited from the Gothic Revival. Modern Movement showed itself in the principles of International Style or universal architecture quite often, which was undoubtedly a main voice of the 1920s onwards. It is, however, most unfortunate to impose a simple interpretation over Modern Movement in general. In 1920s Europe, there existed yet a complex dynamics among different genres such as painting, sculpture and architecture, and that their relationship had not been studied deeply enough[3].

Two opposing attitudes in the early 1920s, that of universal architecture of Mies, Gropius and Corbusier, and of so-called expressionism, of Poelzig, Taut, Mendelsohn and Scharoun, are further developed into International Style, identified by the Museum of Modern Art exhibition in 1932, and organic architecture, pioneered by Frank Lloyd Wright, respectively. The universal conviction of Miesian architecture, based on spatial flexibility and systemised mass production, possessed rather totalitarian perspectives on architectural design, thus accepted 'function' as the

[2] Zevi, Bruno, "Towards an Organic Architecture", Faber & Faber, London, 1950, pp. 23

[3] The Russian Constructivism is particularly significant in understanding German Expressionism. The works of El Lissitsky and Kasimir Malevitch have shown spatial composition in close association with architecture, and Expressionist architects also attempted to envisage unbuildable images of their ideal architecture into works of painting. See Blundell-Jones, Peter, "Hans Scharoun", Phaidon, London, 1995, pp. 34

ultimate virtue. What should be here fundamentally emphasised is that the Expressionist architects also developed their utopian ideals into a functional one. Expressionists were no less inspired by technology and programme than those universalist architects, but they discovered a new vocabulary in their own right. Although their achievement and intellectual seriousness are often undervalued, they perhaps pursued a better-developed architecture in 1920s when one looks back. Posener (1972) argued that "they (Expressionists) are not, as has sometimes been suggested, the phantasies of a sculptor. Sculptural they are, no doubt; but they remain within the realm of architecture"[4]. The transition of Expressionism to Functionalism, was therefore not retrogressive, but progressive and rewarding. Blundell-Jones (1995) argued that, "For the imaginative architect, functional requirements and the demands of building technology can be an inspiration rather than a restraint, and can suggest a new vocabulary, pushing the work in new directions. Thus the so-called transition from Expressionism to Functionalism between 1920 and 1925 had much to do with the rediscovery of a new built world after a period of abstinence... ... they enlarged their architectural vocabularies and deepened their understanding"[5].

Those representatives of modern architectural dynamics can be clearly seen in the 1927 housing project at Weissenhof in Stuttgart. The so-called Expressionist architects joined the project producing works that seemed to display plastic conformity in tune with those of Mies and Corbusier, although Häring and Mendelsohn eventually withdrew. Although these Expressionists also produced somewhat square or cubic looking buildings, Blundell-Jones dismisses their formal conformity as superficiality and illusion, for their approaches fundamentally differ from those universalist architects[6].

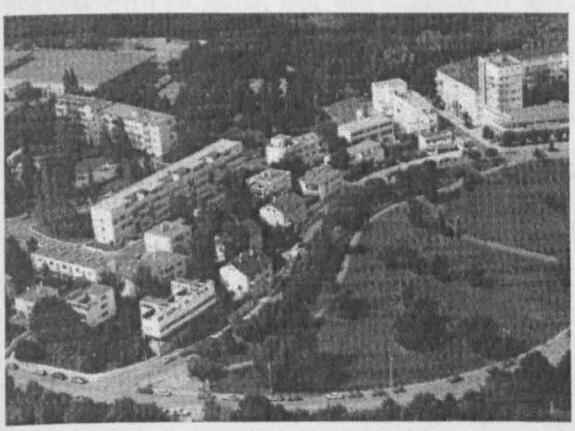
Considering the Modern Movement as a style as Hitchcock and Johnson have done as 'tourists' is not just a mere caricature of complex energies generated in the most intellectual minds. It also involves a shift from a major intellectual enterprise to a mere style; a shift with massive implications. There existed a far greater diversity and

[4] Posener, Julius, "From Schinkel to the Bauhaus: Five Lectures on the Growth of Modern German Architecture", Architectural Association Paper No. 5, Lund Humpries, London, 1972, pp. 30
[5] Blundell-Jones, P., *op. cit.*, 1995, pp. 35
[6] Blundell-Jones, P., *op. cit.*, 1995, pp. 35

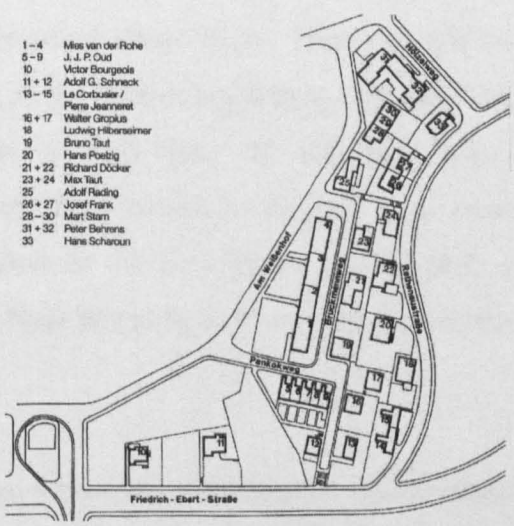
complexity with emerging dynamics of Modern Movement than was reported in the Museum of Modern Arts exhibition of 1932 in New York.

8.2 Weissenhof Siedlung in 1927

The first meeting of CIAM (*Congrès Internationaux d'Architecture Moderne*) at the castle La Sarraz in Switzerland in June 1928 subordinated a number of different values and approaches of modern architecture, which were previously shown explicitly in the Exhibition of Stuttgart Weissenhof Siedlung in 1927, under Corbusian dogma. At this event of 1928, Le Corbusier virtually imposed his regime on modern architecture over the opposition, and his dominance lasted for many years. It is therefore most valuable to examine what Weissenhof Siedlung saw in terms of diverse shaping forces of modern architecture [Figure 8-1 & 8-2].



[Figure 8-1] Weissenhof Siedlung, View



[Figure 8-2] Weissenhof Siedlung, Plan

In 1925, Mies van der Rohe had been asked to direct a major Werkbund exhibition to be held in Stuttgart. It was going to be the biggest event for the Werkbund after the 1914 Cologne exhibition. For the 1927 Deutsche Werkbund exhibition in Stuttgart, 'Die Wohnung', the primary aim was to provide a comprehensive picture of specimen houses with the finest technological, hygienic and artistic achievements. The Weissenhof site was used for specimen houses, and the Städtisches Ausstellungsgebäude in the Stuttgart city centre for the exhibition. Through a lengthy and difficult decision making processes in both Württenburg Werkbund and the city

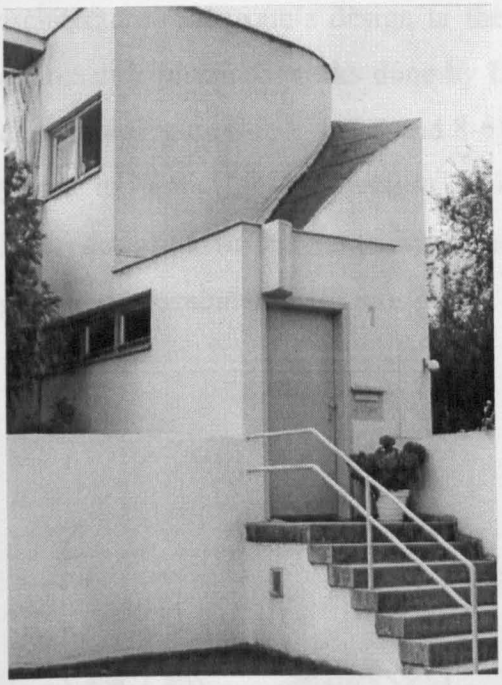
council of Stuttgart, the Weissenhof project eventually got an appointment of architects. Those invited were Le Corbusier, Walter Gropius, Ludwig Hilberseimer, J. J. P. Oud, Peter Behrens, Hans Poelzig, Adolf Rading, Bruno and Max Taut, Hans Scharoun, Victor Bourgeois, Adolf Gustav Schneck, Bruno Taut, Richard Döcker, Josef Frank, Mark Stam and Ludwig Mies van der Rohe himself (total of 17 architects). At the opening ceremony, the Werkbund chairman Peter Bruckmann claimed that housing became a concern for the whole world, and it was reason why architects from other countries are invited for that occasion. Ludwig Mies van der Rohe, the deputy chairman of the Werkbund and artistic director of the exhibition, said the very essence of the event as;

"The problems of the New Home are rooted in the altered material, social, and mental structure of our time; and it is only from this standpoint that those problems can be understood. The degree of structural change determines the character and the extent of the problems. There is nothing arbitrary or personal about them. They can not be solved with slogans; nor are slogans of any use in the continuing debate on them. The issue of rationalisation and standardisation is only part of the real issue. Rationalisation and standardisation are no more than means to an end; they must never become an end in themselves. The problem of the New Home is ultimately a problem of the mind, and the struggle for the New Home is only one element in the great struggle for new forms of living"[7].

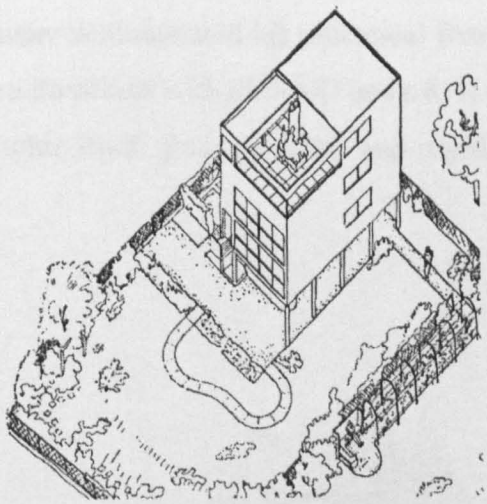
With such an aim in mind, architects who were invited showed convincingly rationalised approaches. Behind the scenes of the 1927 event, however, there existed complex politics which even dismissed Le Corbusier at one stage, on the ground that he was from the west part of Switzerland (then the hated French region). Le Corbusier attended because Mies, who directed the project, strongly argued to Stuttgart City Council that Le Corbusier's attendance was essential, stressing that his publications had been well recognised, and he was especially influential abroad. It was Le Corbusier's architectural approach, however, that brought Mies to include him, more than his international fame. Häring and Mendelsohn, on the other hand, withdrew from the scene, as a result of their incompatibility in approaching the project, in terms

[7] Kirsch, Karin, "The Weissenhof Siedlung", Rizzoli, New York, 1987, pp. 19

of socio-economic context, as well as their general architectural principles. Even in Stuttgart, sharp contrasts of attitudes between tradition and innovation for the Weissenhof project appear to be already manifest. Posener (1981) noted that "the Weissenhof people liked to think of themselves as radical innovators; the Schmitthenner people liked to see themselves as defenders of a core tradition"[8].



[Figure 8-3] Weissenhof Project
Hans Scharoun



Le Corbusier-Weissenhof (13)

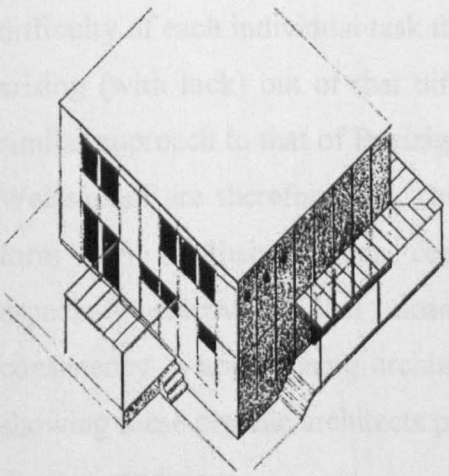
[Figure 8-4] Weissenhof Project
Le Corbusier

Häring, as an elected secretary of Der Ring, once shared an office with Mies upon his invitation. They managed their relationship well until Häring intervened on behalf of Der Ring arguing that each participating architect of Weissenhof Siedlung should receive higher fees from Stuttgart council. What can be perhaps misinterpreted in looking at this event is Häring's withdrawal from the list due to his unhappiness regarding payment, for it appears that Häring's dismissal is rather misrepresented. What actually made Häring leave eventually was that his uncompromising conviction about modern architecture differed from that of Mies[9]. They shared an office only for

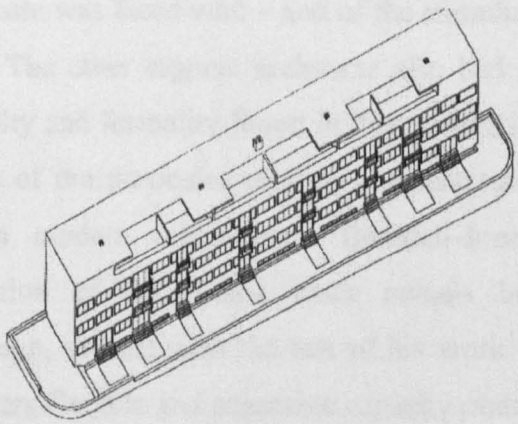
[8] Posener, Julius, "Weissenhof und Danach", 1981
(recitation from Kirsch, Karin, "The Weissenhof Siedlung", Rizzoli, New York, 1987, pp. 12)

[9] It should be noted that both Häring and Mies must have known each other that they have different

political purposes, and they were well aware of it. Häring had primarily a different view on the nature of the Weissenhof project. Mendelsohn and Tessenow who also stood in the same line also withdrew their appointments. Häring's place was later filled by Peter Behrens with three other architects Bruno Taut, Hans Poelzig and Hans Scharoun. Although Häring withdrew, his ideas can still be detectable from the works of Hans Scharoun and Taut who also stood in his line of approach in modern architecture. Scharoun's design in the corner site has shown dramatically different approach from those works done by Le Corbusier and Gropius as well as Mies van der Rohe [Figure 8-3, 8-4, 8-5 and 8-6]. Le Corbusier demonstrated his polemical five points, in "Vers Une Architecture" of 1923, in two dwellings with *pilotis* [Figure 8-4]. Mies designed in his large apartment block with rigid grid modules and rigid geometric vocabularies [Figure 8-6].



[Figure 8-5] Weissenhof Project
Walter Gropius



[Figure 8-6] Weissenhof Project
Mies van der Rohe

As Mies himself arranged the site plan, he must have had a better idea about what he was about to build than any other participating architects. In the Siedlung, as widely known, Mies, Gropius and Le Corbusier have designed housing units under standardised geometric rules, while Taut and Rading produced site-specific projects, and especially Scharoun even more so, respecting the curvy corner site, which

approaches, but shared the same conviction that they must build a new architecture for a new era. Not surprisingly, they became extreme opponents of the modern movement parlance. They shared an office at 24 Am karlsbad in Berlin.

induced architectural form out of its functional programme inside, not repeatable for other sites. The fundamental significance of the Weissenhof event is that the two opposing tendencies in shaping modern architecture seemed to unite behind the success of the exhibition and Mies's propaganda. Weissenhof Siedlung is in fact a place of contradiction in building modern housing in tune with modern mode of living. Despite the rigid formal conformity of the buildings presented in Weissenhof Siedlung, there were serious conflicts between universality and specificity, formality and organism, and rationality and functionality. The confrontation between pure formalism and organic functionalism is visible when one looks at designs of Gropius, Mies, Corbusier, Hilberseimer, Oud and Stam as opposed to Rading, Döcker, Poelzig, Taut and Scharoun; the former universal with a repetitive gridded geometry irrespective of site and context, while the latter are site-specific. Posener (1972) described the polemic difference of Expressionism in Poelzig's attitude as opposed to Mies' formalism that "He (Poelzig) was suspicious of formulae. He was aware of the difficulty of each individual task the architecture was faced with – and of the stimulus arising (with luck) out of that difficulty"[10]. The other organic architects also had a similar approach to that of Poelzig. The rigidity and formality found in their works in Weissenhof are therefore only characteristic of the particular project, and that they form part of their organic conviction in modern architecture. Blundell-Jones especially discovered that close examination of Scharoun's work reveals his consistency in approaching architectural design, in tune with the rest of his work[11], showing these organic architects possessed very flexible and adaptable capacity under diverse conditions.

The success of Weissedhof led to the formation of CIAM. The meeting at La Sarraz was attended by twenty four architects from eight countries, but the proposals resulted in the event, known as the 'Manifesto of La Sarraz', are prepared by Le Corbusier, and it dominated other participants. St. John Wilson (1995) remarked that "... it is very disturbing to read in retrospect the extent to which Le Corbusier ... ... quite frankly professed that these proposals would have to be imposed by a ruling caste; and he was prepared to go to any length in pursuit of the power to put his ideas into

[10] Posener, Julius, *op. cit.*, 1972, pp. 26
[11] Blundell-Jones, P., *op. cit.*, 1995, pp. 46

practice in the teeth of all opposition"[12]. Le Corbusier's proposals were six-fold: (1) Modern technology and its consequences, (2) Standardisation, (3) Economy, (4) Urbanisation, (5) Education, (6) Realisation.

Le Corbusier intended to change a conventional aesthetic dimension in architecture, but reduced issues within the realm of technology. Le Corbusier's approach to modern architecture was vividly represented in his book of 1923 "Vers une Architecture". In it, he proclaimed the machine aesthetic. He wrote the famous phrases "the house is a machine for living in", and "the plan proceeds from within to without; the exterior is the result of an interior", each rather contradictory to the other[13]. Le Corbusier believed that machinery, a new factor in human affairs, has aroused a new sprit of a new epoch[14]. He wrote that "... a chair is in no way a work of art; a chair has no soul; it is a machine for sitting in"[15].

8.3 The Bauhaus and International Style

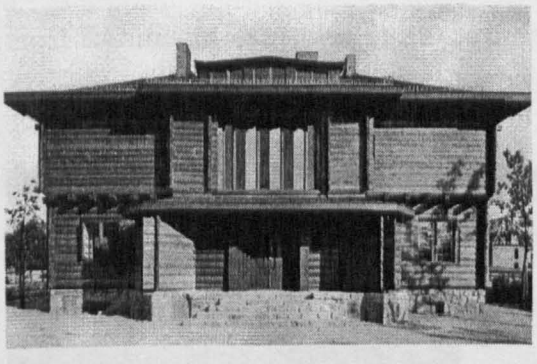
The advent of the Bauhaus at Weimar in 1919 marks a significant point in German modernism as it opened young artists to initiate their learning without the burden of the traditional impositions, offered in the foundation course. It is, however, inappropriate to regard it as a total break from German tradition. The Bauhaus was an outcome of continuous effort to reform art education in Germany as it was formed by two established institutions in Weimar, the old Academy of Fine Arts and a Kunstgewerbeschule (School of Applied Arts) founded by Henry Van de Velde in 1906. This merger may give the impression that there exists a fusion between two modes of pedagogic inspiration, which is perhaps true. The aim of the Bauhaus, however, was clearly expressed in the 'Proclamation of the Bauhaus Weimar. Gropius (1919) wrote that,

"A ground work of craft discipline is essential to every artist. Let us create a new guild of craftsmen, without class snobbery that tries to erect a haughty barrier between artist and craftsman. Let us conceive, consider and create together the new building of

[12] St. John Wilson, C., *op. cit.*, 1995, pp. 6
[13] Le Corbusier, "Towards a New Architecture", The Architectural Press, London, 1927, pp. 10-11 (originally published in French in Paris in 1923)
[14] Le Corbusier, *op. cit.*, 1927, pp. 84
[15] Le Corbusier, *op. cit.*, 1927, pp. 132

the future that will bring all into one simple integrated creation: architecture, painting and sculpture rising to Heaven out of the hands of a million craftsmen, the crystal symbol of the new faith of the future"[16].

Gropius attempted to put architects, artists and craftsmen into the same dimension, encompassing the specialisms of those professions, formulating the combined principles for the builders of a new era. The Bauhaus at Weimar offered the 'Vorkurs' (foundation course) to all students, and every student had to pass it before beginning their chosen fields. The 'Vorkurs' was first directed by Johannes Itten, and he encouraged students to cultivate a relation between forms and emotions. Itten, a Swiss painter, believed that there existed a certain mechanism between a state of mind and its visual manifestation. Itten's stance then naturally brought an uneasy relationship with Gropius, who believed in machine aesthetics. Gropius, however, was not a stark cubic universal architect from the beginning. In fact, he was even closer to Expressionaist architects in the sense that he showed his spiritual naivity in his Sommerfeld House (1920-21) which embraced vernacular images and even ornamentation [Figure 8-7].



[Figure 8-7] Sommerfeld House (1920-21)

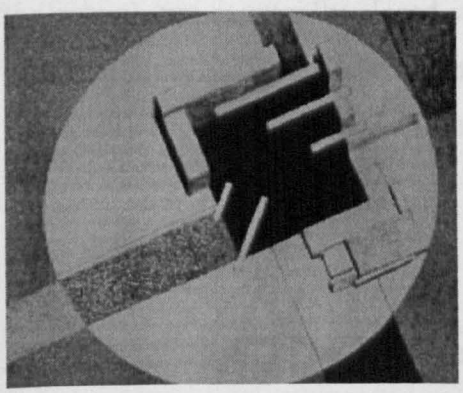
The influence of Muthesius was apparent in the first phase of the Bauhaus, but Gropius became more inclined to an industrialist view towards the mid 1920s. In the case of Itten, he was certainly a visionary who wanted to initiate a new kind of product free from conventional beliefs. Curtis (1995) pointed out that Itten encouraged his students to 'unlearn' the habits and clichés of European 'academic' tradition, and to make a new beginning through experimentation with natural materials and abstract forms[17]. Despite the fact that their conviction towards a new form for the future was the same, their different approaches eventually caused Itten's

[16] Gropius, Walter, "Proclamation of the Bauhaus Weimar", 1919
(trans. from Curtis, W., "Modern Architecture since 1900", Phaidon, London, 1996, pp. 184)
[17] Curtis, W., "Modern Architecture since 1900", Phaidon, London, 1996, pp. 185

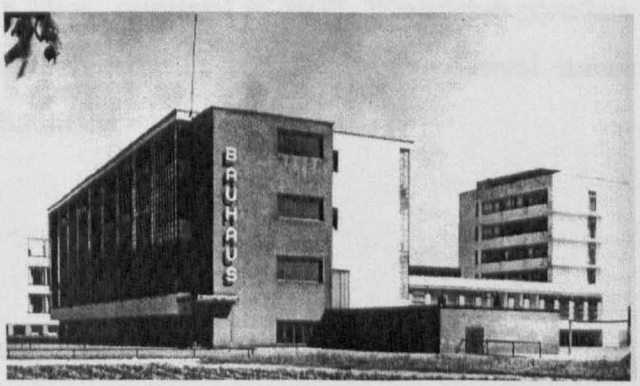
leaving. Gropius wrote an essay "Idee und Aufbau des Staatlichen Bauhauses Weimar (The Theory and Organisation of the Bauhaus)" in 1923 in a careful attack on Itten. An excerpt runs:

"The teaching of craft is meant to prepare for designing for mass production. Starting with the simplest tools and least complicated jobs, he [the Bauhaus apprentice] gradually acquires ability to master more intricate problems and to work with machines, while at the same time he keeps in touch with the entire process of production from start to finish, whereas the factory never gets beyond the knowledge of one phase of the process. Therefore the Bauhaus is consciously seeking contracts with existing industrial enterprises, for the sake of mutual stimulation"[18].

Gropius' essay resulted in Itten's immediate resignation, and he was replaced by László Moholy-Nagy. A Hungarian refugee, Moholy-Nagy was a radical socialist, and he had come to contact with Russian Constructivists such as El Lissitzky [Figure 8-8][19]. With a series of expansions and developments, there also came a rough time. The political changes brought the dissolution of the Bauhaus in Weimar and it had to move to Dessau. The new building for the Bauhaus was designed by Gropius himself, and it was built between 1925-26 [Figure 8-9]. The building remains as one of the most significant examples in modern architecture or 'International Style' before the term was actually inaugurated in 1932 in New York.



[Figure 8-8]
El Lissitzky '*Proun IE*' (1921)
Stedelijk Van Abbemuseum, Eindhoven



[Figure 8-9] The Bauhaus, Dessau (1925-26)
Walter Gropius

[18] Gropius, Walter, "Idee und Aufbau des Staatlichen Bauhauses Weimar (The Theory and Organisation of the Bauhaus)" , Berlin, 1923 (trns. from Frampton, Kenneth, "Modern Architecture: A Critical History", Thames and Hudson, London, 1992, pp. 126)

[19] Curtis noted that El Lissitzky attempted to combine Bourgeois spiritual legacy with the emerging utilitarian social objects in modern Russia. He wrote that abstract 'Prouns' were conceived as

The formation of the department of architecture in 1927, led by Swiss architect Hannes Meyer (1889-1954), brought a radical transformation in subsequent years, after Gropius was forced to resign in 1928. After Meyer was appointed head of the institution, he organised the Bauhaus into four departments; architecture, advertising, wood and metal production, and textiles. Meyer's conviction is well presented in his essay 'building' in 1928 claiming that all things in this world are a product of the formula: "building = function times economy", and that "building is a biological process, building is not an aesthetic process". He attempted to construct human needs into certain categories claiming these are the only motives when building a house; i.e., (1) sex life, (2) sleeping habits, (3) pets, (4) gardening, (5) personal hygiene, (6) weather protection, (7) hygiene in the home, (8) car maintenance, (9) cooking, (10) heating, (11) exposure to the sun, (12) service.

Politically Meyer was more radical than Gropius which eventually led his dismissal in 1930. Under Meyer's directorship, the Bauhaus had still further moved to socialist ideas, even closer to 'Neue Sachlichkeit (new actualness)', perhaps reactionary to the enforcement from extreme right nationalist, and more likely because of Hannes Meyer's social conviction. His successor Mies van der Rohe also could not sustain the school long after, as National Socialism (Nazis) grew more and more influential, and the school was eventually closed with Mies' dismissal in 1932. It was due corollary that the socialist Bauhaus was not favoured by the Nazis, and its political stance eventually brought the demise of the Bauhaus.

8.4 Organic Architecture

8.4.1 Definition of Organic Architecture

In an effort to put 'Functionalism' and 'Organism' as the opposed parlance of architectural tradition in modern architecture, it is useful to define what 'organic architecture' refers in this dissertation. The term 'organic architecture' was used by many authors for different purposes from time to time. Lagueux (1999) argues that there is a need of a clear definition of 'organicism', as "it (organic architecture or

ideograms with a Utopian content, and also as a basic form-language applicable to sculpture, furniture, typography or buildings. see Curtis, W., *op. cit.*, 1996, pp. 202-203

organicism) has typically been employed by architects who were in the business of promoting their own architecture by using it to highlight its qualities and to implicitly contrast these with the shortcomings of other types of architecture"[20]. A biological metaphor of progress is the common feature of the 'organisms', and that it needs to be critically assessed before it can further continue to be addressed as an alternative tradition in Modern Movement. St. John Wilson (1995) pointed out that the meaning of organic architecture should not be interpreted as a literal analogy to the form of nature nor to point to some hypothetical 'freedom' of form, but to a process that makes possible a greater precision of form[21].

It was Bruno Zevi who initiated the theorisation of an organic architecture by urging people to think architecture in terms of space. He launched an organic perspective in architecture stressing that houses should grow like plants with the progressively changing requirements of their inhabitant[22]. It was an attempt to validate the architectural theory in its own right independent from theories of other genres of painting and sculpture hitherto dominating the intellectual platform of the architectural discipline. Pevsner (1943) also remarked that it is in its spatial quality that architecture distinguishes itself from painting and sculpture[23]. The imposition of form or mass prior to the definition of internal space, as the cases for sculpture, was indeed a clear impediment to develop better works of architecture and Zevi believed it hampered the unity of public support for architecture. Zevi (1957) noted that "a satisfactory history of architecture has not yet been written, because we are still not accustomed to thinking in terms of space, and because historians of architecture have failed to apply a coherent method of studying buildings from a spatial point of view". He further argued that "the façade and walls of a house, church or palace, no matter how beautiful they may be, are only the container, the box formed by the walls; *the content is the internal space*"[24].

[20] Lagueux, Maurice, "Reconfiguring Four Key'~isms' Commonly Used in Architectural Theory", British Journal of Aesthetics, Vol. 39, No. 2, April, 1999, pp. 180

[21] St. John Wilson, Colin, "The Other Tradition of Modern Architecture", Academy Editions, London, 1995, pp. 72

[22] Zevi, Bruno, "Towards an Organic Architecture", Faber & Faber, London, 1950, pp. 71-72

[23] Pevsner, Nikolaus, "An Outline of European Architecture", Pelican Books, London, 1972 (first published in 1943)

[24] Zevi, Bruno, "Architecture as Space: How to Look at Architecture", Horizon Press, New York, 1957, 1974, pp. 22-24

Zevi juxtaposed 'Organic Architecture' and 'Functionalism' as the two most important conceptions in architecture; as opposed to each other, the latter is strictly rational, while the former is organic with a full sense of humanity. He claimed:

"organic architecture satisfies more complex needs and functions; it is functional not only in technics and utility, but also in terms of human psychology. It bears a post-functionalist message which speaks of the humanisation of architecture"[25].

It appears pretty clear in his notion of 'post-functionalism', i.e., 'organic architecture', that it refers to the functionalism which has become more profound and has gone deeper in building traditions of modern architecture. Zevi further eulogised the organic concept as "The Organic Movement is not merely a current in taste or an anti-stereometric and anti-prismatic vision of space, but is aimed at creating spaces which are not only beautiful in themselves, but represent the organic life of the people who live in them"[26]. He demonstrated that the organic architecture is represented by Frank Lloyd Wright, and the Functionalism was brought into play by the Chicago School of 1880-1890 culminating in the Swiss-born French Le Corbusier. A further conceptualisation of an organic architecture would be putting polemic examples of organic architecture as Posener (1972) pointed out that the work of Mies van der Rohe would be the culmination of anti-organic architecture[27]. Blake (1960) also labelled Wright as the master of space while Le Corbusier was the master of form, and Mies the master of structure[28].

What is here confusing in determining the term 'organic architecture' is that Le Corbusier also promoted his own organicism by saying that "the plan proceeds from within to without; the exterior is the result of an interior" in his 1923 masterpiece "*Vers une Architecture*" (Towards a New Architecture)[29]. Corbusier's three reminders of mass, surface and plan suggests a strong memory of Viollet-le-Duc's five step programme. The most important manifesto in the "Towards a New Architecture" is the advocacy of functionalism based on machine aesthetics. His assertion of "a house is machine for living" was later criticised by Zevi (1957) as "a naïve, mechanical

[25] Zevi, Bruno, *op. cit.*, 1957, pp. 157
[26] Zevi, Bruno, *op. cit.*, 1957, pp. 158
[27] Posener, Julius, *op. cit.*, 1972, pp. 30
[28] Blake, Peter, "The Master Builders", W.W. Norton Co., London, 1960
[29] Le Corbusier, *op. cit.*, 1927, pp. 11

interpretation of science as fixed, logically demonstrable, mathematically indisputable and invariably truth"[30]. This suggests perhaps, that the definition of organic architecture is not absolute, but relies on the degree and emphasis, as Zevi himself described in his "Towards an Organic Architecture"[31].

After three decades of Zevi's attempt, Blundell-Jones further recognised this organic tradition, or responsive tradition, as an alternative tradition of modern architecture, theorising German organic architecture in close relation to Gothic Revival and English Arts and Crafts movement. His definition of organic architecture, as against Miesian tradition, was a responsive architecture: it responds to site, climate, light, its inhabitants and their movements, and to the materials with which it is made[32].

As examined hitherto, the use of term "organism" or "organic architecture" by those functionalist architects is a mere instrument to promote their business rather than genuine expression of their belief. These functionalists are propagandists, for the way in which they behaved was not consistent. What they have produced on the drawing boards differentiates them from genuine organic architects who are often reduced to mere expressionists. The term 'functionalism', in fact, tends to misrepresent what it refers to, and it becomes often arbitrary and meaningless. Posener pointed out that functionalism is being used as opposed to its meaning, for it was never used by some architects such as Häring who is perhaps the purest of functionalists[33]. This would be an important evidence to further acknowledgement of their serious intellectual contribution in shaping modern architecture. The definition of 'functionalism' in this context should therefore be understood as 'a conscious attempt to unite man and nature into the built environment regardless of its methodological preferences'. Certainly, what counts in the end would be the usefulness of the built environment, and the human bond with what is built would help to perfect such a phenomenon as a whole.

[30] Zevi, Bruno, *op. cit.*, 1957, pp. 157
[31] Zevi, Bruno, *op. cit.*, 1950, pp. 71
[32] Blundell-Jones, P., "Organic Versus Classic", Architectural Association Quarterly, Vol. 10, No. 1, 1978, pp. 18
[33] Posener, Julius, *op. cit.*, 1972, pp. 34

8.4.2 German Organic Tradition in Architecture

In the course of establishing German modernism, there existed a substantial influence from the Gothic Revival movement which flourished both in England and France, and which also formed a theoretical foundation for the American architect Frank Lloyd Wright. In the European Continent, the Gothic influence was apparent as French theorist Viollet-le-Duc's systematic work was inherited by Dutch architect Berlage and others.

Regarding German modernism as the most decisive phenomenon in shaping modern architecture, especially in terms of the organic movement, English influence would be among the most noticeable. The English Puginian Gothic Revivalist trend was imported to Germany through Hermann Muthesius who wrote a three volume book "Das englische Haus", with particular interest in domestic architecture, after he was a cultural attaché in German Embassy in London. Muthesius stayed in London for seven years between 1897 and 1904, and his assignment was to investigate English buildings in general. Posener (1972) pointed out that his appointment as an attaché in the Embassy is very much a credit of that day, for there was not any similar case thereafter and before, and that he bridged the gap between Arts and Crafts and the Deutsche Werkbund, i.e., the gap between the renewal of handcraft and industrial design[34]. Muthesius wrote in his "Das englische Haus" that,

"In the English House one would look in vain for the kind of pomposity, for style written with a capital 'S' (or architecture with a capital 'A') which we, in Germany, are still devoted to. It is already forty years since movement against the imitation of styles began in England. It has been inspired by simple buildings in the country; and in its course, it has already yielded splendid results. Let us learn from it. The same reasonable, straightforward attitude which informs the shape of the house can be seen in the way house is placed on the ground fitting into the surrounding countryside. It adapts itself to nature, and house and garden are treated as one closely integrated unit"[35].

Along with Muthesius stood Theodor Fischer who was the teacher to most of the organic architects in Germany in 1920s. What one may find interesting by examining the following architects - Hugo Häring, Erich Mendelsohn, Bruno Taut, Hans

[34] Posener, Julius, *op. cit.*, 1972, pp. 17 and 44
[35] Muthesius, Hermann, "Das englishes Haus", translation from Posener, J., *op. cit.*, 1972, pp. 18

Scharoun, Gunnar Asplund, Alvar Aalto - is that they all subscribed to neo-classical principles in their early days, but became mature modernists in course of time. The Modern Movement itself is apparently a timely phenomenon, and one can easily recall that when the Weissenhof Siedlung was held, most participants were in their 40s, and their building of theoretical maturity over time is a corollary. These architects have established their own organic or responsive theory as opposed to the universality proclaimed by mainstream modernism of International Style. Here, it is not just coincidence that these architects were once taught by German architect Theodor Fischer (1862-1938), one of the best masters of architecture at the time, once based in München, but moved to Technische Hochschule in Stuttgart. Moreover, their line of approach is vividly in opposition to disciples of Peter Behrens, who included Mies van der Rohe, Walter Gropius and Le Corbusier. Blundell-Jones wrote that if Peter Behrens is seen as a father of universal architecture culminating as International Style later, then Theodor Fischer can be regarded as father of European Organic Movement[36].

[Figure 8-10] Theodor Fischer (1900-01)
Volksschule am Elisabethplatz, München

[Figure 8-11] Theodor Fischer (1908-11)
Garrison Church at Ulm

Fischer was the first chairman of the Deutsche Werkbund in München, and he was responsible for the famous Cologne exhibition in 1914. The importance of Fischer's contribution in shaping modern architecture is hitherto left unattended by the success of his disciples. In relation to the dynamic ideas of architecture at the turn of the

[36] Blundell-Jones, Peter, "Hugo Häring: The Organic Versus the Geometric", Edition Axel Menges,

twentieth century, Blundell Jones (1989) wrote that "buildings with an iconography, with ornament or with formal and stylistic references to the past, were all easily glossed over or consigned to the waste-bin of historicism"[37]. It is this moment that Fischer belonged to, and he contributed towards more mature modern architecture, which obviously built up by his famous disciples such as Hugo Häring (1882-1958) and Sigurd Lewerentz (1885-1975). Fischer's conviction on modern architecture was that architects should interpret the place and programme, creating a work that grows organically from inside outwards[38]. This attitude later formed the core attitude of organic architecture.

Fischer's influence is not only found in his disciples, but also in generating a new urban planning aesthetics along with Camillo Sitte's new ideas on town planning which were published in 1882 under the title of "Der Städtebau nach seinen künstlerischen Grundsätzen". Sitte advocated the virtues of irregular medieval towns, and that such environment can provide aesthetic experience. As Fischer paid attention to the relation between a building and its surroundings, hence considering the history of the city and its historic structure, he could suggest curved streets and the selective views and focal points while allowing the historic features currently extant such as available views. His approach in this regard, as opposed to imposing a new grid plan or similar, is vividly observable in his München project when he was the head of the planning department for eight years between 1893 and 1900. Fischer's Haimhauser School Project (1897) and a school at Elisabethplatz (1900-01), both in München, exemplify that he combined historical München style with organic structure [Figure 8-10]. Its appearance was vividly resonant to historic and regional building form, but its layout structure is based on function, and context of educational ideas of the time[39]. It was contextual approach in terms of style, as Fischer wanted to develop the form out of local history. Nerdinger (1986) noted that "Fischer claimed that there are two kinds of architects; one kind imposes his own ideas on nature and surroundings... the other kind wishes to adapt himself to the situation... ... Fischer taught his students to respect the 'lines and wrinkles' that history has carved in the ground and not to

Stuttgart, 1999, pp. 18

[37] Blundell-Jones, Peter, "Theodor Fischer", The Architect's Journal, 12/April, 1989, pp. 40

[38] Blundell-Jones, P., *op. cit.*, 1999, pp. 19

[39] Nerdinger, Winfried, "Thedor Fischer" (translated from German by Peter Blundell Jones), The Architectural Review, Nov. 1986, pp. 62 the educational idea at the time maybe phrased as 'learning

sacrifice them 'to make life easy for the geometer"[40]. Despite Fischer's claim that 'without tradition and locality as a compulsion and an incentive to architects, any wilfulness of architects can inevitably become reduced to being schematic and mannered', he was also entirely flexible to employ new ideas when it became indispensable[41]. His Garrison Church at Ulm (1908-11) clearly demonstrates the way in which he combined a new exposed concrete frame structure with an unconventional twin-towered façade [Figure 8-11].

Fischer's approach is significant as he consciously attempted to find the best solution for both the building and the city within the limits of the historical context. He did not intend to rejuvenate the ageing principles of classical layouts nor turn to modernism for its own sake. Nerdinger (1986) pointed that Fischer wanted to allow inner directional forces to radiate outwards, while the surroundings must also project inwards, just as iron filings attempt to align themselves with a magnetic field[42]. This organic manifesto is strikingly similar to the Chinese way of conceptualising nature and culture, and if only Fischer had known the Chinese, he would be more assured and inclined to be organically armed.

Among the disciples of Fischer, Hugo Häring was not only an architect, but also theorist. Häring was influenced by both Fischer and the American Frank Lloyd Wright. Blundell-Jones (1978) recognised that Häring was undoubtedly influenced by Frank Lloyd Wright by noting that the works of Wright was published in Germany by Wasmuth by 1910, and was widely circulated[43]. As one can easily expect, their organic approaches in architecture were pretty similar. The most apparent difference between two would be the allowance of the use of grid; Häring hated it, but Wright allowed it for the purpose of construction[44]. His use of grid was indeed a dilemma in his theory of organic architecture as the configuration of geometry is inorganic[45]. This inconsistency makes a critical division between Wright and Häring. Häring in fact

by doing'. It was advocated by Max Kerschensteiner and spread in Germany.

[40] Nerdinger, Winfried, *op. cit.*, 1986, pp. 64

[41] Nerdinger, Winfried, *op. cit.*, 1986, pp. 64

[42] Nerdinger, Winfried, *op. cit.*, 1986, pp. 64

[43] Blundell-Jones, P., "Organic Versus Classic", Architectural Association Quarterly, Vol. 10, No. 1, 1978, pp. 13

[44] Blundell-Jones, P., *op. cit.*, 1978, pp. 18

[45] Sergeant, John, "Woof and Warp: A Spatial Analysis of Frank Lloyd Wright's Usonian Houses", Environment and Planning B, Vol. 3, 1976, pp. 211

consciously attempted to be consistent as he even deliberately employed the term 'Organisches Bauen (Organic Building)'. The use of the word 'building' was set against the Latin word architecture as the latter denotes the academic tradition of Classicism[46]. Another difference between two is their notions of 'organic architecture' was that Wright attempted to apply biological metaphor of nature into his works, while Häring employed the term in the context of the programme.

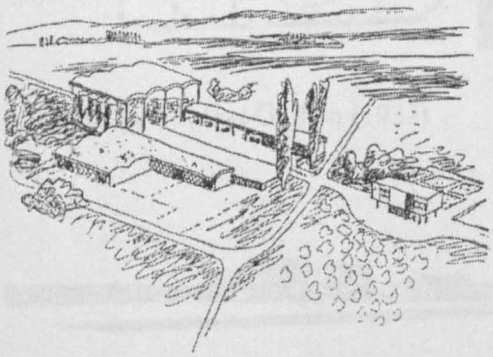
Hugo Häring was an architectural theorist, and the secretary of 'Der Ring', a group of architects in Berlin. He was a close friend of Mies, with whom he shared an office at some point in Berlin, but he built his own organic theory of architecture completely in opposition to that of Mies'. His own organic theory or functionalism was quite in opposition to Le Corbusier as well[47], and their disagreement over the fundamental values and design methods brought his absence from Weissenhof Siedlung. Here, it must be stressed that the term "Functionalism" in 1920s was quite different from what present time subscribes. Functionalism appears to deviate from the way Häring used it in the 1920s, as the term often indicated geometrical imposition. From today's perspective, however, the term became often arbitrary and meaningless. The only matter between Häring and his contemporary functionalists was then the profoundness of function, not the functional program.

In order to identify Häring's organic theory of architecture, it is useful to contrast works of Le Corbusier and Mies with those of Häring. The difference between Le Corbusier and Häring can be best exemplified in the 'Gut Garkau' (Garkau Farm) (by Häring) of 1923, near Lübeck, and 'Ferme Radieuse' (Radiant Farm) of 1934 (by Le Corbusier, project unbuilt). Ferme Radieuse was a project for an agricultural community studied at the request of a group of farmers of the Department of Sarthe [Figure 8-12 & 8-13]. The project claimed that some inhabitants of the town should

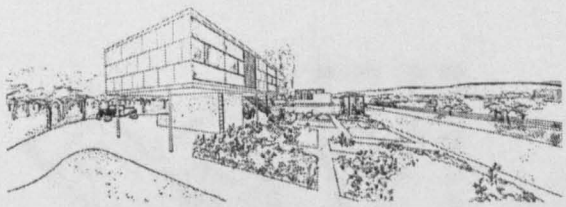
[46] Blundell-Jones, P., *op. cit.*, Stuttgart, 1999, pp. 8
Ironically, the term 'building' was also favoured by Gropius in the Bauhaus.

[47] It should be noted that, both Le Corbusier and Hugo Häring are influenced by Frank L. Wight to a certain extent despite their polemic difference. Despite Wright's influence is well reflected and received in Häring's ideas, Le Corbusier's reception is not known. Wright's work was published in Berlin in 1910 by the publisher Wasmuch, and it was widely circulated among architects. It was also the time when Le Corbusier went to work in Behrens' office in Berlin, while Gropius and Mies also worked for Behrens' in the similar period. For detailed study of Wright's influence on Le Corbusier See Turner, Paul V., "Frank Lloyd Wright and the Young Le Corbusier", Journal of the Society of Architectural Historians, Vol. 42, 1983, pp. 350-359, and Vol. 43, 1984, pp. 364-365

return to the country, hence he reorganised land in terms of co-operative villages and the fixing of new type of farm, and buildings are vaulted[48]. As seen in the illustrations, Corbusier's syndicalist proposal imposed regularised grids on the farm yards with the intention that the new architectonic plan would even reorganise the agricultural system[49]. Although Le Corbusier did not execute the building, the comparison between these two is important for what counts here is a fundamental idea behind the building, not physical substances. Häring thought all built forms should evolve out of their internal logic, and should develop in their own organic metabolism. Le Corbusier, on the other hand, imposed his own pre-ordained geometrical language on the political-economical context. Coincidentally, when Häring built the Garkau farm in 1923 [Figure 8-14 & 8-15], Le Corbusier published his most important book "Vers une Architecture", and Mies designed his famous Brick House [Figure 8-16]. In the same year of 1923, Häring also produced a house plan fully detectable of its organic nature by its curvy, anti-geometric properties [Figure 8-17]. Compared Häring and Mies in approaching architectural form, they fundamentally differ from each other.



[Figure 8-12] Le Corbusier
Ferme Radieuse (1934)



[Figure 8-13] Le Corbusier
Ferme Radieuse (1934)

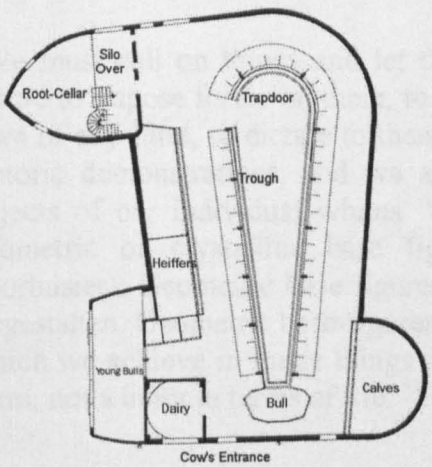
As evident from his Gut Garkau and house plan, Häring is primarily against an approach that pre-ordained geometrical form is to be imposed on to building design, and for mass production of standardised fixed models. He certainly subscribed to the benefits of modern technology and the mass-production process, but did not consent

[48] Girsberger, H., "Le Corbusier et Pierre Jeanneret: Oeuvre Complete de 1929-1934", Édition H. Girsberger, Zürich, 1935, pp. 186 (translation of the text was kindly assisted by Professor P. Blundell Jones)

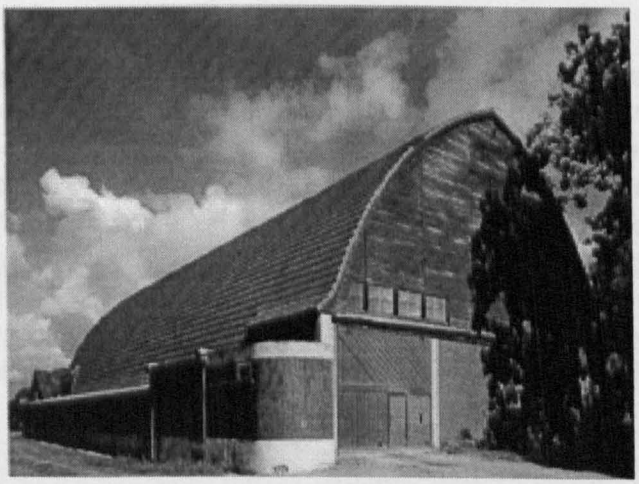
[49] Arts Council of Great Britain, "Le Corbusier: Architect of the Century", Hayward Gallery, London, 1987, pp. 33

the product should also be uniform. For Häring, movement was a plan-determining agent[50], and its mechanism was the true determinant for the built form. Even so, this logic appears to be extremely flexible, as the moving mechanism can be defined case by case, and its application to actual building design is nearly mechanically determined. It is because movement can always best present the function, and it can even tolerate indeterminate elements, when the conditions of main movement are properly interpreted, such as unnecessary movement or unexpected temporary divergence.

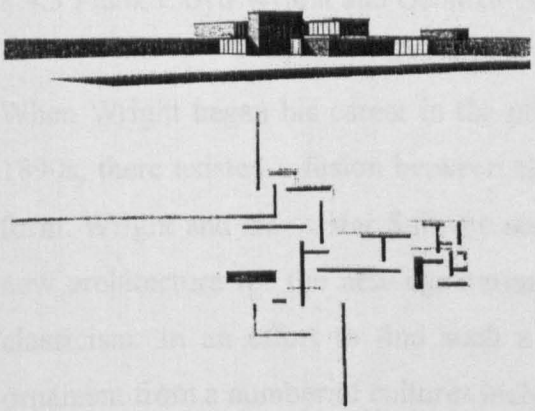
Gut Garkau 1923-25



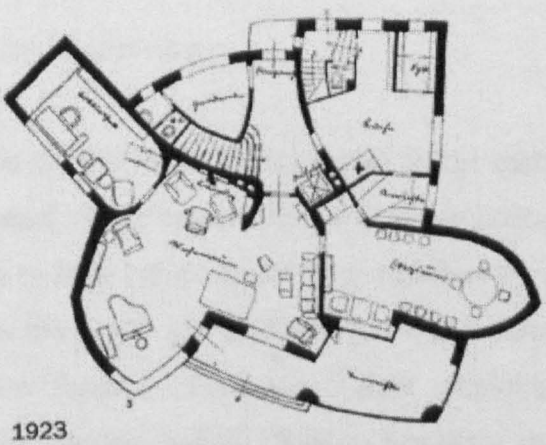
[Figure 8-14] Gut Garkau (1923)



[Figure 8-15] Hugo Häring, Gut Garkau (1923)



[Figure 8-16]Brick House (1923)
Mies van der Rohe



[Figure 8-17] A House Plan (1923)
Hugo Häring

[50] Posener, Julius, *op. cit.*, 1972, pp. 35

Häring's theory was further envisaged by Hans Scharoun. They became known to each other by 'Der Ring', founded by both Mies and Häring. Despite their approaches to the new architecture in the early 1920s being directed in a pretty similar way, Scharoun's involvement with 'Der Ring' certainly brought him an opportunity to join the Weissenhof Siedlung project which initiated his fame. Blundell-Jones described their relation as "Häring's theory both helped Scharoun to interpret what he was doing, and provided an intellectual and cultural alibi for it"[51]. Häring wrote his theory of architecture in his seminal essay of 1925, "Wege Zur Form (Approaches to Form)" as,

"We must call on things and let them unfold their own forms. It goes against our nature to impose forms on them, to determine them from without, to force upon them laws of any kind, to dictate to them. We acted wrongly in making them a display of historic demonstrations, and we acted equally wrongly when we made them the objects of our individual whims. We also act wrongly when we force a return to geometric or crystalline base figures, because this always means dictatorship (Corbusier). Geometric base figures are not original forms (Urformen), nor are they Urgestalten. Geometric base-figures are abstractions, derived lawlikenesses. The unity which we achieve in many things on grounds of geometric figures is only a unity of form, not a unity in terms of life"[52].

Häring further consolidated his organic theory later, but his theory was better envisaged through works of Hans Scharoun.

8.4.3 Frank Lloyd Wright and Usonian Organic Architecture

When Wright began his career in the office of Sullivan and Richardson in the early 1890s, there existed a fusion between classical authority and liberated asymmetrical form. Wright and his master Sullivan seem to have believed that their searches for a new architecture for the new egalitarian world could not be found in conventional classicism. In an effort to find such a new form, Sullivan and Wright employed ornament from a number of cultures including Islamic, Indian, Chinese, Egyptian, etc. Wright's encounter with Japanese culture and architecture at the World's Columbian Exposition in 1893, held in Chicago, undoubtedly gave him fresh ideas on new forms derivable from Japanese architecture and the ideas behind it, which helped him to

[51] Blundell-Jones, P., *op. cit.*, 1995, pp. 94
[52] Häring, Hugo, "Wege zur Form", in "Die Form", Vol. 1, Berlin, October, 1925, pp. 5

formulate his notion of organic architecture. Wright, however, never admitted that his architecture was influenced or inspired by Japanese architecture, but insisted that it only confirmed what he believed. This facet was suspected by many scholars, and was much clarified by Nute (1993) through his comparative analysis on Wright's works and traditional art and architecture of Japan[53]. Whether Wright actually used Japanese motifs directly or not, it looks pretty certain that he looked at the Oriental culture most positively. Despite the fact that Wright said that Japanese art and architecture only confirmed what he felt, he most certainly sought an unknown spirituality from the East. Wright (1930) indeed said that "the ethnic eccentricity of their (non-western) work makes it safe inspiration for the white man, who now needs it, it seems, (as) aesthetic fodder that he can not copy or reproduce"[54]. Wright's ambivalent attitude, in denying his learning from Japanese culture is similar to Le Corbusier's attitude in denying knowing works of Wright despite the two architects' enormous similarities in architectural design[55]. Be that as it may, the current debate concerns an organic notion that one can sense through Wright's works as well as in what he wrote and said. This dynamic cross-cultural flux and its implications will be further discussed and clarified in the next chapter.

Frank Lloyd Wright's design method appears to be inherited from the famous French theorist Viollet-le-Duc. Viollet-le-Duc saw natural organisms as the true expression of functional and structural harmony, hence considered them as a paradigm for architectural design. His organism included programmes of building, structure, site specificity and so on. Viollet-le-Duc suggested the five steps of design method in his book "Histoire d'une maison" published in Paris in 1873; i.e., (1) Establishment of a program, (2) Developing the plan, (3) Determining the structural system, (4) Deriving the design from the structural necessity, (5) Determining ornamentation. Despite confusion about which of Viollet-le-Duc's works that Wright read, Hoffmann (1969)

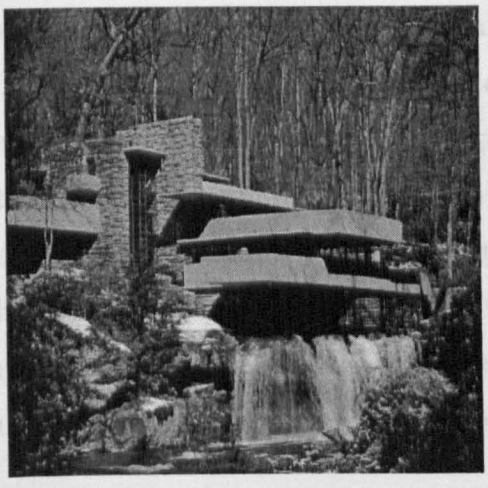
(translated by Blundell-Jones, P., *op. cit.*, 1995, pp. 96)

[53] see Nute, Kevin, "Frank Lloyd Wright and Japan", Chapman & Hall, London, 1993

[54] Wright, F. L., "Machinery, Materials and Men", A Lecture at Princeton University, printed in "The Future of Architecture", The Architectural Press, London, 1955, pp. 70

[55] see Turner, Paul Venable, "Frank Lloyd Wright and the Young Le Corbusier", Journal of the Society of Architectural Historians, Vol. 42, 1983, pp. 350-359 It is an interesting point to see that Le Corbusier denied his knowing on Wright consistently, and Wright also encouraged this view. Turner, however, reveals evidences that Corbusier was certainly influenced by him, and that it is detectable from various angles.

identified that it was "Entretiens sur l'architecture"[56]. Hearn (1990) also suspects that Frank Lloyd Wright almost certainly read Viollet-le-Duc's book, translated by 1874, and assimilated it into his own philosophy and practice[57]. Apparently, Wright brought Viollet-le-Duc's two volumes of "Discourses in Architecture" to his son, John Lloyd Wright, and told him: "In these volumes, you will find all the architectural schoolings you will ever need. What you can not learn from them, you can learn from me"[58]. Wright's application of Viollet-le-Duc's inspiration is perhaps earlier found in the works of Louis Sullivan, from whom Wright received his architectural training.



[Figure 8-18] The Fallingwater (1935)

[Figure 8-19] Thomas Gale House (1909)

Starting from the Gothic Revival trend in Viollet-le-Duc's structural rationalism, Wright developed his notion of organic architecture in relation to nature. Wright (1939) remarked that "Modern architecture-let us now say organic architecture-is a natural architecture-the architecture of nature, for nature"[59]. Wright stated that organic architecture develops from the inside out like a plant. Wright's organic architecture never fully developed a systematic theory of organism, but his general remark, in fact a sheer criticism, of non-organic architecture - which he expresses as "(more) a mask for life to wear (rather) than an expression of life itself" - shows his stance clearly. Here it is clear that Wright's idea of organic architecture is reminiscent of Viollet-le-Duc's structural rationalism. Wright (1908) wrote that "a building should appear to

[56] Hoffmann, D., "Frank Lloyd Wright and Viollet-le-Duc", Journal of the Society of Architectural Historians (US), Vol. 28, No. 3, October, 1969, pp. 174
[57] Hearn, M. F., "The Architectural Theory of Viollet-le Duc: Readings and Commnetary", The MIT Press, 1990, pp. 166
[58] Wright, John Lloyd, "My Father Who Is on Earth", G.P. Putnam's Sons, New York, 1946, pp. 69
[59] Wright, F. L., "An Organic Architecture", reprinted in "Future of Architecture", pp. 226

grow easily from its site and be shaped to harmonise with its surroundings..."[60]. This perspective is later most splendidly realised in the 'Fallingwater' in Bear Run, Pennsylvania (1935) [Figure 8-18]. After the 'International Style' was declared, Wright's sound answer for the MOMA exhibition was indeed monumental. McCarter (1994), however, pointed that the 'Fallingwater' is not actually an answer as many historians have said, for it shows a consistent approach of his architecture, visible even in such early works as the Thomas Gale House[61] [Figure 8-19]. Wright's congruence on his methodology is perhaps still an answer; a negation of the stark imposition of form. Wright said to Kaufmann, the client of 'Fallingwater', that he wanted him to live with the waterfall, not just look at it, but for it to become an integral part his life[62]. His unchanged conviction on the principle of architecture, a site-specific organic architecture, originates from his apprentice period. Wright seems to have developed this notion from his teacher and mentor Louis Sullivan, who already proclaimed a famous dictum 'Form follows Function'. Wright's notion, however, goes a step further. He (1939) claimed that his notion of organic architecture required a more or less organic society, i.e., one can not have an organic architecture unless one achieves an organic society, explaining that;

"Organic ideals of integral building reject rules imposed by exterior aestheticism or mere taste, and so would the people to whom such architecture would belong reject such external impositions upon life as were not in accord with the nature and character of the man who had found his work and the place where he could be happy and useful because of it in some scheme of livelihood fair to him"[63].

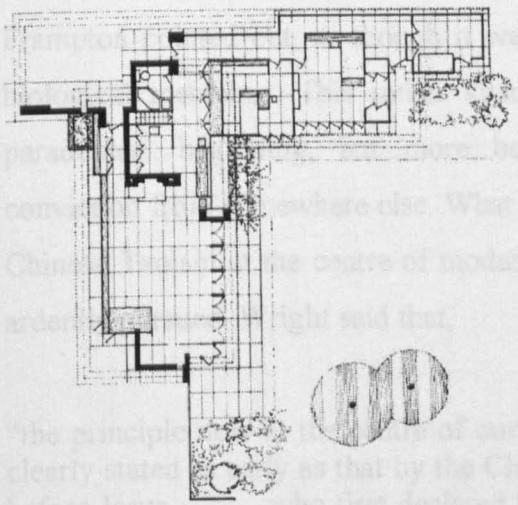
He further ascertained that;

"... ...What we call organic architecture is no mere aesthetic nor cult nor fashion but an actual movement based upon a profound idea of a new integrity of human life wherein art, religion and science are one: Form and Function seen as One, of such is Democracy"[64].

[60] Wright, F. L., "In the Cause of Architecture", Architectural Record, XXIII, March, 1908 (recitation from Hoffmann, D., *op. cit.*, 1969, pp.179)
[61] McCarter, Robert, "Fallingwater", Architecture in Detail Series, Phaidon, London, 1994, pp. 8
[62] Recitation from McCarter, Robert, *op. cit.*, 1994, pp. 7
[63] Wright, F. L., "An Organic Architecture: The Architecture of Democracy", Lund Humpries & Co., London 1939, pp. vii
[64] Wright, F. L., *op. cit.*, 1939, pp. 47

His idea of democratic organic architecture can be best seen his family housing so-called 'Usonian' houses. Wright (1939) explained the term 'Usonia' in his London lecture that;

"'United Statesers' does not sound well and we are not really entitled to call ourselves 'Americans' because we have not a monopoly of that title. The South Americans, as I found when I was in Rio de Janeiro several years ago, resent our use of it; the Brazilians say that they are the Americans. We have therefore to settle a dispute to find a good name for ourselves. Your Samuel Butler called us 'Usonian'. I think Usonian an excellent name, having its roots in union, as we have our national life in it"[65].



[Figure 8-10] The Jacobs House (1936)

The usonian house is a system-built house type designed for a low-cost family fitted for the 'Broadacre city', a new American city type, which Wright also suggested would emerge spontaneously, therefore organic. The design of the usonian house proves its relevance to democracy in the sense that his domestic planning emancipated housewives from unnecessary movement in the house as well as presenting an atmosphere lacking the rigid formality characteristic of his earlier Prairie house structure. The first usonian house, 'The Jacobs House', of 1936 in Madison is a clear example [Figure 8-20]. The centrality of the kitchen, and the informality of the overall spatial organisation was indeed suggesting a changing environment for a modern life style. In building usonian houses, according to Sergeant (1976 a.), Wright preferred to construct the roof first, supported by the brick masses and window-wall posts, and then to insert the wall panels which could be assembled off-site or under the roof, a

[65] Wright, F. L., *op. cit.*, 1939, pp. 27 Note that Samuel Butler (1835-1902) is a philosophical writer,

traditional Japanese practice[66]. His notion of organic architecture, however, presents an inherent dilemma in using geometry for the fulfilment of organic architecture. Sergeant (1976 b.) pointed out that "the configuration of geometric grids is inorganic, and their use to create an 'organic' architecture therefore presents a problem"[67]. Despite the fact that Wright used grid systems only as a means to co-ordinate every elements of the building into parts of a whole, therefore seeing it as organic, his neglect of natural causes is on the contrary inorganic. Although Wright later developed his organic notion into a much more mature one, resulting in master-pieces like Fallingwater, he never fully overcame the innate methodological problem. Wright indeed applied his notion of organic architecture into the use of the cantilever, as Frampton pointed out, as though it were a natural, tree-like form[68]; a direct use of biological metaphor. This rather kitsch-like performance is partly because of its paradoxical beginning, but more because of his borrowing his philosophical conviction from somewhere else. What is of interest in this context is that Wright saw Chinese Taoism at the centre of modern architecture, an organic architecture that he ardently pursued. Wright said that,

"the principle now at the centre of our modern movement (in architecture) was very clearly stated as early as that by the Chinese philosopher Lao Tze, five hundred years before Jesus, ... who first declared that the reality of the building consisted not in the four walls and the roof but inhered in the space within, the space to be lived in"[69].

Wright's discovery of sense of space from the philosophy of Laotzu was, however, only viewed within his own interpretation as an artist. Wright considered space as a reality, space as the positive entity rather than a mode of being or non-being which is normally taken to denote[70]. This is not abnormal in viewing non-western cultures, for they have always been seen through western spectacles rather than for what actually they are or can be[71]. Wright indeed had a clear conviction on modern machine

a Cantabrigian who once emigrated to New Zealand in 1859, but returned to England in 1864.

[66] Sergeant, John, "Frank Lloyd Wright's Usonian Houses: Designs for Moderate Cost One-Family Homes", Whitney Library of Design, New York, 1976, pp. 19

[67] Sergeant, John, "Woof and Warp: A Spatial Analysis of Frank Lloyd Wright's Usonian Houses", Environment and Planning B, Vol. 3, 1976, pp. 211

[68] Frampton, K., "Modern Architecture: A Critical History" (Third Edition), Thames and Hudson, London, 1992, pp.188

[69] Wright, F. L., *op. cit.*, 1939, pp. 2-3

[70] See Nute, Kevin, *op. cit.*, 1993, pp. 124

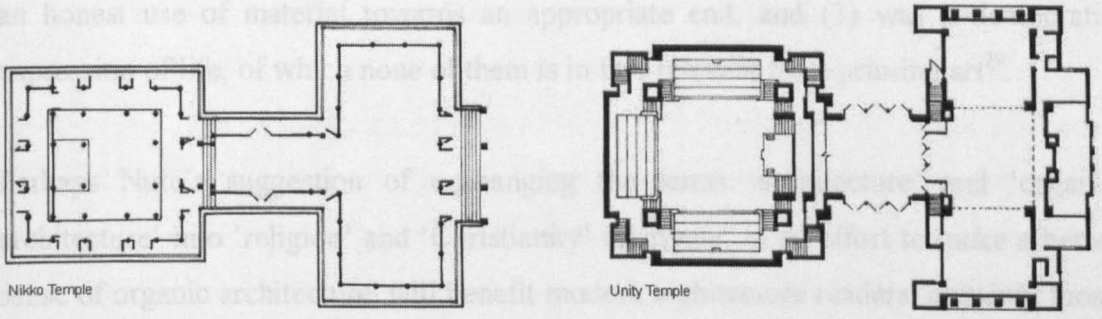
[71] The notion of 'Orientalism' derived from Edward W. Said will explain the Western perspective on the Orient. This notion will be discussed in detail in chapter 9.

aesthetics. According to Siry (1997), Wright proposed that the dilemma of modern art's future may contain its solution if the architect can recognise to have been given a new masterful tool that demanded of him its proper use. For he believed that as the machine was the modern means of production, its consequences in the architectural domain should be controlled[72]. Unlike William Morris, whom Wright noted for his ethical stance over the danger of the machine in art, Wright believed that the mastery of the machine would benefit the material culture of democracy[73]. It is at this point that Wright's scientific mind clashes with the spirituality of Eastern philosophy; Two modes of thought, fundamentally incompatible with each other. As the Taoist commitment of space and physicality can not be converted into the realm of actuality and materiality (modules and geometries), his synthesis of Eastern philosophy and the modern mode of production uncompromisingly failed, and this reveals the primary paradox of attempting their integration. If his notion of organic is certainly influenced by Laotzu, as he explicitly said, then the inherent dilemma of his organic architecture is a corollary of his artistic aesthetic interpretation.

His reading of Laotzu perhaps dates back to much earlier in his career. Wright's discovery of Laotzu appears to be from the "Book of Tea" by Kakuzo Okakura written in 1906, which Wright came across through the Japanese ambassador some fifteen years later. Nute (1993), however, points that Wright must have known Laotzu much earlier than that[74]. There were several translations of the 'Tao Te Ching', the Taoist Canon, in America before the turn of the century, and Wright himself knew Okakura's earlier work on 'The Ideals of the East' (1903) which also mentions Taoist philosophy in general sense. Furthermore, Nute points out that Wright's reference uses a different romanisation of the name Laotzu; that of Laotzo used in the book '*Tao The King*' of 1898, which earlier appeared in the Chicago-based Journal 'Open Court' by Paul Carus[75]. His encounter with Taoist philosophy, however, develops into an aesthetic orientation that gives a chance to create yet another space of substance in the Western context, not a space as a mode of being in the world in an Eastern sense. The design of Unity temple, which Wright claims as an expression of this sense of

[72] Siry, Joseph M., "Frank Lloyd Wright's "The Art and Craft of the Machine": Text and Context", in Pollak, Martha (*eds.*), "The Education of the Architect", The MIT Press, 1997, pp. 4-5
[73] Siry, Joseph M., *op. cit.*, 1997, pp. 7
[74] Nute, Kevin, *op. cit.*, 1993, pp. 123
[75] Nute, Kevin, *op. cit.*, 1993, pp. 123-124

space, would well exemplify the difference. Despite the morphological similarity between Unity Temple and the traditional Japanese Temple, their spatial organisation in the context of patterns of movement and, more importantly, the fundamental understanding of space undoubtedly reveal Wright's own concept of organic architecture as essentially different from that of the East [Figure 8-21].



[Figure 8-21] Spatial Contrast between Unity Temple and Japanese Nikko Temple
(Source: Nute, K. *op. cit.*, 1993)

The process of transformation from Japanese art and architecture to his own can be looked at as a 'creative elimination'. It was the Japanese art of printing called 'ukiyo-e', once a popular genre of painting at the end of the Edo period (1603-1868), which gave a significant influence to Wright. It normally depicted everyday life including landscape and buildings. Nute (1993) suggested that, for Wright, the elimination of the insignificant and the conventionalisation of forms were parts of a single process of creative abstraction[76], as Wright himself wrote "this process of elimination of the insignificant we find to be their first and most important consideration as artists, after the fundamental mathematics of structure... ... this process of simplification is in a sense a dramatisation of the subject, just as all Japanese ceremonials are the common offices and functions of their daily life delicately dramatised"[77]. Nute further asserts that Wright appears to have seen his role as one of providing geometric abstractions of the fundamental social forms of American life, and that, in practice, this meant reducing those institutions to their formal essence and then re-presenting their

[76] Nute, Kevin, *op. cit.*, 1993, pp. 107
[77] Wright, F. L., "The Japanese Print", 1912, pp. 13-14
(recitation from Nute, Kevin, *op. cit.*, 1993, pp. 107)

'essential forms' in terms of a simple geometric unit arranged into a mutually interdependent 'organic' whole[78].

Nute (1993) points out that Japanese printing not only influenced Wright's approach in design, but also his rendering style. Wright seems to have sensed Japanese art printing as organic as it (1) possesses independently pleasing aesthetics, (2) showed an honest use of material towards an appropriate end, and (3) was a democratic expression of life, of which none of them is in fact relevant from printing art[79].

Perhaps Nute's suggestion of exchanging the terms 'architecture' and 'organic architecture' into 'religion' and 'Christianity' relatively, in an effort to make a better sense of organic architecture, will benefit modern architecture readers, certainly those who are Christians. He suggested that the comment on the Unity Temple by Pastor Johonnot would best represent Wright's attitude to architectural history. Johonnot (1906) wrote that "... 'while religions are many, religion (i.e., Christianity) is one' and that the vital power and superiority of Christianity consists in its ability to absorb, perfect, and use whatever was good in all preceding forms of religion"[80]. This grand, even crusading tone of praise in commenting on the Unity Temple, however, also vividly reveals the sense of cultural and social domination of West over East or non-West in the early twentieth century[81].

8.5 Summary

Although one may easily come up with the idea that formalism is a way of thinking generally associated with reason, universality, and sobriety, whereas expressionism is associated with the intuitive imagination, individuality, and complexity[82], the reduction of organic architecture to a mere expressionism is too reductive and inappropriate. The overlapping of meanings associated in terms such as functionalism, formalism, organism, expressionism are all related with functionality, and the use of

[78] Nute, Kevin, *op. cit.*, 1993, pp. 107
[79] Nute, Kevin, *op. cit.*, 1993, pp. 108
[80] Johonnot, Rodney, F., "The New Edifice of Unity Church, Oak Park, Illinois, Frank Lloyd Wright, Architect. Descriptive and historical Matter by Dr. Rodney F. Johonnot, Pastor", The Unity Church Club, Oak Park, IL., 1906, pp. 16 (recitation from Nute, K., *op. cit.*, 1993, pp. 175)
[81] This topic will be further explored in the next chapter in the context of 'Orientalism'.
[82] Lagueux, Maurice, "Reconfiguring Four Key'~isms' Commonly Used in Architectural Theory",

such terms in a particular sense or for the purpose of propaganda could only generate irrelevant labels.

Blundell Jones (1988) pointed out that "the most obstructive of all to a deeper understanding of Modernism is the presumed *tabula rasa* whereby Modernists pioneers supposedly renounced their past - all the superstition of 'historicism'- and took a brand new road"[83]. This point is so vividly stated in Le Corbusier's book of "Vers une Architecture" that "to send architectural students to Rome is to cripple them for life. The Grand Prix de Rome and the Villa Medici are the cancer of French architecture"[84]. As a historical product, the Modern Movement certainly reflects a number of diverse attitudes towards modern society. For the architects of an alternative tradition in Modern Movement, such as Häring, Aalto, Asplund, Scharoun, history has never been neglected but combined into the better interpretation for a newly discovered need. St. John Wilson (1995) noted that "Association, reference and symbolic form were always part of the discourse in their (architects of organic tradition) work... ... this architecture has suffered in no way from the absence of historical reference or formal sophistication that Post-Modernism claimed to be re-introducing"[85].

Modern architecture, however, stressed a particular system within the Modern Movement, and it was mistakenly overemphasised for a lengthy period of time. The International Style is only a reduced product of whole modern architectural phenomenon, and contemporary awareness of problems in architectural authenticity and identity enables one to redraw a bigger picture of the beginning of modern architecture. The evolution of Modernism in architecture is already exemplified from early modernists in architecture who became aware of the emergence of instrumentality and functionalism, and conflicting attitudes of Romanticists and Avant-Garde modernists. It is therefore significant to perceive what one can refine as good intentions in modern architecture. Blundell Jones warned that "we are in danger of rejecting the Modern Movement as a whole ... ... What we should be rejecting

British Journal of Aesthetics, Vol. 39, No. 2, April, 1999, pp. 187

[83] Blundell Jones, P., "From the Neo-Classical Axis to Aperspectival Space", The Architectural Review, Vol. 183, No. 1093, March, 1988, pp. 19

[84] Le Corbusier, *op. cit.*, 1927, pp. 161

[85] St. John Wilson, C., *op. cit.*, 1995, pp. 30

instead is the histories of the Modern Movement written by those propagandists who were too close to it to present a balanced account ... ... "[86]. He later further advocated that we should have rejected the prevailing interpretation of it (Modernism), the way it was framed, the process of selection, but should study the tantalising complexity in modern architecture[87]. In doing so, one can perhaps find what maybe of significant in the traditions of modern architecture, and that they can be better refined and integrated into new ideas and values of the contemporary society and the future.

[86] Blundell-Jones, P., *op. cit.*, 1978, pp. 10
[87] Blundell-Jones, P., *op. cit.*, Stuttgart, 1999, pp. 11

Chapter 9

Cross-cultural Enlightenment in Architecture:

Orientalism and Reflexivity

9.1 Orientalism and Ambivalence

Like any cultural goods, architecture also significantly owes to other cultures. Historical artefacts of architecture are the products of the incessant reconciliation between the ideas of the vernacular and the imported (or 'modern'). The integration of complimentary yet opposite ideas of vernacular and alien unfolds the inherent possibilities of emergence of a better paradigm in architecture and urbanism. In this context, the history of a cross-cultural intellectual trade would be of benefit in building alternative theories to escape from the revolving doors of the current intellectual deficiency, making better sense of contemporary hybrid society, leading to better-informed actions. The current study concerns the way foreign cultures are seen and conceptualised in Western culture in large, and how this hampers the elevation of the current debate about combining cultural diversities, and thus building alternative protocols of higher consciousness. A particular emphasis is laid upon East Asian culture in the current dissertation.

When cultures encounter one another, there generally occur opposing attitudes of affirmation and negation. Often the affirmative attitude carries one's own culture forward to higher stage of its development, better integrating diverse beliefs and values into a harmonious synthesis. The negative attitude, on the contrary, results in an isolation from outer worlds. It cripples the capacity to promote one's own culture developed, mature, instead causing a stagnation of the customary system of thought which can even lead to the demise of a culture from invasion by others. From the affirmative point of view, foreign culture is a catalysing source of insight, inspiration and encouragement that enables a recreation and deepening of one's own culture. It is a fountain from which unknown ideas and wisdom continuously spring out. Foreign ideas and the goods made in remote societies lead one to reflect and re-examine the

validity of currently prevailing ideas of one's own society, recognising its inadequacies, thus enabling the social constituents to criticise and innovate it. On the other hand, when looked at from the negative perspective, foreign culture is a threatening alien full of nonsense and secrets. Clarke (1997) described the ambivalent attitudes against Chinese culture as opposed to Western as follows;

"On the one hand it has been a source of inspiration, fount of an ancient wisdom, a culturally rich civilisation which is far superior to, and can be used to reflect on the inadequacies of, our own. On the other, it is an alien region of looming threat and impenetrable mystery, long locked in its stagnant past until rudely awakened by the modernising impact of the West"[1].

It is perhaps true that there is much more in the way of a sceptical view on cross-cultural issues than of optimistic ideas. The ambivalence of scepticism and optimism, however, appears to have originated together from the same concept of 'Orientalism'. The famous Palestinian historian Edward W. Said evoked the term 'Orientalism', in his book of the same title in 1978, arguing that the image of the Orient for Western cultures has been invented and built by Westerners as they perceive it, and that it forms part of Western civilisation. The images that the occident perceived are therefore not genuine portraits of the Orient. He saw that 'Orientalism' helped to define and strengthen the Western world. Said (1978) argued that

"The Orient is an integral part of European *material* civilisation and culture. Orientalism expresses and represents that part culturally and even ideologically as a mode of discourse with supporting institutions, vocabulary, scholarship, imagery, doctrines, even colonial bureaucracies and colonial styles... ... Orientalism is a style of thought based upon an ontological and epistemological distinction made between "the Orient" and "the Occident""[2].

He further argues that Orientalism does not consider the Orient as a free object of thought or action, since it functions, as a style, for dominating, restructuring and having authority over the Orient[3]. Within the concept of Orientalism exist the ambivalent attitudes of the Romantic and the Colonial; the Romantic attitude sees the orient as a pure land that the West missed long time ago, while an aggressive colonial

[1] Clarke, J. J., "Oriental Enlightenment: The Encounter Between Asian and Western Thought", Routledge, London, 1997, pp. 3
[2] Said, Edward W., "Orientalism: Western Conceptions of the orient", Penguin Books, London, 1995 pp. 2 (first published by Routledge & Kegan Paul in 1978)
[3] Said, Edward, *op. cit.*, 1995, pp. 3

attitude takes the Orient as a wilderness which has to be conquered and ordered. Said employed Michel Foucault's paradigm of knowledge-power that can be most vividly found in British Colonialism in Egypt[4]. Foucault's paradigm in the architectural context is that spatial organisation is an indispensable element for power-knowledge systems. He claims that architecture became a political device towards the end of the eighteenth century with the power of government[5]. What Foucault refers to are prisons, hospitals and asylums within which a high level of disciplinary control operates to order and integrate their inhabitants into a particular political and social system. The government rationality was a source of power that shaped the cities and buildings in terms of organising public facilities, providing services of infrastructure, as well as guiding private architecture. This line of thinking can also be applied to Orientalism.

The rationality of Orientalism was a vehicle to discipline and control the Orient. The rationality, however, can only be valid when it is theorised from the object as it is. As Orientalism lacks the true picture of what the Orient indeed is, the only product that Orientalism can deliver is a representation, a biased account to enhance the hegemony of the West over the East in political, cultural and any other 'profitable' senses. The more significant agenda in this context is that the unbalanced and distorted images of the East are so widely spread, thanks to the mass media and also the lengthy period of the colonial tradition that has become almost a modern myth. Despite the fact that Said's Orientalism mostly concerns the near East, without discussing the relation between the Far East or East Asia and Europe, his concept of Orientalism as a Western invention and an authoritarian device still appears valid for other cases such as the Sino-British relation.

In fact, description of a culture within its own terms had already generated a contradiction. Painters and sculptors often created images as they perceived things, without precise resemblance to reality. In vernacular cultures, symbolic representation tended to dominate realistic reductionism hence reading something as it appears may prove inadequate to represent one's culture to aliens. Gombrich (1960) pointed out

[4] Said, Edward, *op. cit.*, 1995, see chapter 1 and also see Foucault, Michel, "Archaeology of Knowledge", and also "Discipline and Punish: the Birth of Prison", Tavistock, London, 1977
[5] Foucault, Michel, "Space, Knowledge and Power", 1980, pp. 239

that "the first prejudice which teachers of art appreciation usually try to combat is the belief that artistic excellence is identical with photographic accuracy"[6]. Wilde also (1905) pointed earlier that "Do you really imagine that the Japanese people, as they are presented to us in art, have any existence? If you do, you have never really understood Japanese art at all. The Japanese people are the deliberate self-conscious creation of certain individual artists. If you set a picture by Hokusai, or any of the great native painters, beside a real Japanese gentleman or lady, you will see that there is not the slightest resemblance between them"[7]. Certainly, one may not even need such a careful observation, as what he/she needs is only the 'way' things are presented, not 'what' they ought to present. In this context, one can also sense the complex process of distortion in the representations of cultures.

Under this line of approach, cross-cultural mutual interaction requires a brand new intellectual platform that should go beyond Orientalism's preordained limits. Said's argument suggests that the task of establishing a new foundation would be essential for the integration of East and West. The drawback of Orientalism was recognised even before the work of Said which became monumental in its kind, though the term 'Orientalism' in this context did not really come by then. Orientalism is Said's sound answer for such a long outstanding argument that the West's narrow self-conceptualisation of the East separates East and West as incompatible entities without legitimate ground, and that this became an irrecoverable prejudice over time. Iyer (1965) earlier asserted that the West had created an 'eternal schism' between Europeans and Asians[8], which may explain some of the difficulties in cross-cultural interaction. It is, however, more important to recognise the fact that mutual trade between cultures had initiated an intellectual enlightenment. Orientalism is a systematic phenomenon that swept across a period of history, but it also entails huge implications for future enterprises. The invention of Orientalism is in essence a reflection of the West of its intellectual response to the East, a reactionary behaviour without being necessarily a manifestation of human will. As a systematic defence against an unknown world, involving ambivalent attitudes, Orientalism is pretty

[6] Gombrich, E. H., "Art and Illusion: A Study in the Psychology of Pictorial Representation", Bollingen Foundation, New York, 1960, pp. 4
[7] Widle, Oscar, "The Decay of Lying", in "Intentions ", 1905 (*eds.*), pp. 46
[8] Iyer, Raghavan (*eds.*), "The Glass Curtain between Asia and Europe: A Symposium on the Historical

natural, and even almost a due course as a corollary. Clarke (1997) also pointed out that:

"the information flowing Westwards from Asian cultures has provided not merely entertainment and distraction, a sort of exotic time out, as is often supposed, but also an instrument of serious self-questioning and self-renewal, whether for good or ill, an external reference point from which to direct the light of critical inquiry into Western traditions and belief systems, and with which to inspire new possibilities"[9].

From East Asia, Confucianism, Buddhism, Taoism, Zen as well as feng shui are among ways of thinking which demand immense responses for their powerful message of spirituality as opposed to materiality in the West. Western intellectuals indeed showed their solemn respect for the East's high morality and philosophical fulfilment. On the other hand, Western colonisers deliberately promoted and established themselves in a higher dimension by looking down on Indians and Chinese, while busy conquering large territories and properties.

Encountering foreign cultures certainly did not always benefit the West. Some people who have an intense and persistent fear of foreign people and goods even developed it into xenophobia. Mostly such problem occurs from one's sensitivity, hence it can be easily sorted out by a systematic desensitisation such as psychiatric treatment. Usually the anxiety and fear people appear to suffer is unjustified, and it is irrational to judge on the basis of particular cultural differences. It is nonetheless a significant element in the mutual interaction. Some people even just get too sensitive to foreign issues, and such situation carries unnecessary implications that may destroy deeper understanding of each other. Moreover, this notion is closely tied to political stances which recently became a hot issue of globalisation. Giddens (1998) points out that the anti-globalisation tendency, an orientation of far right politics, may be defined in terms of economic and cultural protectionism that takes the form of a xenophobic relationship to other cultures. They fear that the global economy will threaten local identity and the local economy, thus defensive action is needed to secure one's culture and not to be contaminated by noxious cultural forces from outside[10]. The concept of

Encounters and Changing Attitudes of the Peoples of East and West", Oxford University Press, London, 1965

[9] Clarke, J. J., *op. cit.*, 1997, pp. 6

[10] Giddens, Anthony, "Modernity and Globalisation", A Seminar held at Seoul National University, Korea, on 12th of October, 1998

Orientalism can certainly serve as an effective device to draw a line for such a purpose, but it can simultaneously create a distortion by misrepresenting the actuality of the others. Under the context of this kind of biased politics, one can not easily build a well-balanced world history, especially at this time of global-scale transition, for it is not a pure knowledge, but a political knowledge that can shape and influence the world order.

What is now urgently needed is a correction of distorted images that have shaped people's mind over centuries hampering a better understanding of human heritage and legacy. The study of Western colonialism should be the beginning of this debate as Colonialism and modernity are first of all indivisible elements of the history of cross-cultural trade. Colonialism transformed the cultural landscape of the eighteenth and nineteenth centuries across the world. In many vernacular societies, their system of living was completely wiped out, and Western modernism was transplanted irrespective of their awareness of it. In the case of East Asia, their anger over Western colonialism was intense and it even gave rise to nationalism.

What needs explaining is that contemporary Western society still appears to lack a balanced history of cross-cultural intellectual trade. Most Western people who take pride in themselves are not aware of an intellectual debt already deeply immersed in Western tradition. In Architecture, Frank Lloyd Wright's stance on Japanese art and architecture is a clear example. Despite the fact that Wright read Taoist philosophy, his interpretation was aesthetic, that of an artist, which can be perfectly legitimate. His interpretation, however, only becomes a peripheral visual effect coated on a prevailing Western ideology, democratic society in the case of Wright whose concept though is not very clear. Aesthetics certainly offer a useful debate on visual images, experiences and subsequent judgement, but it does not concern the fundamental issues of different modalities through which such images are produced. As far as the debate on cultural synthesis resides within the realm of aesthetics, its function would not suffice to elevate the cross-cultural scrutiny into a higher level, engendering principles for new kind of art and architecture. It is clearly noticeable from Wright's concept of organic architecture which is derived from the concept of Taoist readings, but became part of his own theory through lack of genuine understanding of Taoism.

Perhaps it would be useful to recall Nute's suggestion of experiment changing terms "architecture" and "organic architecture" into "religion" and "Christianity" relatively[11]. He (1993) suggested that the comment on the Unity Temple by Pastor Johonnot would best represent Wright's attitude of architectural history. Johonnot (1906) wrote that "... 'while religions are many, religion (i.e., Christianity) is one'. and that the vital power and superiority of Christianity consists in its ability to absorb, perfect, and use whatever was good in all preceding forms of religion"[12]. When one changes the above two words, then the sentence can best represent what 'Orientalism' stood for. This grand, even crusading tone of praising comment on the Unity Temple vividly reveals the sense of cultural and social domination of the West over the East or non-West not only in the early twentieth century, but also in the most recent past.

9.2 Clash of Cultures

As it is well acknowledged that East Asia was modernised through the West's science and technology, political and economical systems, understanding the East's penetration of Western civilisation is less advanced and would profit current discourses. Before undertaking this ambitious task, an examination of how East Asia and Europe perceived each other would give a sharp impression of what and how the current task should begin. One of the most dramatic claims on Chinese culture over the West may be as follows,

"China is one of the largest as well as the oldest existing nation in the world. When the inhabitants of Europe and America were roaming about in half-naked condition, living in the woods and fishing in willow canoes, the Chinese were dressed in silks and enjoying a high stage of culture. Before Moses led the Israelites through the wilderness, the Chinese had laws, literature, and religious knowledge superior to those of Egypt. While Homer was composing and singing the Iliad, China's minstrels were celebrating her ancient heroes, whose tombs had already been with them for nearly thirteen centuries. A hundred years before the north wind ripped over the harp of David, an emperor of China composed classics which are committed to memory at this day by every advanced scholar of the Republic. Her literature was fully developed before England was invited by the Norman conquerors. The Chinese invented fire-arms long before Schwartz, and the art of printing five hundred years before Caxton was born. Gunpowder, the mariner's compass and the making of porcelain were first

[11] Referred earlier in chapter 8, pp. 197

[12] Johonnot, Rodney, F., "The New Edifice of Unity Church, Oak Park, Illinois, Frank Lloyd Wright, Architect. Descriptive and historical Matter by Dr. Rodney F. Johonnot, Pastor", The Unity Church Club, Oak Park, IL., 1906, pp. 16 (recitation from Nute, K., *op. cit.*, 1993, pp. 175)

discovered by the Chinese. The Great Wall, completed two hundred and twenty years before Christ was born at Bethlehem, and containing material enough to build a wall five or six feet high around the globe, is one of the great engineering feats of the world. The admiration and the model of the surrounding nations, the centre and source of the highest culture of the Eastern world, no wonder she won the name and for ages was known to all the Orient as 'The Middle Kingdom'"[13].

After the two humiliating defeats in wars with Great Britain, known as the 'Opium Wars' between 1839-42, the Chinese must have felt considerable anger and fear against not only Great Britain, but also the West in general. The above statement is an illuminating gesture of how the Chinese wanted to conceive and build the West, in order to legitimate her glory and superiority over Western barbarians. In fact, the 'vernacular' or 'pre-scientific' cultures in many parts of the world seem to have experienced a bitter challenge to their vernacular cultures from modern science. Modernism mostly took the form of military invasion and subsequent colonisation; this form of modernisation is dramatic in comparison with leading industrial countries in the Western Europe. As many anthropologists and sociologists have pointed out, countries who experienced such colonial periods suffered a different kind of modernisation process. In many cases, there occurred a civil war and a prolonged inner dispute over sovereignty. The overall chaos caused by a colonial period is not only directly from the colonial suppression, but also the undervaluing of the vernacular system when a reconciliation is attempted over a modern influx. This is still a progressive problem yet to be settled. To produce a possible exit from this revolving door of contradiction and ambivalence, the way in which cultures encounter and impact on each other would be considered as a process of shock, acculturation in the forms of employment, reconciliation, and recognition of encountering cultures. The penetration of modernism, based on modern science and technology, appears to generate innate discontinuity and instability of social institutions. Russell (1950) even raised the question as to whether a society based on science and scientific technique can achieve the sort of stability that many societies possessed in the past, claiming that it is bound to develop explosive forces that will eventually destroy it. This question was indeed well presented over the last few decades, thus peoples of the global village are now much more aware of the value of cultural diversity.

[13] from the Introduction of the "History of Chinese Medicine" by K. C. Wong and Lien-Teh Wu (2nd edition) Shanghai, 1936

Perhaps the real implication of such cultural clash is that it signals yet another development towards the future society. It would be a society with much better institutions both in terms of humanism and cultural integrity, and it would be the outcome of an elaboration of substantial consciousness. The emergence of yet developing institutions also bear an imprint of the persistent growth of human endeavour that saw as unacceptable the general description of cultures that should be valued as products of the historical process in their own right. The emergence of Modernism and its world-wide spread maybe a good example for this account

Modernisation through science may have an implicit but real threat to humankind. If Modernism is a western product in modern times, then the product of modernisation in non-western societies may not be the western Modernism, but rather a kind of modern civilisation. Huntington (1993) asserts that the modernity as pursued in different countries is variously reconciled with traditional cultures and values, and that culture is the most distinguished division of humankind, the dominating source for possible conflicts, which he termed 'clash of civilisations'[14]. The implication of his assertion is that the modernity such as high technology or modern natural morality can be understood and utilised in a very different ways, and that the rifts between the ways it is interpreted among different groups of people may cause conflicts. For him, although modernisation involves the same modernity over the planet, it does not denote Westernisation. His assertion emphasises religion as the most significant and distinguishable element of cultures, and possible future conflicts may originate from it[15]. Following Huntington's conviction about religious matter as the most significant factor in potential cultural conflict and clash, one may recall our exchange of terms of 'architecture' and 'organic architecture' to 'religion' and 'Christianity', in an effort to make a sense of the context of architecture. The new statement in this case then could be like 'There are architectures. There is one architecture: Western architecture. Western architecture would embrace other architectures and perfect them, and make use of whatever comes from the non-west to adorn the West'. The battle of future architecture should certainly not remain as a tournament for dominating systems of

[14] Huntington, Samuel, "The Clash of Civilisations?", Foreign Affairs, 1993, Vol. 72, No.3, pp.22

[15] The growth of Christianity in non-western societies would reveal a lacuna in Huntington's argument. In countries like Korea and Malaysia, Christians outnumbered any other kind of religious population such as Buddhism and Hinduism and Islam. Given the situation, the potential conflict originating from religion may not be as critical as Huntington suggests.

architecture, but provide a fine recreation of human heritage and legacy of all kinds towards a new paradigm for new architecture and urbanism.

Hitherto, the history of architecture was undoubtedly unbalanced in terms of western and non-western examples. A famous history book such as Sir Banister Fletcher's History of Architecture recently added a substantial amount of non-western architectural documentation for its millennium edition, but its scope and erudition still remains at a most elementary level[16]. Other history books are even worse. In a critique of a well-known history architecture book by Spiro Kostof, Pyla (1999) asserts that Kostof did not do justice to non-western architecture. Pyla points that Kostof lavishly painted a picture of Western architecture, while its Eastern counterparts are described only against Western "monuments". Despite this, Kostof is confident about his book's inclusiveness, though it appears that Kostof misrepresented non-western architectures, as if they possessed no history, and no substantial importance in the symbolic dimension. Non-western architecture is presented as if it can function only when it is projected as a counterpart to Western[17].

This point is indeed true insofar as history textbooks are concerned. New discoveries and historical documents available in remote countries are not considered seriously, but left unattended. This long unjustifiable trend not only caused a wide scholarly gap between western and non-western architecture, but also left considerable work to be done as a result of underdevelopment in understanding the growth of consciousness and development of human civilisation. The clash of cultures should not be viewed as a battle over a political and cultural dominance, but as a conscious bid for a better synthesis towards a better society. Architecture should then be formed as a systematic body of engendering principles for the new forms of a future society.

[16] See Cruickshank, Dan *et al.* (*eds.*), Sir Banister Fletcher's "A History of Architecture", Architectural Press, London, 1996

[17] Pyla, Pani, "Historicizing Pedagogy: A Critique of Kostof's A History of Architecture", Journal of Architectural Education, Vol. 52, No. 4, May, 1999

9.3 Recognition of Cultures

While recognising non-western cultures can only be properly understood within a bigger picture of imperial colonialism and the expansion of the West[18], it is still possible to retain a neutral stance in an effort to induce a better dialogue in the architectural discipline. The recognition of non-western cultures as genuine bodies of knowledge is a precedent for this rather ambitious task. To get rid of what hampers this process would present a way out from the moribund currency of Orientalism.

In a sense, it is a paradox to achieve genuine cultural recognition from another culture. Culture as a system of knowledge, practice and as an institution as a whole can not find its true place in a different system. With regard to cultural recognition or establishment in 'another' culture, the notions of 'recognition' or 'establishment' present fundamental questions about how exotic cultures can acquire authority in a prevailing system, and even if they do so, what they can possibly mean. Foucault elucidated cultural differences as different conceptions derived from one's own order of the knowledge which operates within a particular system. Following his notion of 'Knowledge-Power', cultural incompatibility can only be resolved when viewed inside of an overall organisation that defines certain forms of existence of objects, and enables communication about those entities[19]. Furthermore, how can a particular culture validate another culture's authenticity? Current discussion therefore presumes an inherent dilemma. Without obtaining recognition within the dominating cultural system, periphery systems of knowledge or tradition can not survive. The recognition of cultures is therefore the core concept of cultural enlightenment, not only in architecture but also in any other genre of human consciousness and awareness. This debate on cultural recognition, first of all, holds a presuming trap which legitimates the superiority of Western culture for the sake of a structural argument. Theorising cultural recognition in the West therefore becomes another form of Orientalism, to be seriously questioned and rejected.

[18] Clarke, J. J., *op. cit.*, 1997, pp. 10 and Said, Edward, "Orientalism", Harmondsworth Penguin, 1985
[19] For further discussion on systems of organisation, see Foucault, Michel, "The Order of Things", London, 1970

It must be then stressed that the current study did not attempt to allocate Eastern or any non-western ideas within a Western intellectual structure. Rather it was aimed to allocate Eastern ideas into prevailing contemporary ideology that may have originated from the West, but also owes a huge intellectual debt to the East. This is certainly an ambitious project, but also immensely significant to continue its relevance to debate in building a better society and architecture. The reconstruction of an East Asian tradition in architecture and urbanism in previous chapters were all under this line of thinking.

At the moment, non-western cultures seem to struggle to achieve recognition from the Western 'cultural market' which virtually encompasses all genres such as painting, music, sculpture, cinema, etc. Perhaps the struggle itself is a cultural movement, as a process that shapes people's minds and their bodies. Mainstream Western culture, however, is not an isolated phenomenon. What is irrational and even sad is that recognition appears to become more dependent on the art market rather than on serious intellectual scrutiny for its relevance to contemporary cultural discourse. Art patrons are rare nowadays, and the logic of economics dominates non-western cultures. Material properties may create more profit, but do not contribute to building better insights towards the future. Moreover, even when patronage exists, its concern appears to be confined to an aesthetic dimension, not involving serious intellectual discourse such as philosophical and socio-economic issues. Too much attention to aesthetic issues and commercial interests even generates an overemphasised importance of symbolism followed by commercialised authorship and connoisseurs. Under this condition, people can not gain new perspectives, but confine their horizons of the world within their own constructions. This milieu seriously hampers appropriate recognition of valid systems of knowledge and values from non-western traditions. As a consequence, cultures, whether they are mainstream Western or non-western, confine themselves to generating ambivalent, discursive and paradoxical relationships with the conditions of modernity which can most clearly presented in the form of commercialism in the art market and cultural conflicts in the street.

If the current bifurcation of East and West is a totally western construction, as 'a system of ideological fictions' as Said (1985) asserted[20], then the current art market virtually cripples the emergence of non-western master artists or architects who possess authentic inspiration and insight derived from free will. At the moment, the talent of artists and architects must be recognised before they can build a new paradigm or ideology, and those future visionaries often fall into reconciliation with the reality for convenience. Modern capitalism is certainly the beginning of this disaster, and its domination becomes tighter as time goes by. Culture is instrumentalised for such purposes as the art market often determines the recognition of artists and architects. The validity of culture and its relevance in contemporary art and architecture must therefore be seriously considered before any further involvement is established between artist and the art market. This rather crusading aim would involve a fundamental change in the way people look at cultures without the mundane logic of capitalism. Genuine works of intellectual and spiritual elaboration, however, can still be abundant although this paradox maybe later detected and adequately validated. This sort of situation should indeed be extremely rare if the system of art market operates in search of valid institutions of other cultures. When the capitalistic attitude can be successfully changed into a more idealistic one, works of art and architecture can be truly valued for their own sake, as the works would be created solely in accordance with a particular system of knowledge and belief.

As Pierre Bourdeau (1994) had already remarked, the art market plays as a marker for class distinction, and culture is in no sense exceptional. More elaborate use of culture would lead to higher recognition, and it would again create more capital; in another words 'more profit'. It would be extremely important to read a culture as a system of inculcated beliefs and practices that shape imagination, desire and skill, that also distinguishes one culture from another. The tradition of culture has apparently changed dramatically over the years. Traditional apprenticeship became replaced by a school system specialised by professionals. The distinction between vernacular and modernism made earlier in this dissertation had sufficiently demonstrated such an institutional transition. Looked from this viewpoint, culture no longer exists as an authentic entity in its own right. It becomes a property and an asset that must be

[20] Said, Edward, *op. cit.*, 1995, pp. 321

exploited and valued. This is the trap which we lock ourselves within, preventing us going beyond the current horizon.

Modern architecture saw the creation of the 'International Style' which could value its capital in the market, and could win recognition from the public. The abstract reduction of the modern movement then resulted in a dehumanised and discontinuous built environment. The recognition of the International Style brought a dissemination of items designed in a particular way, a mechanised systematic production, but it did not promote human welfare. Equally, the use of feng shui or any other kinds of cultural product would only create such half-baked products unless they were understood and interpreted as serious systems of knowledge independent from commercial values. At the moment, the proliferation of feng shui in architectural practice completely lacks genuine understanding of what it is all about, and how it worked in its original sense[21]. In feng shui, everything too easily melts into the name of tradition or a secret system of knowledge. For the purpose of commercialisation, feng shui was mystified and then deliberately promoted as a secret panacea. This attitude will only result in the real values of non-western traditions being marginalized what can be further considered to make a better sense of the world in which one can find one's own place along with others'.

Within the Modern Movement in architecture, various attempts to learn from different cultures, mostly the vernacular cultures, can be detected. Although buildings of vernacular and modern differ in most of their features such as decoration, material and scientific structure, one of the common features of both is that they aimed to be very functional. The functional orientation of vernacular architecture, being immediate, parallels Modern architecture's famous catch-phrase "form follows function" which was provided by Louis Sullivan. Under the vernacular tradition, embellishment of natural material revealing construction and structure somehow looks primitive or underdeveloped. However, showing structure in Modern architecture results in the same appearance. The difference between the two can not be defined easily, since vernacular in this thesis refers to the level of human consciousness, even if vernacular people knew which building they should reveal the structure and which they should

[21] For the recent proliferation of feng shui in the West, see Hwangbo, A. B., "A New Millennium and Feng Shui", Journal of Architecture, Vol. 4, No. 2, E & FN SPON, London, 1999, pp. 191-198

not[22]. Oliver (1969) admitted that the architectural honesty of vernacular tradition, for instance timber frame, reinforcement of mud walls and tensile structure of reed huts, affirms the integrity of modern structural aesthetics[23]. Walter Gropius claimed that

"the Japanese house is so strikingly modern because it contains perfect solutions, already centuries old, for problems which the contemporary western architect is still wrestling with today: complete flexibility of movable exterior and interior walls, changeability and multi-use of spaces, modular co-ordination of all the building parts, and prefabrication[24].

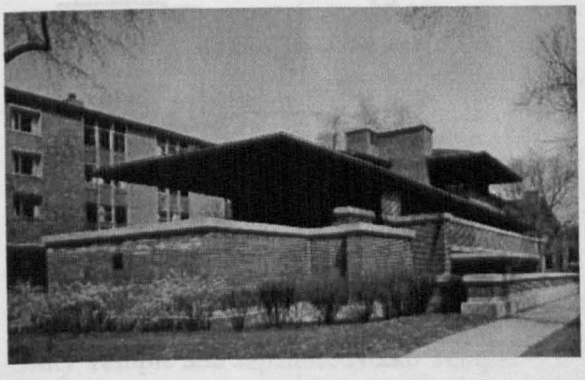
His remarks, however, not only apply to Japan but also can be appropriate to East Asian culture more generally. Gropius's praise can be summed up as three parts; flexibility, multi-use of space and modular system. Among these three, multi-use of space can be found in virtually any number of cultures, although their implications may differ from case to case. Flexibility of walls is brought, virtually with the modular plan, from the *tatami* floor plan. The modular system dates back in fact more than a thousand years in China as exemplified in the chapter five. Prefabrication is also an outcome of the establishment of the modular system. Tiles, walls, windows are all subject to the modular system. If it is true that the Japanese were as rational as those modern pioneers of architecture, as Gropius claims, then the modernisation of Japan in general should have been ahead of that of Europeans, for their artefacts were built hundreds years earlier. In short, practicality is one facet among numerous possible characteristics in a specific vernacular world. Gropius seems to have missed the symbolic values of *tatami* modules laid upon the numerical significance, and the Japanese beliefs about their built environment. Gropius's position here clearly represents his attitude towards modern architecture; functionalism. His approach, however, must be looked at together with that of contemporaries such as Hans Scharoun, Bruno Taut, Hugo Häring, etc., who paid attention to vernacular cultures in an effort to achieve a fresh inspiration for modern architecture. These architects in this context are Romanticists who wanted to mirror their images through other traditions.

[22] This point can be most vividly found in the embellishment of the ceiling in temples or palaces of East Asian cultures. Embellishment of ceiling in temples or palaces meant the hierarchy of building and the significance of occupants.

[23] Oliver, Paul, "Shelter and Society", Barrie & Jenkins, London, 1969, p.22

[24] Gropius, Walter *et. al.*, "Katsura, Tradition and Creation in Japanese Architecture", Yale Univ. Press, New Haven, Conn., 1960, p. 1-11

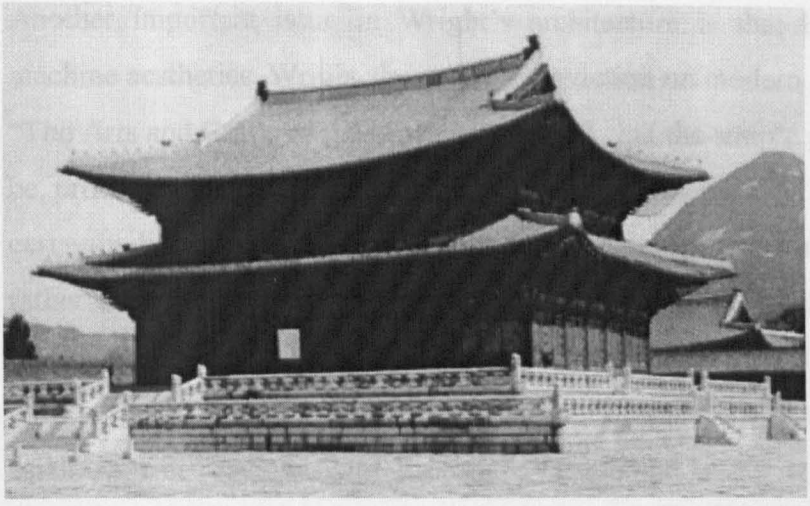
The romantic attitude to non-western cultures at the turn of the century in Europe and America may explain the popularity of Japanese art and architecture at the birth of modern architecture. Frank Lloyd Wright would be an extreme example of those oriental romanticists. Wright was so deeply impressed by Japan that his architectural vocabulary often vividly exemplifies Japanese influences, although he claims Japanese culture only confirmed what he believed. For instances, his hovering roof planes of Frederick C. Robie house in Chicago appears to have influenced by double eaves in Japanese temples which is also common characteristics in East Asian architecture [Figure 9-1, 9-2, 9-3 and 9-4]. His symmetrical concept of the Unity Temple as well as domestic space in many houses also resonates that of Japanese temple [Figure 9-5]. His logic of the "destruction of the box" perhaps the best example of all to reveal Wright's debt to Japanese architecture [Figure 9-6]. Despite Wright's insistence on the procedure A-B-C in the Figure 9-5, it does not seem to provide any logical deduction process. Rather, according to Nute (1993), the "destruction of the box" appears to have come from that of Japanese temple whose structure can actually be stripped off logically[25].



[Figure 9-1] Frederick C. Robie House (1905) Frank L. Wright

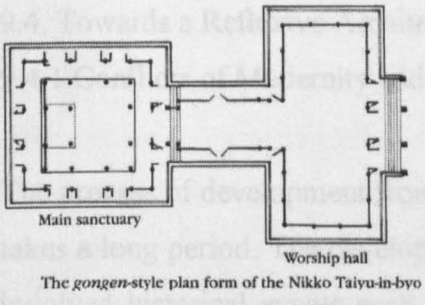
[Figure 9-2] A Double-Eaves of Japanese Tea House (at the Columbia Exhibition held in Chicago in 1893)

[25] Nute, Kevin, "Frank Lloyd Wright and Japan", Chapman & Hall, London, 1993, pp. 62-63

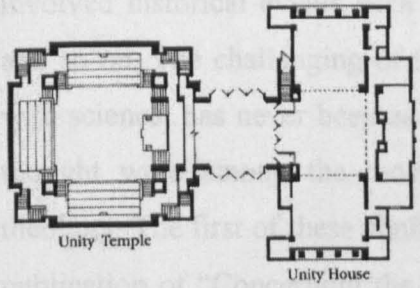


[Figure 9-3] A Double-Eaves of a Korean Palace in Seoul (1394)
(The current building was rebuilt in 1867 after the fire)

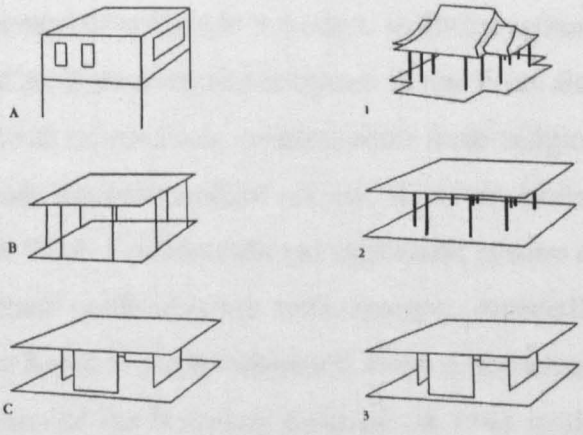
[Figure 9-4]
Han Dynasty Clay Model



The *gongen*-style plan form of the Nikko Taiyu-in-byo



[Figure 9-5] A Spatial Contrast between Unity Temple and Japanese Nikko Temple
Source: Nute, K., 1993



[Figure 9-6] "Destruction of the Box"
Source: Nute, K., 1993

Even if Japanese influence on Wright's works should prove apparent, Wright's victory over Japanese art and architecture should nonetheless be only credited for its innovative re-adaptation, simplification and elimination of architectural elements for the new function and purpose. This point can be further strengthened in that Wright used Japanese concepts only in the spatial organisation of both plan and elevation, not detailed ornamentation.

Another important issue in Wright's architecture is that he did not totally trust machine aesthetics. Wright showed his conviction on modern architecture in his paper "The Arts and Crafts of the Machine" in 1901 that the simple geometrical forms could be produced by machine, and that it would form part of a new architecture. He certainly did not want the machine as an ultimate solution for a new architecture, but rather attempted to combine an industrial logic with the qualitative aspect of life. It was then from Japan in pursuing his grand aim that Wright could obtain insights and intuitions. This aspect further clarifies the importance that Wright attempted to establish a new synthesis of East and West, rather than just copying Eastern motifs into his 'Western' works. His understanding of architecture, 'no new form without no new idea' also demonstrates his attitude.

9.4. Towards a Reflexive Architecture

9.4.1 Conflicts of Modernity and Culture

The process of development from the vernacular culture to a modern scientific culture takes a long period. The development of modern scientific countries in the West also involved historical events such as political reformation, emancipation from religion and so on. The challenging of the attitude towards modern society, however, armed with science, has never been easy in the West. Well-established traditional system of thought were among the most important confrontations with science, especially theology. The first of these conflicts was found in the Renaissance. From Copernicus' publication of "Concerning the Revolution of the Heavenly Spheres" in 1543 to the Galileo's recantation in 1633, scientific development had to challenge the most authoritative institutions of the time. Most learned people, trapped within the illusions brought by an academic training from their forebears, resisted the scientific truth. Russell notes that "respect for observation as opposed to tradition is difficult and contrary to human nature. Science insists upon it, and this insistence was the source of the most desperate battles between science and authority"[26].

Be that as it may, over the past two hundred years, the West achieved a tremendous scientific development. The influence of science on society nonetheless began to be

[26] Russell, Bertrand, "The Impact of Science on Society", Unwin Bros. Ltd., London, 1952, pp. 18

viewed from a rather pessimistic perspective. Russell pointed out that "as the scientific technique increases the importance of organisations, and therefore the extent to which authority impinges upon the life of the individual ... ... scientific oligarchy is bound to become what is called 'totalitarian'..."[27]. In the modern society, being a highly rationalised and systematised mass culture, the totalitarian mind of the planners, bureaucrats, and corporate elites were among the most alarming elements to the society,[28] while another group of contemporary philosophers have been searching for human values, not in the domain of scientific method, but by a different method which can be known[29]. Perhaps Medieval physics was a study of values rather than a mere instrumental discipline. Indeed, Russell noted that "science used to be valued as a means of getting to *know* the world; now, owing to the triumph of technique, it is conceived as showing how to *change* the world"[30]. Before modern science became dangerous to human kind as it is today, it was a beneficial method, awakening humankind from religious darkness. Ravetz (1978) claimed that "the classic simple optimism of science may relate to a stylistic feature of European culture"[31]. This pink optimism unfortunately turned out to be a threat to humanism.

It is simply because although science was the means to build modern technological society, it escaped from human control and proved to be an unforeseen disaster. The most dramatic failure of modern science as a means turned up as a collective madness of the late developing countries such as Germany, Soviet Union and Japan; Nazis, Communism and Imperialism. Bertrand Russell (1950) noted that those phenomena seem to have come due to foreign origin and its sudden advent. As late industrial countries, they needed to develop industry as fast as they could. The sudden advent of foreign industrialism was combined with vernacular characteristics which almost certainly evoked extreme nationalism or socialism.

Russell (1950) also pointed out that "we are not yet accustomed to applying science to the human mind. Science has powers for evil, not only physically, but mentally: the hydrogen bomb can kill the body, and government propaganda (as in Russia) can kill

[27] Russell, Bertrand, *op. cit.*, 1952, pp. 59
[28] Harvey, David, "The Condition of Post-modernity", Basil Blackwell, Oxford, 1980, pp. 5
[29] Hall, Everett W., "Modern Science and Human Values", D. Van Nostrand, N.Y., 1956, pp. 5
[30] Russell, Bertrand, *op. cit.*, 1952, pp. 98
[31] Ravetz, J. R., "The Symbol of Science in European Thought" in "Human Implications of Scientific

the mind"[32]. He also continued that "scientific societies are as yet in their infancy. It maybe worthwhile to spend a few moments in speculating as to possible future developments of those that are oligarchies"[33]. Among many visionaries at the early modern times, Huxley (1880) warned of the scientific influence to society and culture. He asserted that "the pretensions of our modern Humanists to the possession of the monopoly of culture and to the exclusive inheritance of the spirit of antiquity must be abated, if not abandoned"[34].

9.4.2 Risk Society & Reflexive Modernisation

The loss of humanism and subsequent collapse of a continuous dialogue in history and culture may not be a completely new phenomenon. Giddens (1990) pointed out that the features of discontinuity in modernity with respect to the past are the pace and the scope of change as well as the intrinsic nature of modern institutions which can not be found in previous societies such as nation states or systematic capitalist production[35]. Even though there were attempts to develop modern society into a humanistic welfare society under the umbrella of capitalistic nations from the beginning, those endeavours produced an unexpected nationalism, economic crisis and even a war.

While the scope and the pace of modernity regarded the quantitative side, the intrinsic nature of the modernity refers to the application of science to politics and economics. Habemas (1971) claimed that the scientific mode of thought is developed into political ideology and economic strategy[36]. Perhaps it is true that Modernism before World War I was more of a kind of reaction to unexpected conditions of production, circulation and consumption than it was a pioneer of those changes[37], but it also gradually appeared to be a controlling power of the society. In architecture,

Advance", Eds., by E.G. Forbes, Edinburgh University Press, 1978, pp.34

[32] Russell, Bertrand, "Science to Save Us from Science", The New York Times Magazine, 19th March 1950, reprinted in printed in "Great Essays in Science" eds., by Gardner, Martin, Oxford University Press, 1985, pp. 405

[33] Russell, Bertrand, *op. cit.*, 1952, pp. 65

[34] Huxley, Thomas Henry, "Science and Culture", Address delivered to the opening of Sir Josiah Mason's Science College, Birmingham, England, 1880, printed in Gardner, Martin (*eds.*), "Great Essays in Science", Oxford University Press, 1985, pp. 144

[35] Giddens, Anthony, "The Consequences of Modernity", Polity Press, Cambridge, 1990, pp. 6

[36] Habemas, Jürgen, "Towards a Rational Society", Heinemann Books, London, 1971

[37] Harvey, David, *op. cit.*, 1980, pp. 23

monotonous and systematised architectural goods were produced under the strategy of scientific politics and scientific economics which eventually proved to be non-human totalitarian products. Against this totalitarian perspective of modernity, post-modernity came into existence principally in reaction. Whether the term is accepted or not, there was a strong tendency against almighty scientific modernism. Giddens said that "the post-modern outlook sees a plurality of heterogeneous claims to knowledge, in which science does not have a privileged place"[38]. Nonetheless, for Giddens himself, current society is moving towards a high-modernity rather than entering the post-modernity[39], if the prefix 'post-' symbolises 'anti-' in general. He argues that although post-modern will eventually come into being, this rather simplistic approach brought a reflexive trend in building a new paradigm to replace post-modernism. Post-modernism in fact appears to be only a reactionary current which does not require much intellectual development. Indeed, the prescription for post-modernism often seems to be the opposite to that of modernism. In architecture it is certainly true as the two opposing styles only resulted in more styles and eventually a crisis in architectural style.

The fast systematisation of production and social organisation, driven by aesthetic motivations, brought an unforeseen social status which threatens even the survival of the human species; the emergence of the 'risk society'. The risk society, according to Beck (1992), is not an option to choose or reject, but the due course of an automated process of modernisation. In another words, risks and hazard are the consequences of scientific and industrial development which are unprecedented[40]. Lash and Wynne points out that if modernity is very much co-existent with industrial society, then reflexive modernity is with the risk society[41]. The risk society involves two phases, of which the first regards the emergence of the failure of the social system as self-threatening. At the second stage, it develops into an uncontrollable chaos despite the old social system still working but only in the interests of its own organisation. The risk society may produce nationalism, mass poverty, religious fundamentalism,

[38] Giddens, Anthony, *op. cit.*, 1990, pp. 2
[39] Giddens, Anthony, *op. cit.*, 1990, pp. 176
[40] Beck, Ulrich, "Risk Society: Towards a New Modernity", SAGE Publications, London, 1992 (originally published as "*Risikogesellschaft: Auf dem Weg in eine andere Moderne*", Suhrkamp Verlag, Frankfurt am Main, 1986)
[41] Lash, S. & Wynne, B., "Introduction" in, Beck, Ulrich, *op. cit.*, London, 1992, pp. 3

economic crises, possibly wars and revolutions[42]. This tragic scenario would bring not only a sharp cut of cultural continuity, but perhaps eventually even the demise of the human species.

To find an exit from this chaotic society, a new paradigm was suggested under the title 'reflexive modernisation' which implies that recent social progress can turn into self-destruction in which two or more modernisations undercut and change one another in order to give a birth to a new society with growing wealth rather than the Marxist perspective of pain and poverty[43]. According to Beck (1994), 'reflexive modernisation' means "the possibility of a creative (self-) destruction for an entire epoch: that of industrial society. The 'subject' of this creative destruction is not the revolution, not the crisis, but the victory of Western modernisation"[44] He also asserts that reflexive modernisation is "a radicalisation of modernity, which breaks up the premises and contours of industrial society and opens paths to another modernity"[45]. Reflexive modernisation is therefore a modernisation of modern industrial society, fundamentally different from the first modernisation which occurred to traditional or vernacular society. One must bear in mind what Beck (1992, 1994) intends here about the 'radicalisation of modernity', e. g. modernisation of modernisation. The notion does not indicate the problem in the hardware of the modern society (e.g. environmental problems such as pollution, nuclear weapon and so on, as these risks are infinitely reproducible; while no one can rule these possibilities out, the impacts on society increase dramatically), but in the software which runs it; the institutional crisis which arose from the triumph of the instrumental order of rationality. Therefore, he regards the essence of the risk society as more an "ecological problem than mere "environmental problem". His ultimate assertion on the risk society is that the ecological problems cannot be solved within the system. The modern logic of wealth production and risk production is reversed in the risk society, and that its consequences maybe irreversible. Due to its global scale of risk, the risk society even creates critical dialogues beyond the classical platform of politics, economics and various social institutions such as family structure, gender issues and so on. Here,

[42] Beck, Ulrich, "The Reinvention of Politics: Towards a Theory of Reflexive Modernisation" in "Reflexive Modernisation", Polity Press, 1994, pp.4-5
[43] Beck, Ulrich, *op. cit.*, 1994, pp. 3
[44] Beck, Ulrich, *op. cit.*, 1994, pp. 2
[45] Beck, Ulrich, *op. cit.*, 1994, pp. 3

however, one should also take a close look at his concept of reflexive modernisation, for it does not imply a whole-sale bargain of modernism or yielding unconditional controlling power to a new paradigm. Beck's commitment is still on the framework of scientific thinking and technological society. As Lash and Wynne (1992) note, 'reflexive modernisation' only implies to confront and try to accommodate the essential tension between human indeterminacy and the inevitable tendency to objectify and naturalise man's institutional and cultural products[46].

According to Habemas (1971), the risk of modern scientific society occurs in the name of rationality, but in reality is a form of unacknowledged political domination. He wrote that, "The progressive "rationalisation" of society is linked to the institutionalisation of scientific and technical development. To the extent that technology and science permeate social institutions and thus transform them, old legitimations are destroyed. The secularisation and "disenchantment" of action-orienting worldviews, of cultural tradition as a whole, is the obverse of the growing "rationality" of social action"[47]. Ernst Bloch also pointed out that the rationality of modern science is distorted by capitalism in order to make use of modern technology, the innocence of a pure productivity force[48]. In the mass production culture and society, technology is made use of not only for the purpose of effective production for the mass consumption society, but also as a political controlling device. In architecture, its use as a social controlling factor is evident. The provision of collective housing and zoned use of land reflect a misled use of science and technology. This is one of the main reasons why modern architecture and urban design failed. The reflexive use of these science and technology can only solve the strengthened risk of contemporary society, as far as architecture is socially needed. The reflexive modernisation can therefore dissolve the industrial society and produce a new modernity, according to Beck, just like modernisation dissolved the structure of feudal society and produced industrial society[49].

[46] Lash, S. & Wynne, B., "Introduction" in, Beck, Ulrich, *op. cit.*, London, 1992, pp. 6
[47] Habemas, Jürgen, *op. cit.*, 1971, pp. 81
[48] recitation from Habemas, Jurgen, *op. cit.*, 1971, pp. 85
[49] Beck, Ulrich, *op. cit.*, 1992, pp. 10

9.4.3 Reflexivity in Architecture

To overcome the current chaos in the architectural discipline, of form and style, retrospective and reflexive modernisation of architectural theory and practice is needed, and it may open a wholly new horizon for future architecture. In the contexts of Orientalism and the emergence of the risk society, it would be beneficial to examine the trajectory of the development of modern architecture to increase understanding of the changing conditions in the contemporary architectural discipline. It needs a change, yet another fundamental change in its modality. What is about to happen, however, is what history has already taught.

The dominant modern architecture of International Style, first of all, emerged in a mood of total iconoclasm against conventional feudal society, and post-Modernism emerged in principle against its predecessor. Although post-Modernism identified a number of significant problems in Modernism, it came into existence rather as a form of reactionary current. In architecture, the clash of '~isms' is really an unfortunate situation as it distracts people's attention from genuine works of architecture from creative individuals. The problem of '~isms' was already well identified by László Moholy-Nagy in his 1926 article 'Isms or Art'. He explained 'Ism History' as an art historian's attempt to "conquer the primary, autonomous, purely painterly means of creation ... ... there is no such thing as an Ism, but only the work individual artists who have succeeded in achieving a conformity between their vision and the subconscious aspirations of their times"[50].

An ambitious mission aiming to achieve a seamless unity of sensory organs and thinking, however, entails the contradiction of objectifying incompatible modes of existence. Unless sensory experience can be integrated into factual entities, it is inevitable to have '~isms' that pay attention to a particular dimension of human interest. On the other hand, if there emerges a kind of phenomenon, such as a seamless unity, then it subsequently extirpates other individual '~isms' as the supposed synthesis would claim as the only truth; otherwise the chaos of '~isms'

[50] Moholy-Nagy, László, "Isms or Art", in Kostelanetz, Richard (*eds.*), "Moholy-Nagy", Praeger, New York, 1970, pp. 34-37 (recitation from Jarzombek, Mark, "A Prolegomena to Critical Historiography", Journal of Architectural Education, Vol. 52, No. 4, May, 1999, pp. 197)

would still continue as the unity will become merely one of those. Considering the East-West synthesis, it would first of all virtually eliminate the original cultures for the sake of the unknown unity, for an aesthetic interpretation of another culture to be used on one's own would inevitable create a misrepresentation or recreation. As chapter four has clearly suggested through examining the mode of representation in East Asian space and buildings, it is simply not possible to combine two alternative modes of thinking into a factual frame. The most notable attempt was an aesthetic interpretation as seen in Wright's works. One can now see an innate problem or ambiguity of the question of unity or synthesis of not only East and West, but also a matter of science and morality, and of today's intellectual weakness.

St. John Wilson (1992) deplored the deficiency in intellectual seriousness of post-Modernism, that it is simply the reverse of the rules of the International Style, and that both currents never venture beyond the aesthetic dimension[51]. The aesthetic dimension should certainly not be a confining domain to lead the whole phenomenon of an intellectual movement. This is perhaps the unfortunate beginning of modern architecture which St. John Wilson called a 'false start'[52]. Harvey (1980) also asserted that "aesthetic judgement, as in the cases of Heidegger and Pound, could just as easily lead to the right as to the left of the political spectrum... ... the twists and turns of modernism as a cultural aesthetic can largely be understood against the background of such strategic choices"[53].

In an architectural context, the notion of risk society, advocated by Beck (1992), does not merely refer to sensory disturbance or perceptive threats, but to the insecurity and eventually a loss of architectural culture *in toto*. Certainly, degradation and immiseration accompany the risk society, such as the contamination of tap water and genetically modified food, or victimisation by instrumentalising human beings, but it carries much more serious implications. First of all, the social production of wealth in architecture is viewed as a production of fine works by artists. It is an implicit yet fundamental condition of capitalism, like anything else, marginalising the demand for deep understanding and maturity. As the art market and architects' competitions play

[51] St. John Wilson, Colin, "The Other Tradition", AA Files, Vol. 24, Autumn, 1992, pp. 3-4
[52] St. John Wilson, Colin, *op. cit.*, 1992, pp. 3
[53] Harvey, David, "The Condition of Post-modernity", Basil Blackwell, Oxford, 1980, pp. 20

a catalysing role, contemporary architecture appears to have involved a systematic negligence in a cultural and intellectual sense, primarily induced and introduced by the modernisation process, for the sake of profit making. Risk, in this context, may not lead to the ultimate demise of the human species, but it will result in a similar effect as man will have to live with fundamentally lifeless society.

As Han (1998) notices many fast developing countries' paths of modernisation is tantamount to 'one dimensional development with a myopic strategy focusing only on economic development[54]. The rush for development led to structural deterioration of human relationships, which Habemas (1985) calls 'colonisation of the life world'[55]. Developing countries often lacked a balanced distribution of wealth, a reliable political system and most importantly they neglected human aspects in the process of modernisation of culture. The issue here is not a mechanical disaster, that maybe prevented by clearing corruption or taking any appropriate actions, but a lack of intellectual discussion. It hampers overall development towards a higher spirituality that will result in not only underdeveloped architectural discipline, but also bring the tendencies of cultural iconoclasm and the lack of humanism.

In the discussions so far posed, what is asserted hitherto is not the claim that there is such a thing as 'genuine synthesis of East and West (or past and the present)', but to identify what the East and West are, and what efforts are made. The underlying concepts of identities in this regard are, in the primary sense, of no use. Nagashima (1985) noted in her tribute to the 'Asian Planning and Architectural Collaboration' (APAC) Meeting held in Tokyo that "searching for identity is not an issue in itself. Identity is the true reality of what we are, rather than what we are trying to be... ... the ultimate search is not for identity but for a more humane world"[56]. This is exactly the same argument put forward by a Chinese philosopher Fung (1922) and a sinologist Sivin (1982), and it pertains to the explanation of the underdevelopment of modern science. Yet the triumph of scientific technology proved to have impoverished human habitability as one can sense through the International Style. The

[54] Han, Sang-Jin, "The Korean Path to Modernisation and Risk Society", Korean Journal, Vol. 39, No.1, Spring 1998, pp.20 ; see Herbert Marcuse, "One Dimensional Man", 1964

[55] Han, Sang-Jin, *op. cit.*, 1998, pp. 23
see Habemas, Jurgen, "Theory of Communicative Action", 1985

[56] Nagashima, Catharine H., "Architectural identity in the Cultural Context", Ekistics, Vol. 314/315,

blind trust of science-driven society therefore can not be a sound platform of East and West, and it is even strongly suggested in the concept of risk society as scientific rationality once again revealed its structural problems. Of course, the vernacular mode of thinking and doing can also not be a dominating idea for future society and its architecture. What is perhaps most accurate to say is what is shaping the future is certainly not what modern society intended to build, but it had to confront experience, and go beyond it. Modern architecture had already proved this through what it generated. The modern crisis of architecture is due not to what the masters of modernism attempted, but to an extensive reductionism which brought such failures as cultural discontinuity and loss of humanism.

Beck (1986) asserts that the criticism of science is counter-productive for the recognition of risks[57], and indeed it is a clear manifestation of possibility that the current crisis can escape to a better society; a society with a significantly higher level of consciousness. A consciousness of cultural risk is a significant manifestation of invisible phenomena that can be seriously dangerous to civilisation. Demystification of scientific rationality can perhaps begin with cultural criticism of science, and the overcoming of Orientalism is a way into a new paradigm in architecture and urbanism for the new millennium. Political illumination of the invisible chains of prejudices and privileges may be involved in this enterprise, but they will all in the end prove inadequate for relevance in the debate, and be found an impediment. The vision is not only for architecture and urbanism, but would also ultimately lead to an unbridled development of civilisation.

Beck (1992:156) suggests that science becomes more and more necessary, but at the same time, less and less sufficient for a socially binding definition of truth. Perhaps self-reflexivity is not an option to choose, but a condition for further development. Lash (1994) noted that "it (new self-reflexivity) would be a development immanent to the modernisation process itself. It would be a condition of, at a certain historical point, the development of functional prerequisite for further modernisation"[58]. The motor of this reflexive modernisation is an increased individualisation, which

Sept./Oct., 1985, pp. 504

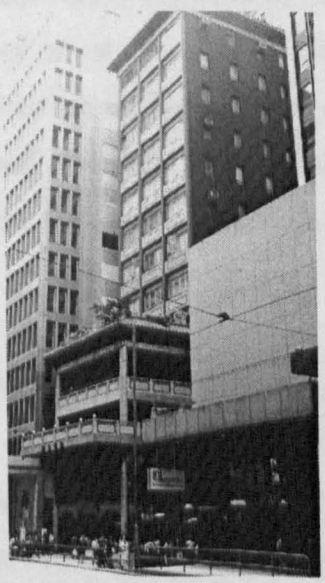
[57] Beck, Ulrich, *op. cit.*, 1992, pp. 72

[58] Lash, Scott, "Reflexivity and its Doubles: Structure, Aesthetics, Community", in Beck, U., *et al.*,

supposedly frees individuals from the stark social constraints of tradition and convention, and leads to a fully grown mature modern society.

This individuality in reflexive modernisation gives a strong parallel to the architect's individual creativity in the domain of the architectural discipline as a scientific process. Some architectural works in the streets of Hong Kong may show such individualised possibility in bringing an alternative paradigm in architecture on the basis of rationality [Figure 9-7 & 9-8]. These buildings are not widely introduced in world-wide sense, but certainly give a fresh impression how an East-West combination be approached. This kind of approach, however, entails a potential conflict between genuine creativity and mere cliché, as formal vocabularies would be very limited. As far as appearances are concerned, the more one approaches the idea of building something new, the more such contradictions would appear. Of course, there can not be artistic creativity totally 'without lacunae', but how much one can tolerate is the question. There indeed exists a thin line between successful creativity and mere pastiche, as any 'new' products would inevitably inherit from the past to which 'creative' individuals must have been exposed.

[Figure 9-7]
HSBC Branch in the central Kowloon



[Figure 9-8]
An Office Building in Hong Kong Island

Reflexivity in architecture is a socio-cultural critique of modernity, and that it goes beyond the clichés of post-modern propaganda. Reflexive modernisation would not

"Reflexive Modernisation", Polity Press, 1994, pp.112

only be valid at a political level, but would also serve a better understanding of the late modernity's reality that impoverished human experience in the name of scientific rationality. The modernist notion of self-consciousness now begins to shape a better form that can combine history and cultures which were once not relevant for the new discourses in architecture and urbanism. The separation of form from culture, as an autonomous expression of free will or of scientific rationality, proved its irrelevance graphically over the last half the century, and this should be enough.

The question posed by the increasing separation between the discipline and the profession (practice) of architecture also manifests the innate problem of reflexivity in architecture and other plastic arts. There has been a long effort to put architecture forward as a scientific process, and to see the outcome of the process as a scientific product, while it is still regarded as an art subject in the logistical context. For instance, building science departments located in many universities try to look at buildings as an operating machine, while art historians in the art faculty regard them as cultural objects. Between these academic polemics, architects design buildings (or pieces of architecture) as the objective outcome which is, at the same time, subjective. While scientific rationality as an operating instrument maybe replaced by reflexivity, architectural works or the built environment as 'ends' or 'product' would still be subject to aesthetic judgement. Reflexivity in architecture is thus a slippery concept, for though it is an illuminating vehicle to integrate and elevate practices of scholarship from Orientalism or Risk society, as it lacks a critique adequate to the aesthetics of its practice.

There may not be such an integration between a discipline and its practice, and this dilemma even suggests the dominant modality of modern self-projection which confirms no exit from aesthetic interpretation of the architectural process. Despite the problem that it might be hard to expect practising architects to confront this dilemma, it should be a working platform in their minds. Thus it can be established as the intellectual functionalism in the architectural discipline. The emergence of an interdisciplinary critique in architecture certainly shows the architecture's dialectic incompleteness and its disciplinary homelessness, while acknowledging inherent interdisciplinary aspects of human life. Human life is indeed a web of myriad of phenomena that can not be objectified nor greatly simplified. Venturi (1966) also

noted that the inherent complexities and contradictions of living which need to be related to actual practice[59]. Venturi preferred messy vitality over obvious unity, with the implication of totality, for what he, as an architect, wanted was to express the richness and ambiguity of modern experience[60]. Venturi's aesthetic interpretation occupies an important position in architectural theory and history, as it changed architects' attitudes towards more flexible design, though its implications remain still somewhat uncertain in terms of cultural synthesis and continuity. Perhaps the notion of reflexivity in architecture would be another great riddle of the architect's life, for its goal is for unity to unravel the process of constant development in human consciousness and its manifestation in forms of architecture and urbanism. Reflexivity is a mode of thinking, it can not be architecture, but rather it serves as a critique that encourages and stimulates architects to confront the imperative conceptions of closure and synthesis.

9.5 Summary

With the arrival of a multi-cultural hybrid society, debates on Orientalism and reflexive modernisation open a new horizon to the modernist notions of self-consciousness and scientific rationality which begin to mutate towards a better consciousness about the culture and its relevance to contemporary discourses in architecture and urbanism for future society. Different ways of thinking in different cultures could perhaps provide a necessary working platform to initiate such mutation in future society for better or worse. Although there appears to be no way out of the current scientific rationality in building better paradigms in architecture and urbanism, unravelling its inadequateness and structural weakness in contemporary discourses, which led to questioning its validity in modernist propaganda, enables one to gain better insights and inspirations. The emergence of the risk society suggests a changing disciplinary environment where there is a need to find alternative systems of knowledge and cultures which would play a vital role in reflexive modernisation. Recognising the validity of alternative systems of knowledge, values and customs in the domain of modern science is indeed a good sign for future debate in this subject.

[59] Venturi, Robert, "Complexity and Contradiction in Architecture" (2nd edition), The Museum of Modern Art, New York, 1977, pp. 41
[60] Venturi, Robert, *op. cit.*, 1977, pp. 16

Such recognition, however, poses another problem: that the current art market and architects' competition became an institution that actually hampers reflexive modernisation. It is a paradox to encourage artists and architects to employ alternative systems of knowledge and cultures for the sake of building artistic creativity or humanism; for the works of artists and architects need to be recognised within the dominating cultural system. If these two cultures, as systems, are incompatible, then how one can possibly justify one's decision on their judgement or verification of the validity of art or architecture, whether it is based on scientific rationality or personal, societal taste? This chapter attempted to open an argument that needs to be taken as a structural problem which locked contemporary people in the revolving doors of modernism and scientific rationality. What is perhaps most needed at the moment, recognising this series of dilemmas, is first of all to retrieve alternative systems of knowledge and cultures that were hitherto unavailable (or simply neglected by mainstream modernism), and carry them forward to make available in the central debate where new possibilities on the fresh conceptions and paradigms in architecture and urbanism maybe suggested, tested and eventually employed for a future *modus operandi*.

Chapter 10

Epilogue

10.1 In Defiance of Total Iconoclasm

Towards the late 1970s and early 1980s, mainstream architectural history and theory appeared to be increasingly losing its currency, and moved nearer to intellectual bankruptcy. Modernist propaganda of utopian society revealed a lack of humanism and breaking cultural continuity. It was replaced by postmodernism, but this was also criticised for bringing a miserable sense of dystopian evolutionism. The intention of the current thesis was to construct the complicated shift from the vernacular to modernism in the context of cultural continuity and progressive innovation rather than rupture and total iconoclasm. The complex alliance between the vernacular and modernism, that underlay the overall transformation across the society based on scientific rationality, left abstruse vestiges of the development of human consciousness.

Perhaps, the arrival of a reflexive-modernisation dialogue may open a fresh debate on the possibility of new conceptions in architecture. Current architectural praxis urgently needs a new horizon with much more profound understanding of space and people's place in it. It should be a paradigm beyond both modern science and Orientalism. It would, at the same time, be based on rationality, and the Orient can play a vital role in building new paradigms in architecture. In response to the call for such needs, it is not sufficient to appeal neither to a humanitarian attitude[1] nor within the limits of Western culture when more resources of non-western cultures are available. A series of serious questions in scientific rationality was already posed by sociologists such as Beck (1986 & 1994) and Giddens (1990), and a new attitude to non-western cultures began to emerge from historians such as Said (1978).

[1] Heynen (1999) notes that the worn-out appeal to "human values" has proved incapable of averting the worst atrocities. See Heynen, Hilde, "Architecture and Modernity: A Critique", The MIT Press, 1999, pp. 221

A possible scenario for achieving social and cultural integrity, however, may not be completely different from what we have hitherto known and seen, as already discussed in the syncretic works of Frank Lloyd Wright. What is for sure, though, is that it would form part of a contemporary utopian notion of a more humane and culturally diverse future society. This study is therefore by no means a euphemism for intense criticism of the perpetuating hegemony of culture in the built form, or of the promiscuity of romanticism and avant-garde in the Modern Movement. This thesis is an attempt to awake a conscious awareness of the crisis in architecture, and the possibility of building alternative paradigms in future architecture and urbanism.

A quest for a profound transformation does not necessarily amount to a radical discontinuity with the past, nor result in an anti-humanitarian tendency. A fluctuating rupture with the past, against a long established mode of thinking, beliefs and practice in the course of transformation, however, may incur a reactionary attitude. It is nonetheless a task that just has to be undertaken as an endeavour in a frenetic search for alternative paradigms in future society where new architecture and urbanism can be found within them. The transformation would not be a simple transfiguration of rationality and spirituality, but a total transition from one mode of cultural, intellectual life as a whole to another. Culture, however, is no longer a coherent entity which establishes a link between time (past, present and future) and space (East and West) that served as 'tradition'. The tradition of culture has therefore changed, and there is no longer a need to establish homogeneous progeny in the contemporary society as it became heterogeneous, hybrid entity. This transition, at the same time, must follow from historiography that is indeed a sole source for the task. According to Jarzombek (1999), historiography is more than just what historians have to say about each other's work, but it is the dialectical equivalent in history of the modernist notion of self-consciousness[2].

The modernist notion of self-consciousness was nonetheless unfortunately that of a swinging pendulum between utopia and dystopia, as avant-garde movements only resulted in total iconoclasm although their good intentions were most sincerely

[2] Jarzombek, Mark, "A Prolegomena to Critical Historiography", Journal of Architectural Education, Vol. 52, No. 4, 1999, pp. 200

formulated in their minds[3]. With respect to cultural influx in the course of modernisation, iconoclasts' stance for radical transformation, however, does not appear to be a condition for high modernity. Lin (1978) asserted that, "political and social revolutions are not inevitably dependent upon cultural revolutions, nor do they necessarily give rise to them... ...(therefore) totalistic iconoclasm is by no means inherent in the process of modernisation or in striving for modernity"[4]. Certainly, the avant-garde architects and artists did try to envisage unities in culture and society. The prestigious Chinese architect Liang Ssu-Cheng (1952) recognised that China faced the most vital issue in modernism and modernisation of culture and society. His passage quotes the socialist dogmas, and it runs:

"China's new architecture must be scientific; it must be the expression of an outlook which stands for seeking truth from facts, it stands for objective truth and for unity between theory and practice..., and it must be an art that has developed out of her old culture. New China's architects must respect our own history and should not break it up ... respecting its dialectical development, but not eulogising the ancient while disparaging the modern... it should direct them (the masses of people) not to look backward, but to look forward"[5].

He also asserted that the new architecture that he proposed is democratic in the sense that it is in the interests of the broad masses who occupy ninety percent of the population[6]. Surely, all countries in the world at the time fought for the same unity and diversity, but what has eventually come to modern life was kitsch ephemerality rather than continuous cultural heritage *par excellence*.

Thinking of contemporary architecture in this way would be a good preparation for the continuing study of what is shaping in the evolving, ever-changing scene about a new way of designing and building. Contemporary architectural practice urgently needs ideas and theories of architecture that will allow architects and planners as well as clients to conceive a new mode of operation. As it would give rise in the

[3] For example, the first manifesto of the Dutch '*De Stijl*' movement (1917-31) in 1918 shows an attempt to combine the individual and the universal, and bringing the new art independent from the constraints of tradition; The Bauhaus (1919-32) also manifests a continuous reformation process. The Weimar Bauhaus Proclamation in 1919 intended to indifferentiate craftsmen and artists hitherto separated, and to embrace architecture, sculpture and painting in unity.

[4] Lin, Yü-Sheng, "The Crisis of Chinese Consciousness: Radical Antitraditionalism in the May Fourth Era", The University of Wisconsin Press, Madison, Wisconsin, 1979, pp. 4 & 7

[5] Liang, Ssu-Cheng, "China's Architectural Heritage and the Tasks of Today", People's China, Vol. 1, No. 21, November, 1952, pp. 35

contemporary society in a new way, one requires to establish one's own relation to live with it. The need is, however, a dilemma of catching two hares at the same time; a continuously changing industrial society and the mission of carrying tradition forward.

Cultural criticism that assesses the current dialogue and guides future debate in architectural discipline also needs to employ human dimensions in architecture detectable in all levels in all cultures. In fact, there exists intense similarity between East and West, and that they do not reveal incompatibility of their modes of being in the world; *raison d'être*. For example, with respect to orientation, Viollet-le-Duc's writing gives an interesting similarity with that of Chinese cosmography. Viollet-le-Duc (1873) wrote that,

"We must ... build the house almost on the summit of the incline facing the north – sheltering it from the northwest winds under the neighbouring wood. The entrance will have to front the ascending road; but we must arrange for the principal apartments to command the most favourable aspect, which is southeast; moreover, we must take advantage of the open view on the same side, and not disregard the spring of fresh water that flows on the right toward the bottom of the valley; we shall therefore approach it and locate the house in that resting place that nature has arranged so favourably to our views, some yards below the plateau ..."[7].

Viollet-le-Duc's idea on orientation stated in the above sentences is obviously dominated by pragmatic functional reasons, but it does show some preferences motivated by human sentiments such as open view. Functionally, Viollet-le-Duc's conceptual house is almost the same concept of ideal feng shui design as carefully studied in chapter six of this thesis. What is significant in the comparison between Viollet-le-Duc's ideal program and ideal Chinese design is that, despite their morphological similarities, their intentions of building are derived from completely different sources, and they are incompatible in their fundamental contexts. This is, however, always a challenging point for future architecture because aesthetic re-interpretation can lead to another creation which may not even need its source of inspiration as far as one sees the new as an autonomous form, regardless of its contents and context. An attempt to compare and evaluate two conceptual houses in

[6] Liang, Ssu-Cheng, *op. cit.*, 1952, pp. 35
[7] Viollet-le-Duc, Eugène, "*Histoire d'une maison*", Paris, 1873 (translation from Hearn, M. F., *op. cit.*, 1990, pp. 145)

terms of their formal configuration is, therefore, inappropriate to elevate the debate to a higher level, and that it becomes only a disadvantage for future creativity and a predicament for a better worldmaking.

10.2 Conclusion: In Search of Alternative Traditions in Architecture

In an effort to wrestle with one of the most sensitive and difficult problems of contemporary architecture, a harmonic synthesis of past and present, of East and West, this thesis has undertaken an interdisciplinary cross-cultural research on the alternative conceptions in architecture. The thesis is concerned in the way architecture is conceptualised, built and perceived in different times and different regions. The thesis is by no means an attempt to resuscitate moribund notions in romantic traditionalism such as revival of feng shui, nor patronise an illusion of modern panacea, but to awake a consciousness that the crisis of contemporary architecture needs much more intellectual debate with an open mind. The current study does not aim to assert that there is such a thing as 'a genuine synthesis' of past and present, or East and West. Rather it attempts to sense how such an effort maybe made by scrutinising the fundamental natures of the Modern Movement and East Asian architecture; i.e., alternative traditions in architecture.

By clinging to the formal aspects of architecture, as presumed by many modern thinkers that the fundamental methodological instrument of history should be the concept of form[8], modern architects missed out the fundamental problems and the serious intellectual challenges derived from the struggle in an attempt to settle modern architecture. The adherence to the formal system of modernism would not provide a way out of the current dilemma of architecture. The current situation is in many contexts similar to that of the turn of the last century when architects such as A. W. N. Pugin reverting to the past to find a solution for the contemporary problems. As discussed throughout this thesis, different modes of conceptions and the historic debates would only be valid in so far as the context remains unchanged. There is need

[8] This notion is derived from Georg Simmel's thesis on the theory of forms.
see Oakes, Guy, "Georg Simmel: Essays on Interpretation in Social Science", Manchester University Press, 1980, pp. 8-27

to address the future, not returning to the past and tradition, as it is undeniably a condition that one can not get away anyway.

Asfour (1998) recognised the deficiency of intellectual processes in combining multiple cultures into a synthesis with a special reference to Egypt and other Arab cultures[9]. He (1998) notes that images are moved from one culture to another without sufficient understanding of their meanings, which he termed 'cut and paste modernism'; the process which involves cutting ideas from its original cultural fields, the European, and pasting them with their logic in the new field, the Arabian (in lack of inquisitive consciousness)[10]. This intellectually deficient logic was not only that of Arab world, but any non-western cultures who faced pretty much the same task of modernisation, which is yet unchanged. Hence 'cut and paste modernism' necessarily conditioned the causes for the problem of kitsch, and it became a cliché as a corollary. Asfour further asserted that the architectural history of the Arab should be reinterpreted, by architects for architects, in order to establish a tradition of displacing cultural images which would become advantage for contemporary architects in Arab world. In the recent UIA congress in Beijing, a chairperson of the scientific committee of congress Wu Liangyong called for 'integral' architecture castigating contemporary architectural theories. Peter Davey summarises it as 'regionalising the modern and modernising the vernacular' and reviving the genius loci[11]. His claim was to promote regionalism on the basis of modernism. The synthesis of modernism and the vernacular then became a new paradigm for the future architecture.

The historical significance of dynamic trends of Weissenhof Siedlung and International Style largely lies in the way that they exhibit the nature and the crisis of modern architecture. In alliance with avant-garde artists, the architects of the 1920s attempted to articulate the unknown paradigms in architecture and urbanism in the language of form by impersonal and rational currents, which in the end proved to be inadequate for their utopian ideology. The insustainability of modern architecture in the sphere of cultural vehicle therefore called for a comprehensive reassessment of modernism and its changing implementation from a distance. The negligence of

[9] Asfour, Khaled, "Cultural Crisis", The Architectural Review, March, 1998, pp. 52
[10] Asfour, Khaled, *op. cit.*, 1998, pp. 53
[11] Davey, Peter, "Beijing: World Architecture Pivot", The Architectural Review, Vol. 1230, August,

vernacular traditions is no longer accepted as an appropriate attitude, and they receive much more positive eyes from intellectuals who demand them to be considered for new sources of inspiration and creativity. They even began to win attention from the mass public[12]. The changing environment in both worlds of academic and practice may even herald the return of spirit in the new millennium.

The remaining question is "what is a viable way of design or paradigm in architecture in the future?". A universal solution of 'International style' was an answer offered by Mies and Gropius. The link between a new mode of living and a new technology, as clearly shown in the International Style exhibition, was formalistic and aesthetic, not a genuine intellectual unities nor victory of critical consciousness. In a similar fashion, faced with the challenge from Western influx, the Chinese took a total iconoclasm for the modernisation of the country, marked by 'The May Fourth movement'[13]. The new Chinese intellectuals, trained in the West or seriously influenced by the West, called for a critical re-evaluation of China's cultural heritage in the light of Western standards, thus it caused a ferment of anti-traditionalism[14]. Traditional architectural institution, taken in the form of feng shui was certainly one of the first items to be condemned along with Confucianism under the idea of such anti-traditional iconoclastic totalitarianism[15]. An attempt to wipe out traditional values and customs was though not a mission to be accomplished, but only proved to be a painful lesson in the end. Lin (1979) wrote that "If all elements of traditional China were

1999, pp. 15-16

[12] It was Bernard Rudofsky who initiated this gambit in1964 through the exhibition of "Architecture without Architects" at the Museum of Modern Art in New York.

[13] The May-Fourth Movement is an upsurge ignited by some 5,000 students in Beijing on the fourth of May in 1919 against the peace treaty agreed in Versailles concerning issues left over after the First World War. The students protested especially against China's humiliating policy towards Japan, and it called for an immense modernisation movement which served as a catalyst for the social and intellectual revolution in China. The term 'May-Fourth Movement' is, therefore, generally associated with New Culture Movement that followed, during which nationalist and communist ideologies emerged. Some intellectuals such as Li Tai Chao (1888-1927) and Chen Tu-hsiu (1879-1942) even demanded an immediate thorough reformation like Bolshevik Revolution. For the detailed discussion on the intellectual Revolution in 1920s China, see Lin, Yü-Sheng, *op. cit.*, 1979; Chou, Tse-tsung, "The May Fourth Movement: Intellectual Revolution in Modern China", Stanford University Press, 1960; Hsü, Immanuel C. Y., "The Rise of Modern China" (Fifth Edition), Oxford University Press, 1995, chapter 21

[14] During the World War I, China could develop her industry and trade remarkably better than before the War, due to wartime influence to Europe. Many Chinese students could also study abroad, and those returned students were especially ardent to reform China for modern industrial country.

[15] It would be useful to note that British philosopher Bertrand Russell delivered a series of lectures to students in Beijing University between October 1920 and July 1921 in which he extolled Confucian concept of filial piety and Taoist beliefs are less harmful than Western patriotism.

organismically related to the whole, the disintegration of the whole meant, by definition, the loss of meaning and usefulness in all its parts. No part can survive the whole."[16].

In an attempt to modernise society and culture, there always exists an easy tempting option to choose a wholesale bargain, throwing out the baby with the bath water, rather than deliberate speculation of the validity of itemised contents. It is a challenging task to assess the whole contents of the cultural and social system, and verify their further tenures in order to set up a new pattern or mode of culture. To come to terms of modernity, especially in times of change, the wholesale cleansing was relatively easier, and also an effective solution to change the whole contents and to pave the brand new expressway for the future. Once again, such an attitude, however, can only be a physical and formalistic solution. It lacks a genuine apprehension of the fundamental problems of the growth of human consciousness, generating further problems in sequence. Quite vividly, the reduction of Modern Movement into a mere style generated deterioration of the built environment in general, followed by any number of styles and '~isms', again reduced to formal gestures, devoid of meanings and the authenticity.

The negation of tradition *in toto* is now proved to be an obsessed task of being answerable for the technical organisation in building new society in its own right, without being necessarily aware of the fact that it carries much more significant implications in the society and culture as a whole. The Modern Movement was, however, also a conscious attempt to establish a modern institution in the form of a creative transformation of tradition into another tradition. This line of deliberate intellectual good intention, nonetheless, could not draw a significant attention, but was misrepresented as an 'Expressionism' or an 'Organic Architecture' by influential historians such as Pevsner (1936) and Gideon (1952). For architects such as Fischer, Häring and Scharoun, in delineating a complicated phases of development in modern architecture, it became more obvious that the values and meanings of tradition played much more significant roles in times of change. Alternative traditions that this thesis wrestled to identify and re-establish were rather profound solutions, and their

See Hsü, Immanuel C. Y., *op. cit.*, 1995, pp. 506

[16] Lin, Yü-Sheng, *op. cit.*, 1979, pp. 153

intellectual foundations lie deep in their own cultural traditions. The positive employment of modernism is not synonymous to the total negation of the past. The harmonic blend of the two should be the goal of those involved, not upsetting the existing metabolism, nor narrowing down the possibilities with unduly inwardness for the sake of rejection. It is hoped that the current work can contribute to deepen the knowledge of diverse systems and values in the hope of creating a better-built environment.

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A new millennium and feng shui

Alfred B. Hwangbo

Department of Architecture, The University of Sheffield, Sheffield S10 2TN, UK

This paper examines feng shui as an ancient discipline of architecture for its contribution in the creation of the built environment in East Asia. It is observed that feng shui emerged over a long time, and reflects a particular cosmology. The paper argues that the speedy proliferation of feng shui in many parts of the world, especially at the threshold of a new millennium, appears to be a response to modern nihilism as well as representing a naïve taste for the exotic.

Introduction

In recent years feng shui has grown surprisingly popular in Western Europe despite a lack of clear understanding about how and why it is practised. Its proliferation within the architectural profession can be observed at all levels from the selection of building sites to interior design. This essay explores feng shui as a theory of architecture, and speculates about why it is becoming so popular at the threshold of the new millennium.

What is feng shui?

In Western Europe, feng shui has often been seen as a sort of superstition, pseudo-science or even a patchwork of silly ancient anecdotes. There are two reasons for this: first, there is in the West a general lack of understanding of East Asian culture.[1] Second, philosophy and religion preceded the development of natural science in ancient East Asia, and became the dominant elements in feng shui. Perhaps the attraction of feng shui derives precisely from its unclassifiable nature, from the way it connects diverse fields such as science, religion, astrology (astronomy), architecture, and divination. In ancient East Asia there was not even a legitimate discipline called architecture, for it was subordinated to politics, religion, and philosophy.[2] This is why feng shui can be identified as an ancient architectural theory. But because of its intimate connection with these other areas of knowledge and belief, its study entails an enormous amount of difficult work which can seem endless and overwhelming.

Feng shui can be defined as a *mélange* of art and science which governs design issues of architecture and planning, embracing a wide range of disciplines of human interest. It has no equivalent among modern scientific disciplines, for not only does it involve knowledge from many disciplines, modern disciplines also differ from those of ancient East Asia. Architecture as an autonomous discipline in East Asia is only about a century old. Feng shui assumes an unique organisation of the world consistent with various phenomena in its own right. Its use can give anything, from the design of an imperial palace to the design of a dress or a piece of porcelain, a greater claim to conceptual consistency.

The term feng shui, meaning wind and water, is first found in the *Burial Book* of about the third century AD. The author, Gou Pu (276–324), states that chi, the vital cosmic current which runs the

1360-2365

universe and also means 'breath', can be scattered when it meets wind, and can be stopped when it meets water. For East Asians, the substance or rather energy *chi* was the basic constituent of all things, a Chinese alternative to the atoms of matter assumed by the Greeks and inherited by Western science. Starting with the concept of chi, the theoretical foundation of feng shui also depends on the theories of yin/yang and five elements. Yin/yang theory claims that all phenomena in the universe are the result of endless interaction between the two opposing natures of yin and yang which manifest themselves in the oppositions light/shade, man/woman, sun/moon, and heaven/earth. The five elements are water, fire, wood, metal and earth. In the *Annals of Spring and Autumn*, a Chinese classic, these give rise to sixty-five kinds of five categories, including divisions of time, space, sacred deities, colours, sounds, and tastes. By this means many different phenomena are unified under a single all-embracing cosmology.

The theory of five elements bears a close parallel to the Greek Milesian concept of four elements – air, earth, fire and water – but the Chinese elements are conceived as transient states of the primal energy chi rather than as stable substances. These five states are understood to be linked in either a productive or a destructive cycle. In the productive cycle – Water-Wood-Fire-Earth-Metal – each element gives birth to the next, i.e. water produces wood (for water grows a tree), wood produces fire (for it burns) and so on. In the destructive cycle – Water-Fire-Metal-Wood-Earth- each element is destroyed by the preceding one, i.e., fire is put out by water, metal is melted by fire, and so on. The set of five elements also provides the basis for a spatial classification system, for correlations are made between the five elements and the four cardinal points, with the centre added as a fifth point, i.e., Water for North, Fire for South, Wood for East, Metal for West, and Earth for the centre.

The cyclic correlation of five elements imposed on azimuthal directions plays a significant role in the creation of the built environment, for it organises built form and space in a way that is regarded as symbolically auspicious. For instance, the conceptual relationship between different parts of a house can be set up to achieve symbolic harmony among the concepts of yin/yang, five elements and the numerology of eight trigrams, which constitutes a further layer in the system. The eight trigrams emerged in the *I Ching* or *Book of Changes*, a Chinese classic of the fifth century BC. Each figure consists of three bars, which can be full or broken according to whether they represent yin or yang. The different combinations of full and broken bars appear in two esoteric diagrams arranged differently to show the conceptual patterns of changes in Heaven and Earth (Figs 1. and 2.). Since the Chinese believed that Heaven was round and Earth square – based on the empirical observation of apparently flat ground and hemispherical sky – most cities are planned after the square format following the form of Earth, and more interestingly, the altar of Heaven in Beijing is round, symbolising the form of Heaven (Figs. 3 and 4). Moreover, architectural artefacts bearing the pattern of change for Heaven are found in rafters or roof tiles, while those of Earth are found in floor tiles. In summary, the principal concept of feng shui is to create an order in life and

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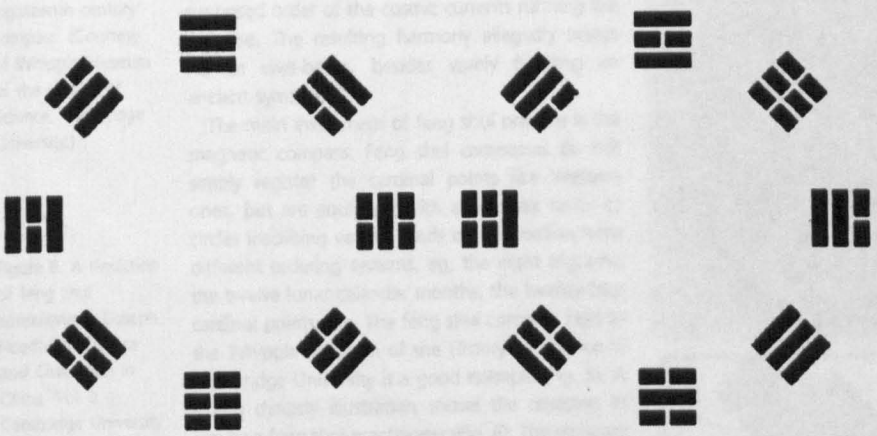

Figure 1. Diagram of Eight Trigrams (Heavenly Pattern of Changes).

Figure 2. Diagram of Eight Trigrams (Earthly Pattern of Changes).

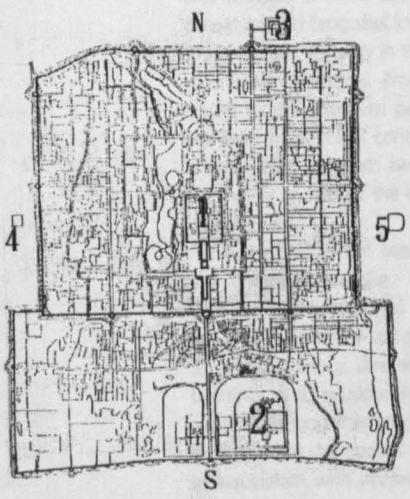

Figure 3. A Map of Beijing:
1 = Imperial Palace,
2 = Altar of Heaven,
3 = Altar of Earth,
4 = Altar of Moon,
5 = Altar of Sun.

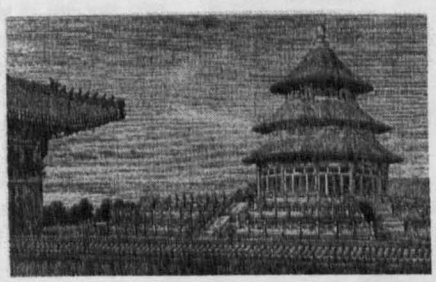

Figure 4. Altar of Heaven (Source: James Fergusson, *Indian and Eastern Architecture*, 1899, p. 690).

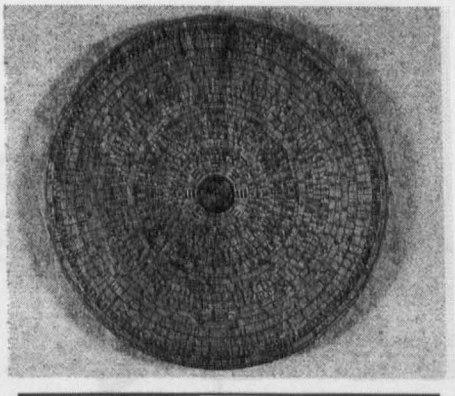

Figure 5. An eighteenth century compass. (Courtesy of Whipple Museum of the History of Science, Cambridge University.)

the built environment which is in sympathy with the supposed order of the cosmic currents running the universe. The resulting harmony allegedly brings human well-being, besides visibly fulfilling an ancient symbolism.

The main instrument of feng shui practice is the magnetic compass. Feng shui compasses do not simply register the cardinal points like Western ones, but are equipped with a complex series of circles inscribing various kinds of information from different ordering systems, eg, the eight trigrams, the twelve lunar calendar months, the twenty-four cardinal points, etc. The feng shui compass kept in the Whipple Museum of the History of Science in Cambridge University is a good example (Fig. 5). A Ching dynasty illustration shows the compass in use by a feng shui practitioner (Fig. 6). The compass was invented in China about 200 BC, and used for divination and feng shui long before it was applied to navigation, for only in the 11th century is it first recorded in that role. Probably its use was introduced to the Southern part of China because of the flat geographical conditions. Needham (1962) differentiates between two schools of feng shui, commonly known as the Compass School and the Form School.[3]

Figure 6. A depiction of feng shui consultation. (Joseph Needham, *Science and Civilisation in China*, Vol. II, Cambridge University Press, 1956, p. 362.)

Practitioners of the compass school would read the compass on site, noting the relationship between natural features and the directions registered by the various compass rings. Their aim was to find auspicious directions for the parts of the building and supposedly to induce productive relations among them (Fig. 7). The compass shows that all items designated by the rings are classified in association with yin/yang and the five elements.

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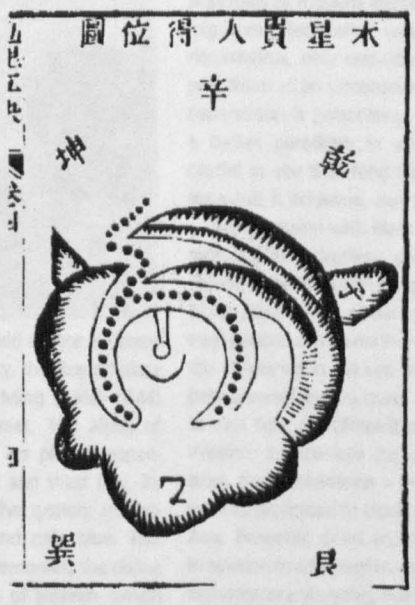

Figure 7. Representation of a set of four auspicious compass directions (an excerpt from a feng shui manual *Five Methods of feng shui* 1786).

Figure 8. Representation of an auspicious site form (an excerpt from a feng shui manual *Five Methods of feng shui* 1786).

It demonstrates the great consistency of the classification system.

Practitioners of the form school would consult the natural configuration of a site using various metaphors to explain forms in nature, in cities, houses, interiors and for people's graves. For example, mountain shapes are supposed to be classifiable under various headings related to mythical animals such as azure dragon or white tiger (Fig. 8). As the form school was dependent on intuitive practice requiring a specially trained eye and particular intuition, only a few people of considerable experience could perform it, and bona-fide feng shui practitioners were hard to find. The metaphors involved were undoubtedly rooted in the theories of yin/yang and the five elements. Probably, the ancient Chinese came gradually to rely on both methods, for they are two versions of the same concept.

Another good example demonstrating the consistency of the classification system is a set of four porcelain vessels kept in the T.T. Tsui Gallery of Chinese Art in the Victoria and Albert Museum in London (Fig. 9). They differ not only in their shapes but also in their colours, and were specifi-

Figure 9. A set of four porcelain vessels. The set was used in the rituals at four altars in Imperial Beijing. (Courtesy of Victoria and Albert Museum, London.)

cally designed for ceremonies held at four different altars around the Forbidden City, the Royal Palace of the Chinese Empire in the Ming (1368–1644) and Ching (1644–1911) dynasties. The altars of Heaven, Earth, Sun and Moon are placed respectively to the South, North, East and West (Fig. 3), and their colours also follow the system: respectively dark blue, yellow, red and pale blue. This ordering reflects a system of ceremonies, the divine duties of the Emperor and Son of Heaven, which were held at certain pre-ordained times of year.

Feng shui as an alternative architectural theory

Feng shui belongs to an ancient Chinese or East Asian mode of thinking which has no Western counterpart. To achieve a good understanding of feng shui, we need therefore to overcome our own assumptions and prejudices and to consider a different way of conceiving the world. Adopting feng shui does not necessarily generate a clash with modernity, for there exist elements within it that can be read as pragmatic and so accord with the principles of modern architecture – increasing solar exposure, decreasing wind-chill, etc. These are, nonetheless, only coincidental facts, and to interpret them as an unconscious pragmatism driven by superstition is patronising. In attempting to create a better paradigm in architectural design, it is crucial to see that feng shui is important not only for what it achieved, but for what it attempted.

The obsession with ideas of innate geometric harmony in the Western architectural tradition has diverted the attention of many scholars, and left a blind assumption about other civilisations where such ground can be neither found nor imposed.[4] But the difference in the use and meaning of geometry between different cultures is an illuminating vehicle to cast light on different systems of symbolism. In Western architecture the use of number – at least since the Renaissance – involved a system of proportion dedicated to visual pleasure (Fig. 10). In East Asia, however, cities and buildings were designed in relation to a form of number symbolism tied to the dichotomous yin/yang, five elements, eight trigrams, etc. The aim was to organise the built environment in harmony with nature, often by determining symbolically auspicious directions. The application of feng shui undoubtedly brought ancient East Asians peace of mind, for in using it they believed themselves to be in tune with Heaven and Earth. This presumably produced in them what we would term an aesthetic experience, but it was a cognitive experience dependent on specific beliefs and values.

On the popularity of feng shui

The current popularity of feng shui seems not to reflect a genuine understanding of that ancient

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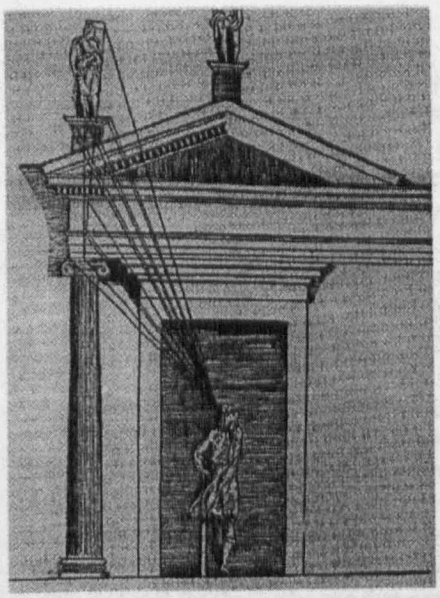

Figure 10. An optical correction illustrated in the French edition of Vitruvius' *Ten Books in Architecture*, by Jean Martin and Goujon (1547) (source: Alberto Perez-Gomez, *Architecture and the Crisis of Modern Science*, MIT Press, 1983, p. 33.)

discipline, but rather a naive taste for the exotic. Taste, however, is neither arbitrary nor trivial: it reflects the network of current social prejudices.[5] The speedy proliferation of feng shui in many parts of the world seems to derive partly from the current distrust of science and technology, partly from the hope of discovering a new paradigm for the new millennium. The growing popularity of feng shui may thus also be related to a parallel growth in new religions, and perhaps the post-modern crisis about the lack of ultimate truth has inflamed this kind of transitional phenomenon. Therefore, one should be aware that the study of feng shui could be both the rediscovery of tradition and a contribution to the creation of a 'new truth' or a new paradigm. There appears to be more creation of 'new truth' rather than rediscovery, for feng shui as disseminated now is the contemporary representation of ancient tradition without its historicity.

Feng shui, as currently understood, somehow stands in opposition to the reality of life. It is borrowed as an instrument to reinforce Western high-culture as opposed to its everyday one. As the museum plays such a role between a high and low culture (sacred and profane), the current tendency may suggest an implicit superiority in the undiscovered East Asian culture. Behind the popularity of feng shui, nonetheless, exists a ruthless commercialisation of art, and an attempt to promote an unjustified schism between East and West as superior or inferior to each other. As viewing art is conditioned by social and cultural factors, the sweeping popularity of feng shui somehow reflects current democratic society on the surface. There appears to be little difference between purchasing a pair of designer jeans or a magazine dedicated to feng shui, or even spending a night in a feng shui designed hotel room. Even so, feng shui may be worth discussing at a higher level, within the realm of art. A work of feng shui is not necessarily visually pleasing, but it is aesthetically significant as it constitutes a massive mosaic of bits and pieces from an unknown world.

Conclusion

In summary, feng shui developed as an intellectual discipline linked to a particular cosmology or world view which governed architecture in ancient East

Asia. As an alternative architectural theory incompatible with Western classification systems, the content and symbolism of feng shui is certainly worth scrutiny, if only for the parallels and contrasts in world-building that it presents. The study of feng shui can also exert a charm and beauty of its own, but its readoption cannot allow contemporary Westerners to experience what it originally meant in East Asia, nor would any benefits it might have brought in its original context still apply beyond the most basic and pragmatic level. The experience of being in harmony with the universe, for example, may be of benefit in many ways, but it obviously requires belief in that world-system, and the confirmation of a classification system – perhaps in itself a powerful aesthetic experience – is only resonant for those who use that system and live within its rules. The current sweeping phenomenon of feng shui seems to have come, along with the proliferation of new religions, in reaction to modern nihilism. It feeds the illusion of a modern panacea, especially at the threshold of a new millennium. Looked at positively, it could herald a return of spiritual values, but only if understood at a much more profound level. Whether contemporary architecture can attain any benefit by extending the tenure of feng shui principles, or whether it is just another way of commercialising tradition, remains to be seen.

Notes and references

1. 'East Asia' is an abbreviation of 'East Asian Civilisation'. Although feng shui originates from China, the term 'East Asia' is used to stress the homogeneous psyche which was once prevalent in the region.
2. Subordination of architecture to other disciplines is not only found in East Asia, for ancient Greek and Roman architecture also reveal a similar nature. Aristotle's stance evidences political subordination of architecture, as is the case in many cultures. The architectural treatise 'De Architectura', written by Vitruvius, manifests a divinatory dimension, as the text states that livers of animals feeding near the building site should be examined in order to be sure that they are healthy.
3. Needham, Joseph, 'Science and Civilisation in China', Vol. IV, (University of Cambridge Press, 1962), pp. 242, 282.
4. Proportional systems identified in Western architecture suggest countless ways of interpreting architectural forms in terms of geometric harmony. Renaissance architects subscribed to the mathematical definition of beauty inherited from Vitruvius' principle of 'symmetria'. Alberti's geometry was to maintain the uniform system of proportion in all parts of a building, and Palladio pursued a symmetrical arrangement of Villa plans. East Asian architecture, on the contrary, was largely practised within the unselfconscious oral tradition. Lack of a representation process before construction prohibited a rational composition of geometry. Therefore, the application of such proportional systems to non-Western architecture would not only be a meaningless imposition after the event, but would also lead to undervaluing different traditions in architecture.
5. According to Bourdieu cultural practices such as museum visits or concert going, and preferences in those genres such as painting or music, are conditioned by educational level and social origin. Thus, taste functions as a marker of classes. See Pierre Bourdieu, *Distinction – A Social Critique of the Judgement of Taste*, (Routledge, London, 1994).

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