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QJ-JU DESIGN KNOWLEDGE:
AN HISTORICAL AND METHODOLOGICAL
EXPLORATION OF CLASSICAL CHINESE
TEXTS ON EVERYDAY OBJECTS

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Qi-ju Design Knowledge: An Historical and Methodological Exploration of Classical Chinese Texts on Everyday Objects

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A thesis submitted in partial fulfillment of the requirements for the

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ABSTRACT

This thesis responds to the repeated calls in the Chinese design field for the creation of modern Chinese-style products and for the establishment of a distinctly indigenous system for the theoretical and methodological study of ancient Chinese products. The thesis contributes to this task by presenting the original knowledge system of Chinese *qi-ju* (everyday tools and utensils) design and by developing a methodology for conducting research on Chinese *qi-ju* design.

The thesis provides a research context for the study of Chinese *qi-ju* design. The researcher presents an historical picture of *qi-ju* in the early stage of modern Chinese design (1920-1940), and defines the key terms such as *she-ji* (design), *tu-an* (pattern) or *yi-jiang* (idea and craftsmanship) which emerged at this early modern design stage. The thesis evaluates contemporary studies of Chinese traditional *qi-ju* by using the "Western paradigm" concepts of *gong-yimei-shu* (craft art), from the 1950s to the 1980s, *zao-wuyi-shu* (creation of object art), from the 1980s, and *she-jiyi-shu* (design and art), since the 1990s.

This thesis adopts an historical and comparative approach to investigate Chinese *qi-ju* design, rather than using an approach of craft art history. By applying constructivism and hermeneutics to the historical study of Chinese ancient classical texts on *qi-ju* design, the thesis adopts a qualitative research method and

uses an "interpretative analysis" approach for analyzing texts. In so doing, this research responds to a long-standing issue concerning the lack of methods to help students approach these ancient texts, such as how to read and interpret them.

The thesise examines classical texts of Chinese design history to identify theoriginal design terms, concepts, philosophies and practices of ancient Chinese design. The underlining rationale is that these ancient texts provide important evidence concerning the formation of traditional Chinese design, culture and knowledge. The thesis reviews a series of landmark studies on *qi-ju* design from three dynastic periods (pre-Qin, Song and Ming), including the *Kao Gong Ji* (*Book of Diverse Crafts*), the various theories discussed during the Hundred Schools era, Shenkuo's *Meng-xi-bi-tan* (*Sketchbook of Dream Brook*), Wen Zhengheng's *Chang-wu-zhi* (*Treatise on Superfluous Things*), and Song Yingxing's *Tian-gong-kai-wu* (*Heaven's Craft in the Creation of Things*).

Based on a textual analysis of above texts, the thesis presents the "original Chinese *qi-ju* design knowledge"and offers four kinds of research findings: (1) the genealogy of the Chinese terms *qi* (utensils)*, ju* (tools)*,* and *wu* (objects), and the basic design concepts of *qi* (utensils)*, xiang* (image or signs)*,* and *fa* (method, or principle); (2) the original state and features of *qi-ju* tradition; (3) the philosophical approach to *qi-ju* design; and (4) the features of knowledge involved in Chinese *qi-ju* design.

The researcher contributes to the field by exploring the distinguishing features of Chinese *qi-ju* design and analyzing this tradition as (1) an ancient practice that has been greatly respected in the design and manufacture of basic tools and utensils; (2) as an approach to design that lays a simple and clear-cut emphasis on functionality; (3) as a craft tradition that has relied on the craftsmen's experiential knowledge and their perceptions of the environment, nature, geography, seasons and materials; (4) as a style of design in which *ji-yi* (technique) and *jing-yan* (experience) are intertwined as important elements.The researcher especially argues that the tacit knowledge feature of *qi-ju* design is unique to the Chinese craft tradition.

The thesis further provides research applications, offering a study of Western product design research. This analysis serves as a methodological reference for contemporary Chinese design. Next, the thesis proposes a theoretical framework based on "reality, knowledge, and interpretation"to inform future studies of traditional everyday tools in China.The proposed framework addresses the lack of a methodological approach in current design history studies, and answers the research question of how we can we approach this design knowledge system.

PUBLICATIONS AND CONFERENCES

Tang Weichen (2008). *The Exploration of Emotion and Memory in the Design of Chinese Everyday Cooking Utensils.* The 6th Design & Emotion Conference Proceedings. October 2008. Hong Kong.

ACKOWLEDGEMENTS

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I.   INTRODUCTION

This chapter outlines the basic ideas of the thesis and the scope of the research. The thesis is composed of five sections. The first section briefly introduces the research context, the research gaps and the research purposes of the thesis. The second section briefly addresses the research questions and the research objectives. The third section defines the topic of the thesis and clarifies the use of the terms *Chinese*, *West*, *Tradition*, *Modern* and *Traditional* and Chinese *Everyday-tools*, and defines the concept of *Knowledge* with respect to Chinese culture, history and design. The fourth section explains why a historical and comparative approach is adopted in this thesis. The fifth section introduces the methodological considerations of the thesis, including the method of historical research, the selection of texts and the qualitative research approach. The sixth section provides an overview of the thesis as a whole.

1.1 Research Context

Over the past three decades or so, there have been repeated calls in the Chinese design field for the creation of modern Chinese-style products and for the establishment of a distinctly indigenous system for the theoretical and methodological study of ancient Chinese products. In other words, a system that is "national" or "Chinese" and therefore differs, both formally and substantively, from the design concepts and theoretical formulations imported from the West.[1] Although traditional Chinese resources and tangible archaeological objects, and their underlying design

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[1] A summary of the efforts of Chinese scholars in studying traditional objects is provided in Chapter Two, which reviews the twentieth century literature.

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philosophies, are the most obvious sources of inspiration for product design in modern China, these features of the knowledge system of Chinese design rest on patterns of historical narratives of craft arts that are neither well-defined nor based on methodological propositions.

Accordingly, more attention needs to be paid to the original knowledge system of Chinese design and to the development of a Chinese design system methodology. Entitled, *Qi-ju Design knowledge: an historical and methodological exploration of classical Chinese texts on everyday objects*, this thesis aims to contribute to this research area by exploring the original design knowledge exhibited in the classical ancient texts of Chinese design. In recent decades, there has been a burgeoning interest in the study of traditional Chinese everyday objects among Chinese design historians and international design researchers.[2] This thesis proposes that the best way to understand the design of Chineseobjects is to return to the original descriptions of Chinese design.

The overall aim of this thesis is to examine the classical texts of Chinese design history to identify the original design terms, concepts, philosophies and practices of ancient Chinese design. The underlining rationale is that these ancient texts provide important evidence on the formation of traditional Chinese design, culture and

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[2] An extensive body of literature on traditional everyday Chinese objects has been published in recent decades, much of whichisdiscussedin the first chapter of this thesis.In a recent paper in the Journal of Design History (2011, Vol. 24, no. 4), entitled *Design History and Study in East Asia*, Wendy S. Wongoutlines the state of design history and design studies in the greater China region (PRC, Taiwan and Hong Kong). The publication of this paper is representative of the growing international attention towards Asian design and research. Chinese design studies and history have long been absentfromthe international stage.

knowledge. Therefore, after first re-examining the status of the contemporary research on traditional Chinese object design, this thesis reviews a series of landmark studies on object design in the pre-Qin period (before 221 BC), the Song Dynasty (960-1279 AD) and the Ming Dynasty (1368-1644 AD).

Although there are no first-hand records of the design experiences of ancient tool makers and inventors, the existing landmark studies on Chinese everyday tools present an alternative approach to the historical understanding of tool design and manufacture. The historical picture that these studies provide of the design situation in different dynasties informs the theoretical foundation upon which ancient Chinese design, thought and philosophy are examined in this thesis.

1.2 Research Questions and Objectives

To explore the abovementioned research aims, the thesis addresses three specific research questions:

(1) How was ancient Chinese design generated and how was it expressed, debated and interpreted in the pre-Qin dynasty? How did this original design knowledge develop in the following period in terms of design history?

(2) What arethe particular features of the design knowledge of Chinese everyday tools (*Qi-ju*), as displayed in the historical texts and contexts?

(3) How did this knowledge guide and influence the theory and practice of *Qi-ju*design"methodology"?

In summary, this thesis attempts to answer two main types of questions in relation to

historical design: "what" and "how".

What was the original state of Chinese Qi-ju design knowledge?

How can we approach this design knowledge system?

To address these research questions and complete the research task, the thesis aims to achieve the following objectives:

(1) To construct a picture of the original state of Chinese *Qi-ju* design knowledge by examining the descriptions of*Qi-ju* presented in the relevant Chinese literature from the pre-Qin dynasty and other selected dynasties.

(2) To present the features of this original system of design knowledge by tracing the genealogy of the Chinese terms for *Qi-ju* and analyzing the recorded design concepts, thoughts and philosophies in Chinese classical literature.

(3) To investigate a methodological framework for approaching Chinese *Qi-ju* that can serve as a theoretical framework for the study of Chinese traditional everyday tools in the future.

The aim of this thesis is to describe the traditional Chinese design knowledge and to explore how this design tradition has been shaped and developed in history. The thesis uses classic ancient texts by Chinese literati (called *Shi-da-fu* and *Wen-ren* in China) as the primary data for exploring this particular tradition. The ancient texts that describe the design of Chinese everyday tools serve as the research object and are an important resource for understanding and interpreting the Chinese design tradition.

1.3 Definitions of the Key Terms

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This section defines and explains the key terms used in thesis and, in the process, outlines the study theme, content and scope of the thesis.

1.3.1 *Chinese* and the *West*

The first key word that needs to be defined is *Chinese*, as this thesis is a study of Chinese design issues. The term *Chinese* has diverse connotations and meanings that reflect its use in different fields and disciplines, such as history, literature and cultural studies. Moreover, the word *Chinese* integrates a range of historical, temporal and geographical meanings. For example, the "Chinese" cross thousands of years of chronological history, during which time different civilizations collide and fuse in different historical periods. Therefore, to simplify its meaning, in this thesis, the term *Chinese* is mainly usedrelative to the "West" to indicate a geographical location and specific cultural differences.

However, what isthe meaning of the *West*? The *West* usually appears alongside *Chinese* in contemporary Chinese publications. From a Chinese perspective, the *West* and *Western* are usually conceived geographically and culturally as relative to *Oriental*, in that the *West* is regarded as "the other" in relation to Chinese civilization and geography. Geographically, the *West* is centered in Europe, and then spreads to North America and Oceania.[3] In this sense, the *West* initially refers to European civilization and then refers to Europe and America.[4]The concept of the *West* began

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[3] Fang Hansheng,*Xifang wenhua gailun* (Introduction to Western culture) (Beijing: Zhongguo renmin chubanshe, 2006), 3.

[4] Benjamin A. Elman provides the following detailed explanation, "Chronologically, 'West' refers to early modern Europe (1500-1800) and grows to include the United States and modern Europe

with the arrival of Christianity, which also brought European science and technology, and cultural knowledge to China. As Elman states, "the 'West' as a cultural construct was used by Jesuits, Protestants, and Chinese to refer to themselves or to the 'other'."[5] In this regard, the *West* refers to distinct historical periods in modern Europe (1500-1800) and the United States and modern Europe (1800-1900) that are defined in relation to the development of Western rationality and science, and the industrial revolution. While these historical periods include the Chinese *Ming* (1368-1644 AD) and *Qing* (1644-1911) dynasties, they also cover the modern era after the Chinese and Western civilizations come into contact with one another.

1.3.2 *Tradition*

It is also important to define the term *Tradition*, as this thesis explores the traditional design of everyday Chinese tools. The term *Tradition* is used in the following senses in this thesis. First, the English dictionary meaning of "tradition" refers to the transmission of customs and beliefs from generation to generation, or the fact of being passed on. Similarly, according to the Chinese Great Dictionary, "tradition" means: 1. theories and meanings that are passed from generation to generation; 2, social factors that are passed from generation to generation, and have their own characteristics, such

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(1800-1900)… and "European" and "Euro-American" will designate a regionalized view with more historical and chronological precision". See Benjamin A. Elman, *On Their Own Terms: Science in China, 1550-1990* (Harvard University Press, 2005), xxii.

[5] Benjamin A. Elman, xxii.

as customs, conventions, ethics, thoughts, habits, art and institutions;3, things that are passed from generation to generation or age-old things.[6]

However, the English term "tradition" can also be traced from the Latin *traditio(n-)*, from *trader,*which means deliver '*deliver*' or'*betray*'. Raymond Williams suggests that as "a general word for matters handed down" the word tradition became "specialized, within one form of thought, to the idea of necessary respect and duty". He further states that,

> It is sometimes observed, by those who have looked into particular 'traditions', that it only takes two generations to make anything traditional: naturally enough, since that is the sense of tradition as active process. But the word moves again and again towards *age-old* and towards ceremony, duty and respect.[7]

This interpretation of *tradition* as an active process that should be respected is central to the aims of this thesis.

Furthermore, in the context of Chinese design history, the "traditional" is conceived as relative to the "modern". For example, Ambrose King defines"traditional" or "classical" China as referring to the two thousand year period stemming from the *Qin* and *Han* Dynasties in 220BC to the end of the *Qing* Dynastyin 1912.[8] This period is characterized by the traditional styles of utensils and handicrafts used amongst the mostly agrarian population and the economic rule of the scholar class. However,

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[6] *Han Yu Da Ci Dian* (The Chinese great dictionary) 1999-2009.(Wuhan: Hubei renmin chubanshe), 588.

[7] *Raymond Williams, Keywords: A Vocabulary of Culture and Society* (London, Flamingo, 1983), p. 319.

[8] See Ambrose King (Jin Yaoji), *From the Traditional to the Modern*. (Taibei: Shi bao wenhua chubanshe, 1995).

quantitatively speaking, "traditional China" refers to a social formation that is different from the Western "nation-state", in that it does not represent a particular nation, but a "Chinese nationhood" that has formed in history.[9] In this sense, traditional China can also be seen to have been distinguished by particular cultural characteristics, as the historians below have claimed.

Some historians believe that during this period, "traditional China" maintained consistent national tradition. In this regard, historical changes are not 'complete' changes but 'adaptive' transformations.[10] Liang Suming argues that,

> The Chinese society of a hundred years ago was inherited from the Qin and Han Dynasties as the general recognized, and had never experienced large changes for nearly two thousand years…it simply maintained a state of hovering around the same place, with no fundamental changes. Therefore, discussing "the society of one hundred years ago" is almost the same as discussing "society two thousand years ago.[11]

According to Qian Binsi, because of its consistent national traditions, China can be seen to extend back through history to such an extent, it could be said that Chinese society has not changed in the four thousand years since the Zhou dynasty.[12] Similarly, Toynbeestated that, "during the last two thousand years, China had never

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[9] Tang Degang, *Wan qing qi shi nian* (The last seventy years of late Qing dynasty). (Taibei: Yuanliu chubanshe, 1998), 200-205.

[10] For details see, Ambrose King, *From the Traditional to the Modern*, p. 15.

[11] For a detail discussion seeChapters 11 and 12 in Liang Suming, *Zhongguo wenhua yaoyi* (General introduction to Chinese culture).(Hong Kong: Jicheng tushu gongsi, 1963). Liang Suming (1893-1988) was an important figure in contemporary Neo-Confucianism.

[12] Qian Binsi, *Zhongguo wenhua daolun* (An introduction to the history of Chinese culture). (Taipei: Zhengzhong chubanshe, 1951), 11.

experienced the 'entire','eternal' changes, instead there were just some 'adaptive', 'circulate' changes. This is because the Chinese culture stayed in a static agricultural society, with a 'self-contained system', and enjoyed a conscious and unconscious 'glorious isolation' in the world order".[13]

This understanding of "traditional China" is adopted in this thesis when referring to the characteristics of traditional everyday tools. The research objectiveis of this thesis is to explore this 'self-contained system' from a design perspective.

1.3.3 *Modern* and *Tradition*

However, after the Opium War, the "stability" of "traditional China" was broken by the arrival of Western culture. Guo Songtao pointed out during the years of Tong Zhi and Guang Shu in the *Qing* dynasty (1644-1911) that the coming of Western culture was a big change for China. According to Li Hongzhang, Yan Fu also said that this was "the biggest change for China in three thousand years, and a huge change for the *Qin* Dynasty".[14] China had now entered the age of modernization.

As with "traditional", the sense of the "modern" is not restricted to the present period. For instance, in sixth century Latin, "modern" appears as an idiosyncratic noun that

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[13] Arnold Toynbee (1889-1975) and David Somervell, *Civilization on Trial, and the World and the West* (Meridian Books). (Cleveland: The World Pub.Co., 1964), 268.

[14] Cited from Ambrose King, 1995, pp. 153-154. King referenced from Guo Tingyi (1904-1975), *Zhongguo Jindaihua de yanwu* (The delay of China's modernization), in Mainland magazine, Vol. 1(3).

expresses the contemporary age.[15] After the Second World War, modernization has been studied by scholars from various countries. Chronologically, modernization can be traced back to around 1500, after which time it gradually spreads to the whole world. This geographical spread has made the connotations of the word more complex and diverse and it is difficult to provide a brief definition or summary of its meaning. Nonetheless, when using the word modernization, scholars must presuppose a meaning of the term for the convenience of discussion.[16]

The issue of "modernization" has been debated by Chinese intellectuals since the 1920s.[17] In the *New Culture Movement* of China, scholars mainly used the word "Europeanization" because sources of modernization had been mostly produced in Europe. After the First World War, Europe declined and the United States became the dominant Western power. As a result, the word "Europeanization" was rarely used after this time and "Westernization" gradually became the more popular term.[18] As Tang Degang indicated, China's early historians used to term "Westernization" what scholars currently refer to as "modernization", as the former term referred to the

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[15] Interestingly, the meaning that people in 17th gave to the word "modern" was exactly opposite to the image that we modern people thought, for example, Shakespeare once took the word "modern" to stand for the meaning of mediocre, corrupt and degenerate etc. And there were writers of Britain once called the French revolutionary leaders as "modernizers" to disdain them. See Wei Zhengtong, *Zhongguo si xiang chuan tong de xian dai fansi* (The modern reflection of Chinese traditional thinking) (Taibei: Gui Guan Press, 1990), 17; Wei Zhengtong makes reference from C.E. Black, *Dynamics of Modernization: A Study in Comparative History,*translated by Guo Zhengzhao, Zhang Zhongping and Zhou Yuhua etc.,(Taibei: Huanyu chubanshe 1972), 5.

[16] Wei Zhengtong, 17-18.

[17] In July 1922, the Shanghai *Shen Bao Yue Kan* (Shanghai monthly magazine) held a "discussion about modernization"in which more than 26 people participated.The text is about one hundred thousand words. For details refer toWei Zhengtong, page 18-19.

[18] Wei Zhengtong, 18-19.

process whereby "traditional Chinese" culture was being transformed into the "modern West". However, it is difficult to divide the concepts of "modern" and "West", because of their historical connotations.[19] In Tang Degang's view, China's recent history is the history of the transformation from "traditional Chinese" to the "modern West".

The difference between the modern and the traditional can be understood as the transformation that results from the encounter between old and new knowledge. As the historian C.E.Black stated,

> The so-called modernization refers to a dynamic form of innovation process caused by the explosion of knowledge in the recent centuries ... We can say that modernization is an old system that has a long history of development, after adapting to the science revolution, and later due to the increase of human knowledge and the ability to control environment, produced some processes of new features of dramatic changes.[20]

C.E.Black focused on what he considered to be the two causes of modernization, knowledge and the belief that old traditions should adapt to the new situation. These two factors can help shed light on the modernization of China.[21]

1.3.4 *Chinese Traditional Everyday-Tools*

Based on above definitions, the research objective of this thesis, "Chinese Traditional

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[19] Cited from Tang Degang, 155.

[20] C.E. Black, *Dynamics of Modernization: A Study in Comparative History,* Guo Zhengzhaoet al., trans. (Taibei: Huanyu chubanshe 1972), 7; Black's opinion cited here is from Wei Zhengtong, 18.

[21] Wei Zhengtong, 18.

Everyday-Tools"(Chinese term *Ri-chang qi-ju*),[22] refers to products that are widely used in people's daily lives and have been passed on from generation to generation. These traditional objects are characteristically custom-made and their use is imbued with moral and ideological connotations. Prior to the influence of Western civilization, these "traditional" objects used to possess the characteristics of etiquette, responsibility and knowledge transfer and conveyed ideas and doctrines. Chronologically, and in accordance with the definition of "traditional China" presented in section 1.3.2, in this thesis "Chinese Traditional Everyday-Tools" refers to everyday-tools made between the pre-Qin era and the Qing dynasty, before Chinese design was influenced by Western civilization.

For example, today's everyday folk tools still maintain the original design features of *Qi-wu* (object creation). The design of these daily utensils, such as chopsticks, bowls, cups, tools for cultivating land and other appliances, is practical and unique. From the *Pre-Qin* era to the *Qing* dynasty there were no fundamental changes in function, as the main changes were in terms of the materials and style. Over time, the materials used changed from pottery to porcelain, wood, bamboo, gold and silver, and other metals, whereas the stylistic changes reflected the aesthetic differences of the various dynasties.

The design and construction of these everyday objects are mostly related to the basic necessities of life. Accordingly, in both material and artistic terms they cannot be compared to palace objects. Nonetheless, in design terms, these objects often have

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[22] *Ri-chang qi-ju*, in Chinese *ri-chang* means every day, *qi-ju* means utensils and tools. The term *Qi-ju* is defined and explained in detail in Chapter 5: Research Findings and Discussion, section 5.2.

unique features. For instance, the Chinese scholars' pen, ink, paper and ink stone, the rosewood furniture of the *Ming*dynasty (1368-1643) and the everyday porcelains of the *Qing*dynasty (1644-1911), all possess these characteristics.

These everyday objects, which were used in daily life for two thousand years, were invented and designed by anonymous craftsmen. Used by generations of Chinese, their use constitutes a cultural "freeze-frame"; a habit or normalcy in people's daily lives. As Highmore said, what is special about everyday life is that there is nothing special. Specifically, the contents of daily life are unobtrusive and not prominent and are always neglected in history.[23] Nonetheless, these habitual, normal, but ignored ordinary objects, are important, as they express the thought, emotion, behavior, habits, values, aesthetics and culture of China's ancient peoples. The information contained in the design and use of these everyday objects has multiple significances and can be interpreted on a number of levels and from multiple angles, including design, science, culture, history, psychology and aesthetics.

1.3.5 *Knowledge: Zhi-shi*

It should be noted that the meaning of the term *Knowledge* (*zhi* or *zhi-shi* in Chinese) has its own tradition and origins in China. Reifying the characteristics of aboriginality and locality, unique systems of thinking and practice gradually formed during the development of Chinese history. Knowledge (*zhi* or *zhi-shi*) is also considered to be the principal epistemic attainment in classical Chinese philosophy, which focuses on

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[23] Ben Highmore, *Everyday Life and Cultural Theory: an Introduction,* translated by Zhou Qunying (Yonghe [Taiwan]: Weibo wenhua guoji youxiangongsi, (2005), 1-2.

the reflective study of knowledge.[24] Because this thesis explores the design knowledge displayed in Chinese classical texts, the knowledge of Chinese traditional everyday tools is interpreted in the context of Chinese cultural history. Accordingly, this section defines *knowledge* (*zhi-shi*) according to its literal and philosophical usage in Chinese.

Zhi and *Shi* are two different literal conceptions of knowledge in Chinese ancient literature. *Zhi* means *Zhi-dao* (to know or beware of), such as *Qian-zhi-da-shi* (nature knows the beginning of all things between heaven and earth)[25] and "*It is wise to hold what you know and admit what you don't know*".[26] *Shi* means to acquire the knowledge of things, such as the names of birds, beasts, flowers and trees. *Zhi-shi* (knowledge) is regarded as a whole word in Chinese literature. In the earliest literature it means *xiang-zhi* (know each other well), *xiang-shi* (be acquainted with each other) and *peng-you* (friends).[27] The latter term also refers to people's understanding of things.[28]

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[24] These reflective studies of knowledge can be seen in the works of Zhuang Zi and Wang Shou-ren. For detailed discussion refer to Bo Mou, *Chinese philosophy A-Z.* (Edinburgh: Edinburgh University Press, 2009), 79-80.

[25] This sentence is from *Yi-Zhuang* (*Xi-Ci*).

[26] This sentence "*It is wise to hold what you know and admit what you don't know*" is from *Lun-Yü* (*the Analects*): *Wei-zheng*. 知之为知之，不知为不知，是知也。

[27] This sentence is taken from *Zhuang Zi- Zhi Le*: "吾使司命复生子形，为子骨肉肌肤，反子父母妻子，阊里知识，子欲之乎？ (Let the God who is in charge of life restore your body, help you grow flesh and skin, and go back to your parents, wife and children, neighbors, old and new friends; do you want me to do this for you?)

[28] Refer to Zou Zhenhuan, *WanMing Hanwen xixue jingdian: bianyi, quanshi, liuchuan he yingxiang* (The late Ming Chinese Western classic: compilation, interpretations, spreading and influence). (Shanghai: Fudan daxue chubanshe, 2011), 119 - 120.

According to the existing research, the first use of the Chinese word *Zhi Shi* to refer toWestern "*knowledge*" was most likely in Western Chinese literature edited by missionaries. For instance, the preface of the "*Eastern Western Monthly Magazine*", which was published in Dao Guang in June, 1833, states,

> So we should have profound knowledge, there are various [forms of] knowledge and skills in the world, but the truth is the same. The talent of each person is different, there are differences between each country's cognition and mood, and we should put all human's knowledge to understand all things on earth.[29]

The most common way in which ancient Chinese people understood the *Qi* (vessels and implements) was the concept put forward in the *Great Commentary*: *Xing-er-shang-zhe wei-zhi-qi, Xing-er-xia-zhe-wei-zhi-dao*. Things of macroscopic, rational thought were called *Tao*, and concrete and touchable things were called *Qi* (vessel).[30] This is thought to be the original description of the concept of *Qi*.[31] Here the *Tao* is interpreted as intangible, nonmaterial, philosophical, and abstract knowledge, while *Qi* is reflected in the visible and touchable, and in objects that can be made and used. We can thus know that the visible *Qi* (vessel) contains the invisible

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[29] The citation provided here is from Zou Zhenhuan 2011, page120. The original source Zou referenced is from *Dong-xi-yang Mei-yue Tong-ji Zhuan* (Eastern Western monthly magazine), Huang Shijian systemized the sixth volume (Zhengzhou: Daxiang chubanshe, 2007), 244. Chinese original sentence is 盖学问渺茫，普天下以各样百艺文渊，虽话殊异其体一而矣。人之才不同，国之知分别，合诸人之知识，致知格物，此之谓也。

[30] *Yi-Zhuang* (*Xi-Ci*), Chapter 12.

[31] The *Suowen jiezi* states: "*Qi* means 'utensil' or 'vessel' (min). See Xu Shen, *Suowen jiezi* (Describing the pictograms and explaining the compound characters) (Beijing: Zhonghua shuju, 1981), 49. And Qing scholar Duan Yucai comments: *Qi* is the general designation for all kinds of utensils and implements." In Duan Yucai, *Shuowen jiezi zhu* (Commentary to the *Shuowen jiezi*) (Shanghai: Shanghai gu ji chubanshe, 1981), 86.

Tao. The *Changes* explicitly indicated that *Tao* was *Xian-zhu-ren, and Cang-zhu-yong*indicated that we should accurately, carefully summarize and reveal the rule of Yin and Yang, and then put the *Tao* (rule or regular pattern) into daily use; *Tao* is hidden in people's everyday tools. However, when conducting a general survey of the whole text of *Changes*, we can see that there is a balanced and interdependent relationship between *Tao and Qi*.[32]

Here, *Tao* means "way". In the book *Shuowen Jiezi* (which describes Chinese pictograms and explains the compound characters), *Tao* is described as "*by a certain direction to arrive somewhere is called road*".[33] In this sense, *Tao* refers to walking with purpose and direction. Similarly, the English word "way" not only means "road", but also signifies "way" or "method". However, in ancient China, the philosophical concept of *Tao* does not refer to real roads or the limited specific approaches and methods used in various activities. In ancient China, people called these various approaches and methods *Ji* (*skills*) or *Shu* (*techniques*). Here, *Tao* is beyond the range of technology, or the specific and tangible equipment used in production, as it is invisible and cannot be seen by the eyes. As Lao Tzu said, move towards it, you cannot see its head; follow it, you cannot see its back".[34] The Guan Zhong[35] school

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[32] In the later historical period, the discussion and interpretation of the relationship between*Tao and Qi* clearly reflects a different focus. Gradually the focus shifts to"Tao" (on behalf of philosophy, spirit) at the expense of"Qi" (representing skills).

[33] Xu Shen, *Shuowen Jiezi*(Beijing: Zhonghua Shu Ju [Book photocopying], 1963), 42.The Chinese sentence is "从行从首，一达谓之道".

[34] The sentence of "迎之不见其首；随之不见其后" see *Lao Zi,* chapter 14, quoted from*Lao Zi Jinzhu Jinyi* (The Modern Translation of Lao Zi Jin Zhu),annotated by Chen Guying (Beijing: Shangwu Yinshuguan, 2006), 126.

[35] "不见其形，不闻其声，而序其成,谓之道" from Guanzi-neiye, 397; Guan-zi (The Book of Master Guan) is an encyclopedic collection of early Chinese materials from various sources

of thought says that, "its shape cannot be seen and its sound cannot be heard, but it was arranged in order, we called it *Tao*".[36]

However, the ancient Chinese people did have a simple and clear understanding of the idea of the tangible *Qi* (vessel),

> 备物致用，立功成器，以为天下利，莫大乎圣人；舟辑之利，以济不通致远，以利天下；服牛乘马，引重致远，以利天下；杵臼之利，万民以济；弧矢之利，以威天下.

> Prepare things for the later use, and then make them into objects for the benefits of all living things, is not this contribution greater than the saint; the first and primary function of the design and invention of objects is to serve and bring convenience to people. Early in the hearts of people, the benefit the boat brought was to help people travel to far places, and to then benefit the whole word; training the cow and horse helped people carry heavy things to far places, and then to benefit the whole world; benefits brought by the pestle and mortar can help all living things; the benefits brought by bows and arrows were to deter the world.[37]

These objects are all related to the word 利 *Li* (*benefit*). Accordingly, the knowledge and ideas relating to Chinese traditional "everyday tools" is already present in this

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(Confucianism, Daoism, Legalism, etc.) by Liu Xiang (77-6 BCE).Written around 26 BCE, although it bears the name of Guan Zhong (prime minister of the State of Qi). Quoted from Bo Mou, *Chinese Philosophy A-Z* (Edinburgh: Edinburgh University Press, 2009), 64.

[36] Wang Qian, *Dao ji zhi jian* (Between *dao* and *ji*: the technique of philosophy under Chinese culture) (Beijing: Renmin chubanshe, 2009), 10, 12.

[37] The *Qi*'s concept here is quoted from *Yi Zhuan—Xi Ci Xia, the Great Commentary*.

early literature. For example, the specific knowledge and use of technology mentioned in *Kai Wu Cheng Wu* (*refers to the knowledge of all things. If we do things according to its truth and reason, we will get success*) is provided in *The Great Commentary* to meet the requirements of *Li Yong Hou Sheng* (*Give full play to the role and make people rich*) in the *Counsels of the Great Yu* (part of *The Book of History*).[38] Drawing on the definitions of *Tao* and *Qi* and their relationship, the definition of *Zhi-shi* (knowledge) in this thesis is based on the cognitive philosophicalframework for understanding *Qi* (vessel).

The descriptions of *Zhi Shi* (knowledge) and the theories of *Tao and Qi* (*Tao and utensils*) are used as the basis for interpreting the discussion of *Tao and Qi* (*Tao and utensils*) in ancient Chinese literature. This discussion provides a starting point for exploring the knowledge contained in traditional Chinese everyday-tools.

1.4 Historical and Comparative Methodology

The research questions outlined in section 1.2 provide the basis for exploring the origins of traditional Chinese design in ancient traditional texts. These texts present the literati's discussions on Chinese *Qi-ju* design. A historical and comparative methodology is used to examine the proposed research questions and to investigate the core theme of this thesis: *design knowledge of Chinese traditional everyday tools.*

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[38] The concept of *Li Yong Hou Sheng* proposed in *Counsels of the Great Yu* (part of *The Book of History*) in Western Zhou dynasty which is treated as Chinese primary form of culture by Chinese scholars is further discussed at Cai Renhou, ''Zhongguo sixiang shi (The history of Chinese thoughts): in Xiu Xianyou et al.ed., *Guo Xue Dao Du* (The guidance of Chinese study) (Taibei: Sanmin shuju, 1993), 53.

According to Kietil Fallan (2010), historical inquiry into everyday things,

> … is best explored through historical analysis to approach design culture, which
> is not elite culture, but everyday culture. Perhaps the most interesting aspect of
> design as a field of historical inquiry is its many guises of inherent ambiguity, its
> essential tension between ideology and practice, between mind and matter,
> between culture and commerce, between production and consumption, between
> utility and symbol, between tradition and innovation, between the real and the
> ideal.[39]

From a historical perspective, these tensions can be seen to constitute the complexity of the significance of Chinese traditional tools. Fallan also argues that, "It is the responsibility of design historians to present these diversities of everyday things and it is a new task for the discipline to interpret and explain these elements: ideology and practice, mind and matter, culture and commerce, production and consumption, utility and symbol, tradition and innovation, and the real and the ideal". As Fallan claims, "design history today is no longer primarily a history of objects and their designers, but it is becoming more a history of the translations, transcriptions, transactions, transpositions and transformations thatconstitute the relationships among things, people and ideas".

China has a history, language, thinking, imagery and civilization different from those of the Western world. Whether a group concept or the work of a single scholar, the

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[39] Kjetil Fallan, *Design History: Understanding Theory and Method* (Oxford, UK; New York: Berg, 2010), viii.

interpretations of these concepts all have their own meanings, which may not completely correspond to their Western equivalents. Accordingly, to explore the knowledge of daily utensils in China we need to understand China's unique system of knowledge. This "local knowledge" should be observed in its specific historical context, including the cultural and subcultural values formed by the specific historical conditions, and according to the standpoint and horizon of the specific interests that decide "local knowledge". In this sense, any interpretations of ancient Chinese texts should not attempt to break away from the "situation". Rather, the interpretation should strive to seek meaning by placing the text in the overall social, historical and cultural context.[40]

At the same time, historical interpretations must also be placed in the correct cultural context.As Schäfer wrote in regard to conducting comparative research on the technology of handicrafts in China,

> The term 'culture' is intended to remind the reader that different forms of knowledge entail distinctive locations, activities, ideas, personnel and materials, exhibiting regularities of practice. We should be aware of this contextual nature, so that the historical investigation can be placed under the identification of the culture.[41]

The concept of "local knowledge" emphasizes the internal horizon of the local culture holders. The idea of the inside family in anthropology serves as an internal indicator of inheritance.[42] In this case, differentiating the view points and interpretations of

[40] Zou Zhenhuan, 25.

[41] Dagmar Schäfer ed., *Cultures of Knowledge: Technology in Chinese History* (Leiden; Boston: Brill, 2012), 3.

[42] Ibid.

family insiders and outsiders, requires comparative insight and a local horizon. As Schäfer further stated,

> As a culturally defined distinguishable entity, China has flexible political boundaries: social, ethnic, linguistic, intellectual, religious and historical. As is the case with Europe, Chinese history is well documented in texts and through artifacts. This aspect contributed to the rather ambiguous but nevertheless crucial role Chinese technological development has played in global and comparative studies. Artifacts and texts verify how this region of the world used and created, designed, produced, consumed, repaired, recycled or abandoned technologies, how it attached meanings to technical processes, work and artifacts, and how they were controlled and organized.[43]

In adopting a "comparative" approach, this thesis refers to the "Western" design knowledge system, and then compares this to the methods of utensil study used by Chinese scholars. By contrasting the two approaches, we can understand the differences between the Eastern and Western methods of studying utensils, and the knowledge and methodologies that lie behind them. An important background and reference framework is provided to construct a reasonable methodology for interpreting the design of daily utensils. For example, section 1 of Chapter 6, The Western Design Knowledge System, provides as an important reference point for analyzing the knowledge system of Chinese objects. By comparing the two approaches to everyday objects, we can see that the epistemologies and methodologies of the East and West have developed in different ways. This comparison provides the basis for the ensuing discussion of the methodology of

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[43] Dagmar Schäfer ed.,4.

Chinese daily utensil design presented in section 6.2.

Finally, this thesis focuses on the "methodology" of design, which is rarely discussed in current research on Chinese objects. According to Western multi-disciplinary, multi-angle studies of daily utensils, we know that object design in Chinese design history lacks the support of a methodology. Therefore, the interpretation of objects remains in the style of "craft history" or the contradiction of *Zao-wu* (object creation) or theory and practice. Accordingly, a methodological framework is proposed that views the characteristics of Chinese artifacts from the perspective of Western phenomenology and hermeneutics.

1.5 Research Methodology

1.5.1 The Method of Historical Research

The study of design history belongs to the category of historical research. In this case, the historical research helps designers understand the history and present situation of design.[44] The literature review (chapter two) reveals that twentieth century research on "Chinese traditional daily utensils" is divided into a number of different historical stages, namely *Gong-yi mei-shu* (craft and art) up to the 1950s, *Zao-wu* (object creation) from the 1980s and Chinese design history from the 1990s. The common method of these approaches is mainly a kind of craft history; the style of which laid the foundations for Chinese design history. Thus, the writing style of Chinese craft art history is clearly based on a linear historical method. That is, the design historians

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[44] Li Lixin, *Sheji yishuxue yanjiu fangfa* (Research methodology of design and art) (Nanjing: Jiangsu meishu chubanshe, 2010), 75.

paid attention to the study of "traditional design" in a wide historical context by taking the time as a clue to inspecting the features of the object shape, materials and craft making of different dynasties. In other words, they investigated the changing forms and technologies of craft "objects" in different dynasties over time.

However, this thesis does not follow the traditional methodology of craft art history in investigating "Chinese traditional daily utensils". While the research objects, ancient literary texts and everyday utensils, are placed in their historical contexts, the focus of this thesis is not on linear historical development of utensils. Instead, it first focuses on the discussions of "traditional daily utensils" in the selected ancient classical "texts", and then integrates these discussions into an analysis of ancient object design. The following sections outline the research method and methodology used in this thesis.

1.5.2 The Texts and the Selection of Texts

Historical studies analyze the data of the past, such as various types of documents, records, unearthed cultural objects, folk objects and personal documents. In general, ancient literatures and unearthed material objects are the two most important material sources for studying traditional Chinese craft history (or design history).

Ancient classical literature related to "Chinese traditional daily utensil design and thought" is used as the primary research data in this thesis. The text selection relates to the choice of the relevant discussions of ancient "Chinese traditional daily utensils". There are many forms of ancient Chinese literature, such as the *Jing*, *Shi*, *Zi*, *Ji*

(Confucian classics, historical records, philosophical writings and miscellaneous works).[45] While these texts constitute the "orthodox" writings, the literature also contains folk stories known as *Ye-shi* (unofficial history), such as legends, novels of manners and casual literary notes, which discuss utensil design to varying degrees. There are also more recent texts about ancient utensil design, such as technological monographs and encyclopedias, which trace the sources of ancient utensil design and the history of daily utensil use. However, the diversity of utensils and dispersive nature of daily utensil design make it difficult to study this subject. Therefore, various kinds of related "texts" are worth studying, as they all present valuable knowledge of daily utensil design. Accordingly, the initial problem is to select the right "texts" and to determine the basis or standard for choosing the appropriate texts.

This thesis uses the four criteria proposed by John Scott to evaluate which texts are suitable for the research data, namely, authenticity, credibility, representativeness and meaning[46] (see Chapter 3 for the detailed methodology). Authenticity refers to whether what a text says is true or not (that is, the content should not be forged) and whether the author of the text is a real person. Credibility refers to the trustworthiness of the contents of a text. For instance, is the text worth trusting? Is the source reliable? Representativeness indicates that the text and the author are good enough to represent

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[45] Detailed discussion refer to Lai Tianyuan, "*Guoxue gailun* (The General introduction of Chinese study)" in *Guo Xue Dao Du* (The Guidance of Chinese Study) edited by Qiu xianyou et al. (Taibei: Sanmin shuju, 1993), 1-49.

[46] John Scott, *A Matter of Record: Documentary Sources in Social Research* (Cambridge: Polity, 1990); John Scott eds., *Documentary Research*. Volume 1 (London; Thousand Oaks, Calif.: SAGE 2006), xxii-xxiii.

the matrix. Meaning refers to the meaning that the text actually wants to express.[47]

However, this form of data collection has its limitations. The primary texts used in this thesis are firsthand accounts, such as "*Shuo wen Jie zi*", "*The Book of Changes*", works of all classes of authors and literati notes from the *Song, Ming* and *Qing* dynasties. The data collection from original texts in this thesis is a non-intrusive method of data collection that does not require any direct interaction with the data producer (or the author). While this kind of data collection avoids the need for interviews and field research, it also introduces the problems of distance and alienation. Like other research methods, this approach must determine whether the data sources are reliable, validated and representative. As no contact is made with the text producer, the answers to these questions will have their limitations. For this reason, the range of reference materials used in this thesis is expanded by using secondary data, such as the original texts of an author's note book. Furthermore, historical research on the social economy and the handicraft industry are used to supplement the primary data, and to make up for the shortcomings of the methodology. The following section outlines the theory supporting the data collection, data analysis and the basis of the author's epistemology.

1.5.3 Qualitative or Quantitative Research

Qualitative and quantitative research methods can be used to study historical documents. Qualitative research can provide in-depth analysis of the design

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[47] Matthew David and Carole D. Sutton, *Social Research: the Basics*. Wang Ruoxin et al. trans (Yonghe: Weibo wen hua guo ji chu ban you xian gong si, 2007), 191; Matthew David and Carole D. Sutton, *Social Research: the Basics* (London; Thousand Oaks, Calif.: SAGE, 2004).

documents to help understand and explain the "real look" of a period of design history. At the same time, quantitative research can help understand ancient artifacts, and date back their historical origins and development. It is difficult to describe historical phenomena without using quantitative research to accurately explain the historical process.[48] In simple terms, qualitative research focuses on the theoretical construction, and the research significance, while quantitative research focuses on measure the data. Both are effective tools for the study of design history.

In this thesis, a qualitative research approach based on construct theory is used to study Chinese design history.[49] Constructivist theory emphasizes the understanding and reconstruction of the meaning of knowledge.The term *constructivism* refers to the epistemology associated with the view that what people may consider objective knowledge and truth is a result of perspective. For the constructivist, knowledge is not "found" or "discovered" from existing facts but constructed as the invention of an active, engaging mind.[50] Accordingly, the design knowledge and design tradition explored and presented in this thesis has been constructed through the descriptions and involvement of various scholars.

According to the constructivist theory of Guba and Lincoln (1985, 1989), human daily

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[48] Li Lixin, *Sheji yishuxue yanjiu fangfa* (Research methodology of design and art) (Nanjing: Jiangsu meishu chubanshe, 2010), 75.

[49] According to this definition, qualitative research is a form of collecting and analyzing data.It focuses more on measuring data, deduction and induction than the constructivist/phenomenological approachesand the depth of analysis is more than in general analysis. Quoted from Wang Ruoxin et al.trans., 566.

[50] Kjell Erik Rudestam and Rae R. Newton, *Surviving your dissertation: a comprehensive guide to content and process*, 3rd ed. (Sage Publications, 2007), 35.

experience is constructed of personal subjective ideas that provide experiential meaning. In this sense, the essence of social phenomena is not like what positivism advocates. Rather than a direct representation of the real world, meaning is implied through multiple constructed points of view. This approach is called relative realism.[51] In this sense, the historical documents on "Chinese traditional daily utensils" analyzed in this thesis, such as Wen Zhenheng's *Chang Wu Zhi* and Song Yingxing's *Heavenly Creations*, are understood to represent the different authors' multiple constructed experiences and knowledge.

1.5.4 The Scientific Paradigm and the Epistemology Adopted in this Thesis

The constructivist paradigm mainly draws on the disciplines of phenomenology and hermeneutics, which are also the main characteristics of the qualitative research approach used in this study.The phenomenological approach is used to study the classical texts of *Qi-ju* and forms the basis of the analysis and discussion of the texts. Phenomenology is a philosophical term that is usually connected with Edmund Husserl. Husserl believes that the phenomena we feel are the "subject" and also the "object" of experience. Husserl proposed to go "back to the object itself" as an objective guide. This means to let the uniqueness of the object itself decide how to understand it. Only in this way can research be called the scientific and objective. Qualitative research usually advocates placing understanding and observation on the sidelines, and removing pulls all the researcher's own world view components, leaving only the observer's view of the world. The aim of qualitative research in this

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[51] Pan Shuman, *Zhixing Yanjiu Yingyong* (Qualitative research: theory and practice)(Taibei: Xinli chubanshe, 2003), 48.

sense is to determine the experience and the existing significance of the object.[52]

Therefore, this thesis attempts to objectify the study object, ancient literary texts, by placing the study object in the real world to make the object show the information the author wants to convey. The aim to reduce the input of researcher's subjective opinion as much as possible, and try to make the text itself present the ideas about the objects the author wants to express. However, the aim is not to separate the text from its historical context, as the analysis of the text also involves investigating the situational context of the text (i.e. the author's living world). The text appeared in a specific time and location, and was produced by a particular author in a particular social context. Therefore, in the discussion of pre-Qin philosophers and pre-Qin period daily utensils, the social and political factors at the time that would affect the production of objects are briefly introduced to provide the historical background and to make the reader understand that the text is not isolated in space and time. As a result, the results of the historical analysis of the text are also applicable to the problems faced in today's design industry.

This thesis also adopts the hermeneutic approach to try to pay attention to "understanding" and interpreting the "meaning" of the text. Hermeneutics originally referred to the interpretation of religious texts. Jurgen Habermas (1971) and others used the approach to interpret social life. As a social science, hermeneutics aims to understand the "process of understanding". "Understanding" and "meaning" are important concepts in hermeneutics. The German sociologist Max Webber

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[52] Refer to Earl R. Babbie, *The Practice of Social Research*. Li Meihua etc., tans. Vol. 2 (Taipei: Xinjiapo shang Tangmusheng yazhou siren you xiangongsi, 2007), 440; Earl Babbie, *The Practice of Social Research*. Belmont, CA: Thomson/Wadsworth, 2010).

(1864-1920) and the philosopher Wilhem Dilthey (1833-1911) introduced the concept of "*verstehen*", which means understanding or insight in German. According to Webber, in people's everyday world life, it is difficult to analyze many events and phenomena on the basis of objective evidence. If people want to understand the meaning behind social actions, they should take the position and opinion of the subject of action. Therefore, in terms of the research context, if researcher has no "present feeling" and experience of the research object, the knowledge and information obtained during the research process will have no deep meanings.[53]

In addition, the interest of hermeneutics lies in the discovery process in the hermeneutic cycle of finding the true meaning of the text. Our initial understanding of the text provides space to examine and explain the individual meanings that are included in the text. However the examination of individual parts reshapes our comprehensive understanding of the text and this again provides a new basis for examining individual parts.[54] Therefore, hermeneutic theory and a hermeneutic text analysis method are used in this thesis in combination with Chinese traditional history to analyze "the design and thought of Chinese traditional daily utensils" in ancient literary texts.

1.6 The Overview of the Thesis

[53] Refers to Chen Bozhang, *The Theoretical Basis of Qualitative Research Methods*, in the discipline of education graduate "qualitative research" symposium (Chiayi[Taiwan]: National University of Education Research Institute, 2000), 28.

[54] Earl Babbie, *The Practice of Social Research*, translated by Li Meihua et al., (Taibei: Shi Ying Press, 1998), 443.

The progression of this thesis can now outline based on the above definitions of the key terms of the title, and the scope of the research topic. This thesis has seven chapters. This chapter, Chapter 1, has provided a brief overview of the research contained in the thesis, including the research context, gap, purpose, questions and objectives, the definition of key terms and the research methodology.

Chapter 2 reviews the historical background of Chinese modern design (1840-1949) and clarifies the terminologies and concepts (*Tu-an, Gong-yi* and *She-ji*) in relation to the Western term *Design*. The chapter reviews the research on "traditional Chinese everyday tools" conducted after the foundation of new China. Three main research paradigms are described: "*Gong-yi mei-shu*" (craft art), from the 1950s to the 1980s, "*Zao-wu wen-hua*" (creation of object culture) in the 1980s and "*She-ji yi-shu*" (design and art) since the 1990s. The paradigms not only shift but also overlap in different periods. Third, the research problems addressed in this thesis are identified based on the evaluation of the above research paradigm and the writing method of Chinese traditional *Qi-ju*. This chapter concludes by arguing that we need to go back to the original Chinese texts to examine the original design knowledge system of *Qi-ju*.

Chapter 3 discusses the methodology and research methods used in this thesis. The basic concepts and theories used in thesis are explained, including the application of the constructivist paradigm, the hermeneutic research method and the interpretative textual analysis. It is argued that the methodological considerations greatly influence the choice of research method and provide an important theoretical foundation for conducting the research. The reasons for choosing a qualitative research approach, the

characteristics of the thesis, the development of the research questions, the standards of data collection and the data analysis are also examined.

Chapter 4 presents historical research on original *Qi-ju* (utensils and tools) design through an analysis of Chinese ancient classical literature. The selected texts (Chinese name *Jing-dian*) include *Kao gong ji* (The book of diverse crafts) from the pe-Qin dynasty, Shen Kuo's *Meng xi bi tan* (Dreams of stream of brook) from the Song dynasty, and Wen Zhenheng's *Chang wu zhi* (Treatise of superfluous things*)* and Song Yingxing's *Tian gong kai wu* (Heaven's crafts in the creation of things) from the Ming dynasty. This chapter presents a chronology of the development of knowledge on *Qi-ju*throughout Chinese history. The chapter tries to construct a picture of historical descriptions of *Qi-ju* by drawing on the research from different periods.

Chapter 5 presents the research findings based on above historical research and the textual analysis of Chinese *Qi-ju* design. The proposed theoretical assumption of *Chinese Qi-ju* as a design knowledge system is based on four research findings: (1) the tracing of the genealogy of the Chinese terms *Qi, Ju, Wu*, with the categorization of the corresponding design system, and the basic design concepts (*Qi, Xiang, Fa*); (2) the generation and features of the original Chinese *Qi-ju*design traditions; (3) the Chinese philosophical approach to original Chinese *Qi-ju* design; and (4) thefeatures of Chinese design knowledgeof *Qi-ju*.

Chapter 6 discusses the comparative Western methodological research approach to everyday tool design. After clarifying the terminology of the objects, artifacts, products and tools, the knowledge of object making and object interpreting in Western

design research is presented. Western design knowledge provides the basis for proposing a theoretical framework for the systematic study of Chinese design knowledge from the ontological, epistemological and methodological perspectives.

Finally, Chapter 7 reviews the contribution of thesis, answering the research questions and provides suggestions for future research.

II.   LITERATURE REVIEW

Following the research context presented in chapter 1, the researcher reviewed relevant literatures not only for an understanding of the current state of knowledge in related fields but also for insights that could inform the development of specific research questions. The scope of the literature review of this chapter includes three main subject areas. Section 2.1 introduces the historical context of Chinese modern design and the design terminologies appearing in this transitional period; Section 2.2 reviews Chinese research situation of Chinese traditional *Qi-ju a*fter new Republic of China was established (after 1950s). Then, research paradigms are identified and displayed to reflect the debate of historical studies of Traditional *Qi-ju* between 1950s and 2010s in China. Section 2.3 evaluates the three approaches to study Traditional *Qi-ju*, in which the strengths and weaknesses of the research method of three paradigms are discussed. To respond to the research problems identified, the researcher suggests that we should look back to Chinese ancient design context and trace its tradition.

2.1 Chinese Modern Design: Historical Background and Terminologies

This chapter is divided into three sections, first section, the Periodization of Modern and Contemporary History; Second section, the Design Historical Background and Context of Modern China (1840-1949); Third section, Key Concepts and Clarifications of Definitions Related to the "Chinese traditional daily utensils", which includes: 3.1, Chinese Traditional Terms *Gong-yi* (Craft); 3.2, *Tu-an* (Pattern), *Yi-jiang* (Idea craftsmanship), *She-ji (Design);* 3.3, *Tu-an* (Pattern) *and Tu-an-xue*

(Pattern Study)*; 3.4, Gong-yi mei-shu* (Craft art).

2.1.1 Historical Periodization of Chinese Modern History and Contemporary History

Traditional Chinese historians believe that the history of modern China start from *the First Opium War* (1839-1842) of the late Qing Dynasty. From the Chinese modern culture, the development of industrial production, and from the *May 4th Movement* to 1949, it is apparent that China is in the modern history period. For this reason, historians think that the Chinese modern history starts from the year 1840 and ends in 1949.[55] China's industrial history scholar Zhu Cishou pointed out that: "the Chinese modern industry firstly began from the hereafter *Opium War*, up until the founding of *PRC* in 1949, experienced a period of approximately one hundred years."[56] Accordingly, Chinese modern *gongyi meishu* (craft art) have also thought to have evolved from A.D. 1840 to AD 1949,[57] while the founding of *PRC* in 1949 up to now is considered as the stage of *Chinese Modern Design*.[58]

However, there are different views on the division of Chinese *Modern History*;

[55] Gao Feng, *Zhongguo Sheji shi* (Chinese design history)(Taipei: Jimu wenhua chubanshe, 2006), 458.

[56] Zhu Cishou, *Zhongguo jindai gongye shi* (China's modern industrial history) (Chongqing: Chongqing University Press, 1989), 86.

[57] Wang Jiashu, *Zhongguo gongyi meishu shi* (The history of Chinese arts and crafts)(Beijing: Wenhua yishu chubanshe, 1994), 2.This book is the mimeographed manuscript of the early 1960s, one of the national art colleges and universities' teaching materials by the central Ministry of culture, details see preface of Guo Zhenhua, 1986 in this book.

[58] Some textbooks date the beginning of modern Chinese history from the end of the First Opium War in 1842. See Essay by Peter C. Perdue: The First Opium War: The Anglo-Chinese War of 1839-1842. http://ocw.mit.edu/ans7870/21f/21f.027/opium_wars_01/ow1_essay01.html

scholars are of great divergence about the beginning of modern China, whether it should be the sixteenth Century or the nineteenth Century. The more traditional Chinese historians believe that the starting point of modern China is the *Ming* (1368-1643) and *Qing* (1644-1911) dynasty's alternate period, during which the European explorers and missionaries came to China. They believe that in terms of the internal state of affairs, this period is the establishment of the *Qing* dynasty; in terms of the external situation, it is the time when western culture began to spread to china. They believe that one has to define the modern China as beginning before or after 1600, indeed, it can accord with the beginning of modern Europe[59]. The author here has taken the period 1840-1949 as the modern times of China, but also does agree with Hsü Chung-yueh, who says: "the western history and the history of China's have already rendezvoused in the 16th century, but its impacts on China started to work not until the mid-nineteenth century, when strong western activities caused the rapid social development in China".[60]

According to the historical period division, *modern China* is from 1840 to 1949, while *contemporary China* is from 1949 to now. *The development of Chinese modern design* can be said to be at an embryonic stage and slowly extended to *Chinese modern design*. From 1840 to 1949, nearly 100 years, is the evolution history of the *Traditional craft* to *modern Design*. China's modern design and design education is believed to have started in early twentieth Century, and is generally thought to be divided into three stages:

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[59] See Immanuel, Chung-yueh Hsü, Chapter 1, the concept of Contemporary China in *The Rise of Modern China*, Ji Qiufeng etc., trans. (Hong Kong: Chinese University Press, 2001).

[60] Chung-yueh Hsü, 2.

First of all, in the Period of *the Republic of China* (early twentieth Century) modern design thought enlightened, modern design consciousness diffused, modern design business and occupation emerged, and modern design products (national capitalist production "domestic" and exotic "foreign goods") appeared in people's everyday living life. Chinese traditional utensil design had faced mass changes at this time.

Secondly, after the founding of new China, for 30 years, there was a self-conscious constructive stage for the Chinese modern design. With national policy support, all kinds of related universities and professions have been established and the cultivation of teachers' team started forming. Design education were not only majored on traditional handicraft of arts and crafts, but also focused on the large-scale machine industry and all kinds of modern designs for modern social life.

Thirdly, since the reform and opening up policy in 1980s, various design ideas, genres, methods, and large number of products of western world flooded into China. Thus, in 1998, *the Ministry of Education* decided to change the contents of the related subjects and the teaching professions. So *the Ministry of Education* used the *Design and art* to replace the professional name of *Craft art.* From then on, Design education widened into a large scale development.[61]

2.1.2 Design Historical Background and Context of Modern China (1840-1949)

The failure of *Sino-Japanese War of 1894-1895* declared the failure of the

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[61] Chen Xiaohua, *Gongyi yu sheji zhijian: 20shiji zhongguo yishusheji de xiandaixing lichen* (Between technique and design: the modernity course of art and design in China in the 20th Century) (Chongqing: Chongqing daxue chubanshe, 2007), 1-2.

Westernization Movement. But the commercial ports have been opened to the outside world for half a century since *the Opium War*, so in the material life, the foreign goods further emerged in Chinese people's lives. After *the Opium War*, China was forced to open numerous coastal cities to the outside world; colonial trade started from Guangzhou, quickly moved to the north to Shanghai and included cities of inland Yangtze River basin. In 1860, Shanghai had become China's largest and most prosperous business capital. Western manufacturing of industrial products such as bicycles, electric bulbs, telegram, train, sewing machines etc., constantly, from the Oriental commercial ports, flooded into the inland with the help of many inland rivers, and thus, foreign goods became more and more deeply entrenched into people's daily lives. [62]

The *Westernization movement* had established a lot of industries, enabled the ruling class witness the "advanced" technology and modern artifacts of western countries, so they started the top-down reform measures. But to the majority of people, the establishment of industry, business promotion, foreign goods, brought convenience to their daily lives. The traditional way of life was rapidly changing; this kind of change could be found in the material life between the old and the new. In the daily life of people there appeared a large number of *foreign* objects.[63] Liu Shanling's *Western Wind*: *Western Invention in China* (1999) described dozens of Western inventions in China, including: sewing machine, the needle, knitting, refrigerator, soda, water, gas,

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[62] Chen Xiaohua, 63.

[63] Specific foreign objects and influence on the society can be seen in the following works: Liu Shanling, *Xiyang feng: xiyang faming zai zhongguo* (The West wind: Western invention in China) (Shanghai: Shanghai Classics Publishing House, 1999); Xie Guian, *Xiqi dongchuan yiqian jindai shehui* (West and East transmission and the early modern Chinese society), Academic Journal 2003, (8): 81-89.

electric light, toilet bowl, train, car, bicycle, rickshaws, airplanes, western sailing boat, soap, cargo shortage, telegraph, telephone, films, etc.. Foreign goods introduced the Chinese people to the advancement of western industrial technology, and also aroused the thirst for industrial change in modes of production. Foreign goods also prompted the development of national industry.

After *the revolution of 1911*, the thoughts of science and democracy had widely spread, industrial salvation, learning western science and technology culture had become a trend, and led to a surging of students going abroad to study in Western countries and Japan.[64] Therefore, the influence on Chinese contemporary design has two aspects, one is Japan, and the other is Europe, mainly Britain and the United States. Although there was no specific subject name called *Art Design*, but, at the latest since 1918, China has adopted the modern meaning of the western design education.[65] Art and design education emerge as the times require, on the one hand, people thought and discussed the western design, on the other hand, they tried to combine the Chinese traditional handicraft tradition with modern design concept, somewhat transformed to meet contemporary needs. *The Academy of Fine Arts* began to offer Handicraft department or Design department, such as the *Beijing Academy of Fine Arts* design department which was set up in 1918, and the *National Centre College Department* and *Handmade Normal Department of Shanghai Art College* in 1920. The Handcraft department of *National Centre College* Department of art educations started in 1928, the Handicraft department of *Hangzhou National College*,

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[64] Ruan Rongchun and Hu Guanghua, *Zhonghua minguo meishu shi1911-1949* (The history of Chinese modern art 1911-1949) (Chengdu: Sichuan meishu chubanshe, 1991).

[65] Zhu Shuai, *Zhongguo wenhua yu zhongguo sheji shi jiang* (Ten Lectures on Chinese Culture and Chinese Design) (Beijing: Zhongguo dianli chubanshe, 2008), 110.

the Handicraft department of *Guangzhou Academy of Fine Arts* and the Applied Arts Department of *Sichuan Provincial Art School* were all established during the period of *Anti-Japanese War* .[66]

The establishment and development of these courses, has cultivated many talents engaged in design practice, what is more meaningful is that they widely draw lessons from western countries and have introduced, and grafted the western design ideas in Chinese local design practice. Under such an environment, the local Chinese, the Chinese capitalist industry and Commerce developed in the limited speed, advocated the slogan of using domestic products and competed with foreign capital, foreign goods, and, in fact, germinated the concept of *tu-an* (pattern) and *gong-yi mei-shu* (craft art), this being the first grafted fruit of western concepts.[67]

In 1930, various cultural thoughts and views of art converged, collided and communicated in Shanghai, even Chinese modern design and theory have germinated here. The papers or monographs about modern art design published between 1910 and 1940 embody various scholars' different thoughts towards *Craft, Industry* and *Industrial Arts Education*. This includes: Chen Zhifo's *How to Develop Chinese Craft Art*, *Industrial Art*, Fu Baoshi's *Outlook and Construction of Chinese Art* and *Chinese National Character and Art*, Yan Wenliang's *From the Productive Education Deduce to the Necessity of Applied Art*, Chang Shuhong's *Overview of Decorative Art Movement of Modern French*, and Sun Fuxi's *Art Education is the Opening Drum of*

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[66] Chen Xiaohua, *Gongyi yu sheji zhijian: 20shiji zhongguo yishusheji de xiandaixing lichen*, 109.

[67] Chen Xiaohua, 65-66.

Production, Chen Zhifo's *What is Called "Craft art"* etc., [68]

2.1.3 Key Terms and Concepts of Design at the Beginning of 21th Century

The earliest Chinese traditional "design" and "production" concept can be traced back to the *The Book of Changes* and works of all classes of authors in the pre-Qin period, and Government's official book of the Warring States – *Kao gong ji* (Book of diverse Crafts) (known as China's first "craft" and "technology" monograph), in which appeared words and concepts like, *bai-gong* (hundred craftsmen), *gong* (crafts), *qiao* (technique), *qi-wu* (utensils & objects). *The Book of Changes - Copulative*, recorded the origin of the divine force that created the universe, words like *Qi*, *Wu* etc., appeared in the book. Concepts emerged such as, "*What is above the form is called Tao, what is below the form is named Qi.*" Lao Zi, who lived in the spring and autumn period and Warring States, expecially described *Tao* in his *Tao-de-jing*. Mo-Zi, an ancient philosopher with craftsman background also put forward his view and methodology towards appliance manufacturing and the method.[69] These ideas have influenced China's traditional utensils manufacturing for nearly two thousand years. However, these Chinese traditional design concepts were shaped by foreign goods and Western design concepts which flooded into China (and were influenced by German Bauhaus design concept and the *British Arts and crafts movement*).

Although at the beginning of twentieth Century, China's social structure was still

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[68] Hang Jian, *She ii dao: Zhongguo sheji de jiben wenti* (The way of design: the basic problems of Chinese design) (Chongqing: Chongqing daxue chubanshe, 2009), 314-315.

[69] See Chapter four, 4.1.3 for details of the discussion about *Qi*, *Ju*, *Tao* from Lao Zi and Mo Zi at *Pre-Qin* period.

pre-dominantly agricultural society, and traditional handicraft manufacturing dominated the society. But when facing the western culture's full-scale invasion, ancient Chinese vocabulary like *ge-zhi, Tao, qi* etc. have become very difficult to describe within the western cultural framework, so there must be new creation and improvement[70]. In this period those returning students from foreign countries like France, and Japan tried to use corresponding foreign concepts to make the Chinese traditional creation "process" move on the way towards modernization. The European *design*, *art, handcraft* and Japanese *tu-an* (pattern), *yi-jiang* (idea & craftsmanship) and other words and concepts have been introduced into China; however, these foreign words collided with native Chinese words like *gong, yi, and Tao, qi.* Scholars try to integrate these exotic vocabularies, which contain new ideas, with native vocabularies to form some new words and expressions. In fact, what scholars have done showed their understanding towards the word "design".

However, although these words reflect the characteristics of the times and adapt to the needs of the times, many vocabulary items interweaved in the later history brought cognitive difficulties to the understanding of today's design. For example, before *the Republic of China,* western art concept was introduced into China, and the fine arts combined with ancient Chinese word – *Process, which* produced the concept of *gong-yi mei-shu* (craft art). Japan's *tu-an* (pattern), *yi-jiang* (idea& craftsmanship) were regarded as the concepts belonging to design and then introduced into Chinese. Nineteen fifties, *gong-yi mei-shu* (craft art) was used as the subject name unifying a series of words that appeared earlier, such as, *applied art, decorative art, yi-jiang* (idea &craftsmanship), *Construction*; similarly, the word *she-ji* (design) was

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[70] Chen Xiaohua, 31.

expressed by *Industrial art*, at that time, this word included not only traditional manual form of art, but also comprises *Modern Design*, and this situation did not end until the mid-90s.[71] Like what Hang Jian has said, "Nearly a century, it seems to have been very difficult to talk clearly about *she-ji* (design) in China. It seems clear, but still fuzzy". The internal factors that caused this 'fuzzyness', such as art, craft, decorative art, pattern and so on, was further complicated by external factors, such as, nouns of different contents were all called *she-ji* (design). The complexity of design comes from the infinite and broad life, the 'living' China, and those unusual daily life situations and all sorts of things, added to which the farfetched analogy drawn by social changes and other problems that lay beyond the basic necessities of life.[72]

According to Hang Jian, the reason is that "design" is an exotic word for China. The social form of early twentieth Century China is still the agricultural society. The accumulated national industry from the 'Westernization Movement' is not strong enough to be a solid platform for the term "design". Therefore, *ying-zao* (construction), *tu-an* (pattern), *gong-yi mei-shu* (craft art), *gong yi* (craft), *Zhuang-shi* (decoration), *zhuang-shi yi-shu* (art of decoration), *she-ji yi-shu* (design and art), *yi-shu she-ji* (an artistic designing) and other words were mixed and losely used together. Due to crossed historical reasons, its boundary of denotation and connotation was ambiguous and vague, especially the historical development of *craft and design*. Historically, how many overlaps do their contents have and how many contents can be distinguished, what kinds of viewing angle is used, especially how to define the ancient and modern, h, and what are their functions of different words, have not had

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[71] Li Yanzu, *Sheji zhiwei* (The thinking of design) (Chongqing: Chongqing daxue chubanshe, 2007), 4.

[72] Hang Jian, Hang Jian, *She ii dao: Zhongguo sheji de jiben wenti*, 1. See the preface.

time to explore from a purely theoretical perspective.[73]

The author believes that the debate about vocabulary should consider reality, and any vocabulary should be put in the local culture, history, custom to annotate. Just like the western *she-ji* (design) is produced in the western history and culture, the corresponding vocabularies of China also contain the Chinese way of thinking, ideology, academic allusions, and the use of custom. So, in China, there is no "most" appropriate vocabulary that can completely be equivalent, synonymous to the word "design". Translation always has a range of error. And the meaning of today's *She-ji* (design) is more extensive and contextual.

As Zhuge Kai's point of view suggests, there is no word like *tu-an* (pattern), *yi-jiang* (idea & craftsmanship) and other proper nouns in ancient Chinese, but when created in practice there are of equal importance. We can not only find far more abundant handicraft products than the western world, and in ancient Chinese, there are words similar to the western concepts, and even earlier than the western world, there were words such as, *gong* (craft), *gai-gong* (handicraftsmen), *gong-qiao* (exquisite), *yi* (skill), *shou-qi* (handicraft), *wen* (grain), *yang* (sample), *aao-wu* (creation of objects), *zhi-qi* (tools making), *qiao-si* (ingenuity), *yi-jiang* (idea &craftsmanship)etc., [74] With the popularity of modern Chinese, ancient Chinese is relatively less used, thus, most students of the School of Design must feel strange about these historical nouns. The Chinese ancient design thoughts associated with these terms were gradually forgotten

[73] Hang Jian, 47.

[74] Traditional Chinese vocabularies of Ancient China which equivalent to the Western word "design" *Zaowu, Zhiqi, Baigong, Gongqiao* etc., are not described in this chapter. For the textual research of the definition and meaning of terms, please refer to the chapter 6.

by people. While the interpretation of the contact between China and western countries is individually defined, the builders of China's art design theory should take the responsibility for the confusion.[75]

2.1.4 The Diverse Terms Related with *Sh- ji* (Design)

This section attempts to clear and sort out the origin, connotation, definition and development of these key words: *she-ji* (design), *tu-an* (pattern), *yi-jiang* (idea & craftsmanship), *gong-yi mei-shu* (craft art) etc., at the earlier stage of China modern design history.

According to Matthew Turner's investigation, "the uses of the word *she-ji* (design) in China can be dated back to the 1920s; it first appeared in *Webster's Collegiate Dictionary with Chinese Translation,* published by the Shanghai Commercial Press in 1924.[76] The word *she-ji* also could be seen in advertisements in Hong Kong as early as the 1930s;[77] nevertheless, the public was still vague about their understanding of "design" until the late 1960s.

As Turner observed, the word *she-ji* appeared in early 1920s, but was not extensively used in China at that time, instead, the two phrases *tu-an* (pattern) and *gong-yi*

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[75] Zhugekai, "The Change of China Design Concept and its Theoretical Value" in *Liebian zhong de chuancheng* (The Inheritance of "fission") (Chongqing: Chongqing daxue chubanshe, 2007), 7; originally issued on the book of "Research on Design Education" (the first volume), (Jiangsu Fine Arts Publishing House, 2004), Volume 9.

[76] Matthew Turner, *Ersatz Design—Interactions Between Chinese and Western Design in Hong Kong: 1950s–1960s* (London: Royal College of Art, 1993), 32. Unpublished Ph.D. dissertation.

[77] Ibid., 17.

mei-shu (craft art) were mainly used to refer to the meaning of design. When the concept of design was introduced into China, in accordance with the understanding and habits, as well as the impact from Japan in particular, the English word *she-ji* (design) was translated as *tu-an* (pattern), *gong-yi mei-shu* (craft art) or *mei-shu mong-yi* (art craft).[78] However, the phrases *she-ji* (design) and *gong-yi* (craft) have completely different connotations and indicate different meanings in Chinese language.

Wang pointed out, "The term *design* (as a noun) in English does not have a natural equivalent or a directly translatable term in most Asian languages including Chinese. The definition of "*design*" is an ongoing process where various scholars have been contributing in the discussion and debate about what is the meaning of design throughout decades.[79] Just like the Western *Design* must be created and used in their own cultural background and habits, the Chinese language also has its own cultural background and habit. So there is no equivalent or a directly translatable term that is completely equivalent with foreign words. Therefore, when a foreign word appears, we must find a corresponding word in Chinese language to best correspond to the given word.

2.1.4.1 Chinese Meaning of *She-ji* (Design) and *Tu-an* (Pattern)

Actually, there is no word for *design* in Chinese Ancient texts, but there are words like

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[78] Li Yanzu, *Zaoxing yishu xinshang* (The appreciation of design art), Tian Mingzhang Revised (Taipei: Wunan Publishing Co., Ltd., 2002), 27.

[79] W. S. Wong, *Contemporary Design in China: The Road to Modernity and Commercialization*, Design Research Society, 2006. International Conference in Lisbon. IADE.

she and *ji,* such as the related words: *she-xiang* (conceive), *she-fa* (manage to do something), *she-shi* (facility), *she-se* (fill in colours on a sketch), *she-nan* (set someone in a bad situation), *ji-hua* (plan), *ji-hua* (project), *ji-ce* (stratagem), *ji-jiao* (bother about), *ji-mou* (scheme) and so on. Its usage is closely related to personal activities of all kinds. Therefore, the meaning of the term *design* is very broad in the concept of the Chinese people, and it is not just being used to describe art. That is to say, when expressing the word *bai-nian* (concept) in the Chinese language, modifiers must be added to define the word. Such as the following phrases that are in regular use: *ji-shu she-ji* (technical design), *gong-cheng she-ji* (engineering design), *wang-luo she-ji* (network design), *shi-chang she-ji* (marketing, design), *yi-shu she-ji* (art design), *mei-shu she-ji* (graphic design), *chan-pin she-ji* (product design).[80]

Since the word *design* does not exist in Chinese language, so in the modern times, people took the Japanese translation and regarded *she-ji* (design), *tu-an* (pattern) and *yi-jiang* (idea & craftsmanship) are of the same meaning, and then these words corresponded with the English words design. We adopt Japanese translation because Japanese script belongs to Chinese language family and is appropriate for Chinese to understand. As for its word origin, a trace of clues of the word can be found in the history of China, such as the phrase *Pi-tu-an-die* in *Han Book - Records of Rites and Music*.[81] And the idiom *An-tu-suo-ji* (try to locate something by following up a clue) also has the similar meaning with *Pi-tu-an-die*, but it has not led to the formation of the independent words such as *design* in the western world. At first, *tu-an* (pattern)

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[80] Zhang Daoyi, 37.

[81] *Han shu- li le zhi* (Han book - records of rites and music), was written by Ban Gu in the period of Eastern Han.

and tu-an (figure*)* were equally used in China.[82]

2.1.4.2 *She-ji* (**Design**), *Tu-an* (**Pattern**) and *Yi-jiang* (**Idea & Craftsmanship**)

In the 1920s, Japanese education had a great influence in China formany disciplines.[83]

Tu-an (pattern) was a phrase that was used in Japan to refer to *design* and the Chinese

borrowed it for use in a similar context. According to Zhu Geka's investigation, after

accepting the western thought in *Meiji Restoration*, Japan took *tu-an* (pattern) and

yi-jiang (idea &craftsmanship) to represent the meaning of *sheji* (design). In the

sixteenth year of Meiji emperor (1884), a book named *Shui-che Yi-jiang Fa* was

published in Japan, and *Yi-jiang* (Idea &craftsmanship) in this book meant *she-ji*

(design). In the 36th year of Meji (1902), the *Industrial Design Department* was

established in *Tokyo Higher Technical School*, and here the word *design* was

translated as *tu-an* (pattern). The word *Tuan* in Japanese was created by Yujima to

translate the word Design in English. Therefore, the original meaning of the word

tu-an (pattern) in Japanese was quite close in the word *she-ji* (design).[84]

Specifically, according to the explanation of Japanese scholars, in the word *yi-jiang*,

yi means idea or intention, and *Jiang* means *technology*. In the word *tu-an*, *tu* means

planning and *drawing*, and *an* means *thoughts*; the general meaning of *tu-an* is *to*

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[82] Zhang Daoyi, 37.

[83] G. Ding, "Nationalization and Internationalization: Two turning points in China's education in the twentieth century" in *Education, Culture, and Identity in Twentieth-Century China*, edited by Glen Peterson, Ruth Hayhoe, and Yongling Lu (Ann Arbor: The University of Michigan Press, 2001), 161-163.

[84] Yuan Xiyang 2003, 11-12

express conceiving.[85] The phrase *tu-an* (pattern) and *yi-jiang* (idea & craftsmanship) therefore are synonyms words.[86] *Tu-an* (pattern) and other new nouns for the first time won a place in large dictionaries, such as the *Ci Hai* of RC.

In such sense, *tu-an*, *yi-jiang* and *she-ji* are foreign words which became synonymous to Chinese *design* in the early twentieth Century.[87] Zhang Daoyi once made the comparison with these three terms that, "*tu-an* (pattern) is more used as a noun, referring to the shape and ornamentation of the artifacts, buildings, etc. and *she-ji* (design) is more used as a verb, referring to some kinds of design or someone's design. *Yi-jiang* (idea & craftsmanship) mainly focuses on conceiving, planning and managing."

2.1.4.3 The Emergence and Use of *Gong-yi mei-shu* (Craft Art)

On the other hand, we can see the use of the following words: *tu-an* (pattern), *gong-yi* (craft), *gong-yi mei-shu* (craft art). The appearance of *gong-yi mei-shu* (craft art) was largely influenced by foreign culture in the early 20th century, such as in Chen Zhifo's early articles (1917, 1930). The origin of the word can be traced back to the 1860s to

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[85] From its semantic meaning, *Tu* means diagram, chart, picture and portrait and can refer to intention, plan and purpose; *an* means a physical object of a narrow long table, bench or a legal record.

[86] Zhugekai, "Han yi chu yi (On Chinese Translation of Design)", in *Liebian zhong de chuancheng* (The Inheritance of "Fission") (Chongqing daxue chubanshe, 2007), 9-17.

[87] For the word *Design*, the Japanese officially used in 1960s. Even now in the English-Chinese dictionary, the English word *design* is translated into Chinese as *Tu an* (pattern), *Yi jiang* (idea craftsmanship) and *She-ji* (design). Detail refer to Zhang Daoyi, "Bu yao kuidai Tu-an (Don't maltreat Tuan)" (original was written in 2001) in *Sheji zhi zai mou* (design is scheming) (Chongqing: daxue meishu chubanshe, 2007), 61-66 (67).

the 1880s, with the rise of the British Arts and Crafts movement. This movement took Art and crafts (Art & Craft, or translated into craft of Fine Arts) as its name and under its influence, Japan began to adopt this new nouns *Gong Yun Fine Arts*.[88] In the later part of 1920s, Japanese kanji vocabulary *Gong Yun Fine Arts* was introduced to China, and gradually became popular in social life as well as in art and education field. In fact, to a great degree, these words gradually replaced the nouns: *tu-an* (pattern), *yi-jiang* (ideal & craftsmanship), *gong-yi* (craft).[89]

According to the existing materials, the earlier user of the term *Gong-yi Mei-shu* (craft & art) is Cai Yuanpei. In 1920, he wrote in his book *the Origin of Art*: "Art has narrow and broad senses. And the narrow sense refers to buildings, statues (sculpture), paintings, and *Gongyi Meishu* (Craft Art)."[90] The *gong-yi mei-shu* mentioned here was not much different from the word *tu-an* (pattern). Thus, in the *Proposal of Establishing the National Instituteof the Arts* Cao Yuanpei drafted in 1927, he mixed the use of *Tu an Yuan (Pattern School)* and *Gongyi meishu Xuanyuan* (*School of Craft Art*), which shows that in his interpretation these two concepts refer to the same thing.[91]

In the 1930s, people have a more urgent understanding towards the development of industrial design, and Liu Lin pointed out in his article *Advocating Craft Art and Encouraging Native Products* that: "*Gong-yi gei-shu* (craft art) is the technique of

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[88] Chen Xiaohua, 2007.

[89] Yuan Xiyang, *Zhongguo Sheji Jiaoyu Licheng* (A Study on Chinese art design education progress) (Beijing: Beijing Institute of Technology Press,2003), 15-16.

[90] Yuan xiyang, *Zhongguo Sheji Jiaoyu Licheng*, 14.

[91] Yuan xiyang, *Zhongguo Sheji Jiaoyu Licheng*, 15.

craft designing and making, which produces daily necessities, the fruit of this kind of technique was called handicraft article or artistic handicraft by people, and compared it with the simple clumsy and ordinary craft product." In his view, at that time a large number of industrial products of Europe, the United States, Japan and other industrial countries flooded into China's urban and rural areas, the main reason is that they focused more on the design, that is, they paid more attention to the form and quality of products, with low price and great utility, but the products of our country were very ugly. This is obviously and completely owed to the fact that Chinese manufacturer and enterprisers ignored the importance of *gong-yi mei-shu* (craft art), not taking *gong-yi mei-shu* (craft art) as a necessary commodity-competition tool.[92]

An article *The Relationship between Craft Art and Life* of Zhang Derong published on the first issue of periodical *Mei-shu Sheng-huo*, which was founded in 1934, stated that *Gong-yi mei-shu* (craft art) is a new term in China, but it is not a new career. And it already has a history of several thousands of years……The so-called *Gong-yi mei-shu* is *shi-yong mei-shu* (practical art). In other words, the *gong-yi mei-shu* (craft art) is the utensils making of daily life that added the element of art design. Therefore, *Gong-yi mei-shu* has a close relationship with human daily life…*gong-yi mei-shu* was originally based on the most necessary and suitable necessities in life. Therefore, all the everyday life tools used are objects of *gong-yi mei-shu*. And the means of *gong-yi mei-shu* is to make these objects in the most economical, easiest and the most beautiful way."[93] As for the function of the *gong-yi mei-shu* (craft art), people at that time have their own understanding: "*Gong-yi mei-shu* is a necessity of society, it is

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[92] Li Yanzu, *Zaoxing yishu xinshang* (The appreciation of design art), Tian Mingzhang Revised (Taipei: Wunan Publishing Co., Ltd., 2002), 67.

[93] Li Yanzu, 67-68.

the production of human evolution, and helps promote the culture of a country, show characteristics of a nation, enliven people's life, cultivate people's characters. Therefore, it is of great importance in human society."

The concept of *gong-yi mei-shu* had been officially established as early as the late Republic of China, but the real development of *Gong-yi mei-shu* education was after the founding of the new China, the period of the Republic of China is only the initial stage of exploration. Before and after the *May Fourth Movement*, many experts who engaged in Craft education, handcraft-education, and *tu-an* (pattern) education, proposed sharp criticism which aimed at the disjointed state between *tu-an* (pattern) design and craft making of all types and all levels of education system. They argued that technical education without the artistic design would have to be reduced to mechanical labor. It could not meet the development of creative purpose, nor could it achieve the purpose of revitalizing industry. They also argued that the artistic design without technical education would inevitably degenerate into empty talk. It would be difficult to guarantee education quality and achieve social goals.

Based on the above understanding, they called for the handicraft Education (craft Education) to be combined with *Tu-an* education, named as *Gong-yi mei-shu* (craft art) Education. In the later period of Republic of China, there had been calls for integration of *Tu-an* education and craft education, which eventually led to the fact that *Tu-an* education, is replaced by the new *Gong-yi Mei-shu* (craft art) education. Precisely because of this reason, the education of *Tu-an* (pattern) cannot be treated as art design education; instead, it is only an embryonic form of art design education.[94]

The phrase *gong-yi mei-shu* (craft art) was actually used in China after 1950.

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[94] Detail refers to Yuan Xiyang, *Zhongguo sheji jiaoyu lichen yanjiu*, 15.

According to Hang Jian, there were two reasons to lead to the conventional representation. First, after 1949, to save the folk arts and crafts, the government organized craftsmen to perform centralized production, and products were sold at the Service Department of Art and Craft throughout each city – and various religious crafts, imperial court crafts, scholar crafts, and folk crafts all being sold there, and then gradually, together, they formed the concept of *Gong-yi mei-shu* (craft art). This has caused a great impact throughout the country. Second, the establishment of the *Central Academy of Fine Arts* also exerted a strong influence for the establishment of the concept *Gong-yi mei-shu* (craft art). The *First National Folk Arts and Crafts Exhibition,* held in 1954, still kept the concept *Gong-yi mei-shu* (craft art). After 1956, the concept *Gong-yi mei-shu* had finally become stable.[95]

As for *tu-an*, *gong-yi mei-shu* and the later *modern design*, Zhang Daoyi proposed that "during the one hundred years of the 20th century, and within the range of the *zao-wu* (creation of objects), China once used three different words to summarize, namely *tu-an* at the beginning of the century, later *gong-yi mei-shu* and now the *design art*. Except the conversion angle, there is no essential difference among these three words. As the angle of reviewing things has extended, the specific connotation and artistic focus also expanded. This is the inevitable development of thing". Study of *Pattern* is the base of *gong-yi mei-shu* (craft art) and *Design Art*; it seeks to establish a systematic framework from the angle of thought, ideas, creativity and manifestation of art.[96]

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[95] Detail refers to Hang Jian, *She ji dao*, 81.

[96] For details refer to Zhang Daoyi, "Buyao kuidai Tuan (Don't maltreat Tu-an)", in *Sheji zhi mou (design is scheming)* (Chongqing: Chongqing Univiversity Press, 2007), 61, 62.

2.1.4.4 Summary

This chapter, so far, stretches over three aspects, historical background, the encounter oftraditional Chinese local design and Western design, as well as the face of the Western design's impact, the transformation of Chinese traditional utensils culture. It can be seen that the first transformation is the reform of subject and subject name. This part of the chapter reviews and clarifies the definition and sources of the foreign words appearing in the period of birth of modern design, such as *she-ji* (design), *tu-an* (Pattern)*, yi-jiang* (idea & craftsmanship) and so on.

2.2 Research Paradigms for "Traditional Chinese Everyday Tools" After the Foundation of New China

In Chinese design research field, "Research of Traditional Chinese Everyday Tools" was generally listed into the subject of design history in the modern design discipline of China as no special subject had been set up for this field of study. After the foundation of New China, driven by governmental policies, traditional Chinese design was studied under the subject title of *gong-yi mei-shu* (craft art). In subsequent periods, the research of this field was labeled by different names, with diversified research objects. In this section, against the backdrop of the Chinese design history after the foundation of New China, and amidst the historical structure of the shift of the concept of traditional Chinese craft art to modern design concept, different research paradigms[97] have been observed for "research of traditional everyday tools"

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[97] The Research Paradigm is from kuhn's concept. Kuhn (1962) describes as a paradigm – a distinctive way of orienting to the world. A research paradigm is a concept about how people find

in different periods, respectively. Indeed, such paradigms are: *gong-yi mei-shu* (craft art), including *min-jian mei-shu* (folk art) from the 1950s to the 1980s, *zao-wu yi-shu* (creation of object art) in the 1980s, and "*she-ji yi-shu*" (design and art) since the 1990s. Not only has there been a paradigm shift[98] but also overlapping has been observed between these three paradigms in different periods.

In light of this observation, this section, based on the three research paradigms in these three periods, presents the researches and research approaches for "traditional everyday tools". This section consists of three parts, namely: (1) discussions on "traditional everyday tools" within the mainstream writing framework of the *gong-yi mei-shushi* (history of craft art) from the 1950s to the 1980s; (2) discussions on "traditional everyday tools" in the *zao-wu yi-shu* (creation of object art) from the later 1980s to the 1990s; (3) discussions on "traditional everyday tools" from *she-ji-shi* (China's design history) and other perspectives in the recent decades.

2.2.1 Paradigm Oriented by the History of *Gongyi meishu* (Craft Art)

In the 1950s, the government adopted a series of policies for "craft art education" - inclusion into the state plan and establishment of special subject and school, to restore production of the artisan industry,[99] separation of craft art from fine arts to become an

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out the truth. See Egon G. Guba ed., *The Paradigm Dialog* (Newbury Park, Calif.; Sage Publications 1990).

[98] Paradigm shifts occur when the dominant paradigm is successfully challenged by another paradigm able to incorporate the existing paradigm and also offer wider explanatory powers.

[99] See Chen Xiaohua, Chapter 6, New Turning Point and Shift of Art and Design, 1950-1978, pp. 137-156; and Attachment II Chronicle of Art and Design from 1900 to 1999, pp. 219-225. In *Gongyi yu sheji zhijian: 20 shiji zhongguo yishusheji de xiandaixing lichen* (Between technique

independent discipline. "In 1953, with "craft art" becoming a discipline title officially recognized by the state, several names, "*tu-an jiao-yu* (pattern education), *shi-yong mei-shu jiao-yu* (practical art education) and *gong-yi jiao-yu* (craft education)" used in the 1920s and the 1930s, were gradually unified under the title of "*gong-yi mei-shu jiao-yu*" (craft art education).

In the winter of 1953, the Ministry of Culture held the First National Exhibition of Folk Craft Art in the Working People's Cultural Palace in Beijing. Primer Zhou Enlai visited the exhibition and remarked to Pang Xunqin who accompanied him, 'Craft art education is to be integrated with craft production... If we are run a craft art school in the future, we should also combine it with production. We should gradually develop it from small to large. We should take care of the needs of people's lives and study advanced production technology.' With such a beginning, the plan for establishing the Central Academy of Craft Art was initiated.[100]

To restore traditional handicraft production so as to adapt to the needs of the new age, the rearrangement and research of traditional everyday tools was included into the research of "history of craft art". The Central Academy of Craft Art played the role of academic leadership at that time: on one hand, it engaged in writing the history of craft art on the topic of "craft art"; on the other hand, it conducted a series of field research on the topic of "folk art", in order to collect and investigate the traditional

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and design: the modernity course of art and design in China in the 20th Century) (Chongqing: Chongqing da xue chubanshe, 2007); Yuan Xiyang, *Zhongguo sheji jiaoyu fazhan jincheng* (Research on the Developmental Course of Art and Design Education in China) (Nanjing: Nanjing Academy of Art Press, 2000).

[100] Chen Xiaohua, 151.

everyday tools used among the people. *Zhuang-shi* (decoration) magazine became a platform for displaying the results of academic research and field research (i.e. research on the craft art history and investigation of folk art).

These works on craft art history differed from the writings on craft history in the period of the Republic of China. The first monograph on craft history authored by Xu Yanzhuo in 1917, *Zhongguo gongyi yange shilue* (A brief history on Chinese Craft art) (published by the Commercial Press), covers a wide range, in which the part on craft art even includes a variety of fields such as electricity, coal gas, running water and metal color refining. *Zhongguo meishu gongyi* (China's craft art) published by Xu Weinan in 1940 introduces the brief history of development of crafts such as jadeware, chinaware, Yixing earthenware, *Jing-tai-lan* (cloisonne enamel), *Ti-hong* (carved lacquerware), *Ci-xiu* (embroidery), carpet, bamboo carving and toys. This method of writing and craft category were developed under the holistic research trend for "craft art history" in the 1950s.[101] Therefore, the main discussions on "traditional Chinese everyday tools" after the 1960s were compiled under the writing framework of "craft art history". Relative to the individualized writing method of the literati in the past, the "writing on craft art history" in New China was the dominant approach of the government and the academics, giving rise to "craft art" education across the nation.

In 1961, the Ministry of Culture of China organized teachers from relevant schools to compile art textbooks. "History of Chinese Craft Art" was listed as one of the key topics, to be compiled by Wang Jiashu from Beijing (Central Academy of Craft Art),

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[101] Li Yanzu, preface to Tools as *Vehicles of Tao--Study of the History of Chinese Craft Art in Different Periods*, 2002. Published in "Self-awareness of Historical Studies of Craft Art", Design Auditorium "Dimensions of Design", 2007.

Chen Zhifo and Luo Dongzi from Nanjing (Nanjing Academy of Art), Long Zongxin from the Sichuan Academy of Fine Arts and He Lanshi from the Luxun Academy of Fine Arts. Their collaborative efforts led to a textbook entitled *Zhongguo gongyi meishu tongshi* (A General history of Chinese craft art) including the modern and contemporary parts. This textbook laid a foundation and provided the initial blueprint for the research of history of Chinese craft art (but it was not formally published).

The Nanjing version of "History of Chinese Craft Art" was compiled by Chen Zhifo and Luo Mozi and annotated by Shen Congwen (a mimeographed printout, which has been lost). The Beijing version of "General History of Craft" was compiled by Wang Jiashu and was also mimeographed.[102] These works were not officially published until the 1980s and the 1990s: for instance, the Central Academy of Craft Art edited, *A Brief History of Chinese Craft Art* (1983), [103] *History of Chinese craft Art* by Tian Zibing (1985), *A Brief History of Chinese Craft Art* by Long Zongxin (1985),[104] *History of Chinese craft Art* by Bian Zongxun, Zhou Xu and Shi Yuzhuo (1993)[105] and by Wang Jiashu (1993),[106] These works influenced the research on history of craft art from the 1960s to the early 1990s.

As to the definition and orientation of "craft art" and history of craft art in this period,

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[102] Prefaced by Zhang Ding, 1985, pp. 1-2

[103] The Central Academy of Craft Art, *Zhongguo gongyi meishu jianshi* (A brief history of Chinese craft art) (Beijing: Beijing Gongyi meishu chubanshe, 1983).

[104] Long Zongxin, *Zhongguo gongyi meishu jianshi* (A brief history of Chinese craft art) by (Xi'an: Shaanxi People's Fine Art Press, 1985).

[105] Bian Zongxun, Zhou Xu and Shi Yuzhuo *Zhongguo gongyi meishu shi* (*History of Chinese craft Art* (Beijing: Zhongguo qinggongye chubanshe, 1993).

[106] Wang Jiashu, *Zhongguo gongyi meishu shi* (History of Chinese craft art) by (Beijing: Gongyi meishu chubanshe, 1994).

Tian Zibing, in the preface of his *Zhongguo gongyi meishu shi* (History of Chinese Craft Art),[107] stated his view on "craft art" and summarized the definition, categories and purpose of craft art as well as the research contents and scope of the history of craft art. From this, the "craft art" concept in the 1960s and 1970s can be observed, which had set the research direction for early "craft art" and "history of craft art". As Tian Zibing (1985) stated:

> A history of craft art is a history of development of spiritual culture and material culture. Craft art is not only one of arts, but also one of material cultures which is directly related to social production. It has the dual nature of spiritual production and material production. Craft art is the combination of aesthetics and life, a product of art and science, closely related to people's lives, and serving people in various aspects of life such as clothes, food, living and traveling. Craft art can fall into two major categories, everyday tools (such as flowery cloth, ceramics and furniture) and ornaments (such as ivory carving, jadeware and Jing-tai-lan...). Craft art reflects the thoughts of an age while at the same time echoes the production mode of a society. Therefore, the history of craft art is a study on the history of aesthetic evolution and production development of articles for people's daily use...[108]

He also pointed out the various opinions of studying Craft art history:

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[107] Tian Zibing, *Zhongguo Gongyi Meishu shi* (History of Chinese craft art), Pang Xunqin is editor-in-chief (Shanghai: Zhishi Chubanshe, 1985). This book is a research lecture notes on the history of craft art after the establishment of the Central Academy of Craft Art in 1956. According to the preface by Pang Xunqin in 1983, it is "the results of the author's research and teaching. The book has collected many historical materials of craft art, analyzing the evolution and development of craft art in different historical periods as well as their artistic features." It is called the first work on craft art history after the foundation of New China.

[108] Detail refers to Tian Zibing, *Zhongguo Gongyi Meishu shi*, 1-2.

There are also several different views on the history of craft art. Some only focus on archaeological materials, taking it as archaeology; while some only focus on aesthetic analysis, turning it into art theory.[109]

Apparently, Tian's history of craft art is the history of development of traditional Chinese everyday tools. Tian includes "craft art" as one of "arts", and its history as the history of development of "material culture". He thinks that the history of craft art should be differentiated from "archaeology" and "history of art", and that it has its own historical systems, rules and characteristics of specific times; he also holds that the writing of history of craft art should be based on historical materials, with discussions in history, in fact, combining history with discussions.

A variety of versions of "History of Chinese Craft Art" compiled by different authors appeared in the 1980s and 1990s, and the writing method of these books followed the writing structure and history research style initiated by early craft art historians such as Chen Zhifo, Wang Jiashu, Tian Zibing and Long Zongxin, namely the method of classifying everyday tools of different materials in different historical periods, for example, defining "craft art" according to materials and based on the detailed descriptions of crafts of various dynasties in historical materials such as earthenware, bronze ware, dyeing and weaving, lacquerware and ceramics, with the objects of study being everyday tools and ornamental articles with artistic value. Ornaments are now generally called "special craft art". In fact, there has never been a pronounced boundary between materials of daily use and ornamentation. All everyday tools would be appreciated and all ornamental articles could be used; only difference being that

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[109] Ibid.

the materials of ornamental articles often had more valuable materials, with more exquisite making.

The writings of the new generation on history of craft art in the late 1990s continued the writing tradition of "history of craft art" in the 1960s, and these authors were most postgraduate students of early craft historians. Hang Jian, a doctoral student of Tian Zibing, wrote *Zhongguo gongyi meixue sixiang shi* (1994),[110] which reviews the history of Chinese craft art from another perspective, namely on the theme of aesthetics (aesthetic thoughts of various dynasties); Li Yanzu, a doctoral student of Wang Jiashu, wrote *Gongyi meishu gailun* (Survey of Chinese arts and crafts 1999)[111] and Zhang Mengchang, another of his doctoral student, wrote *Qiyi zaidao: zhongguo gongyi meishu shi de fenqi yanjiu* (Tools as vehicles of Tao: study of the history of Chinese craft art in different periods, 2002),[112] which discusses a new narrative structure of the history of Chinese craft art. Zhang Mengchang's dissertation is of three parts: Part I reviews five versions of *History of Chinese Craft Art*, Part II comments on the practice of Taiwanese scholars, and Part III discusses the issue of periodization with a view to the teaching of history of Chinese craft art.

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[110] Hang Jian, *Zhongguo gongyi meixue sixiang shi* (History of Thoughts on Chinese Arts and Crafts) (Taiyuan: Beiyue Literature and Art Press, 1994), 225; Hang Jian, *Zhongguo gongyi meishu shi* (History of Chinese craft art) (Beijing: People's Fine Art Press, 2007). He follows the view of his teacher Tian Zibing, and thinks that the history of craft art is essentially the history of craft art, different from the history of design.

[111] Li Yanzu, *Gongyi meishu dao lun* (An Introduction to craft art) (China Light Industry Press, 1999). His other works include: *Zhuangshi zhi dao* (Way of decoration), annotated by Tian Mingzhang (Taipei: Wunan Tushu Company, 2002).

[112] Zhang Mengchang, *Qiyi zaidao: zhongguo gongyi meishu shi de fenqi yanjiu* (Tools as vehicles of Tao--study of the history of Chinese craft art in different periods) (Beijing: China Photography Press, 2002).

From these books we can see that younger scholars have further developed the traditional writing method of the history of craft art. Other craft art historians include Shang Gang, who attaches great importance to archaeological materials and has much accomplishment in the study of craft art from the Southern and Northern Dynasties to the Yuan Dynasty, having authored *Yuandai gongyi meishu shi* (History of craft art in the Yuan dynasty, 1999), *Zhongguo gongyi meishu shi tushuo* (An illustrated history of Chinese craft art, 2005), *Sui Tang wudai gongyi meishu shi* (History of craft art in the Sui, Tang and five dynasties, 2005), *Zhongguo gongyi meishu shi xinbian* (New compilation of history of Chinese craft art, 2007), and *Tiangong kaiwu: gudai gongyi meishu* (Exploitation of the works of nature: craft art in the ancient times, 2007);[113] and Hang Jian, who has authored *Zhongguo gongyi meishu shi* (History of Chinese craft art, 2007)[114] and *Zhongguo chuantong gongyi* (China's traditional craft), among others.

The writing of history incorporates both archaeological articles and historical materials. The archaeological approach of Shang Gang is representative. In *The History of Chinese Craft Art* he has edited, while introducing important craft art phenomena in important periods of China, mainly gives descriptions based on unearthed cultural relics, and the main features of his book include the following: (1) Chronology oriented. Strive to make accurate time definitions as much as possible for art phenomena, in an attempt to elucidate learning and identify source and course. (2)

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[113]   Shang Gang ed., *A New Compilation of History of Chinese Craft Art* (Higher Education Press, 2007); Shang Gang, *Exploitation of the Works of Nature--Craft Art in the Ancient Times*, (Beijing: SDX Joint Publishing House, 2007).

[114]   Hang Jian, *Zhongguo gongyi meishu shi* (History of Craft Art in China) (People's Fine Art Press, 2007).

Explanation focused on regional features. As craft art is produced in specific regions, the same kind of works of the same period may have different features in different places. (3) National characteristics based. Different features of craft art in different periods were often caused by the religious belief and customs of the ruling nation, and to carefully analyze them is extremely important for the understanding of craft art. (4) Verification of literature and physical articles stressed. The extant physical articles and literature are not adequate to construct an objective and comprehensive history of craft art, but mutual verification and illumination of physical articles and literature can restore the original facts of history as much as possible.

2.2.2 Paradigm Shift from *Gong-yi mei-shu* (Craft Art) to *Zao-wu yi-shu* (Object Creation Art)

In the early 1980s, Zhang Daoyi put forward the idea of *Zao wu lun*, that is, "theory of creation of objects",[115] an idea with increasing influence in the following three decades, when a number of articles on the theory of art have appeared, which express the theory of design with concepts such as "creation of objects" and "art of creation of objects". In his words, "What we refer to '*zao-wu*' means articles created artificially, or what is called in the ancient times '*wu-qu you-li*' (tools made from various materials, whose shape is changed and advantages exploited). Artificially made objects are opposite to objects of nature, but ordinary artificially made objects are based on nature."[116]

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[115] Zhang Daoyi, "Zaowu yishu lun" (Zaowu art theory), in *Collection of Zhang Daoyi's Essays,* Book I (Hefei: Anhui Education Press, 1999).

[116] Zhang Daoyi, Preface to *Pandect of Industrial Design* (Nanjing: Jiangsu Technology Press, 1994).

Artificially made objects referred to here are artefacts in English, which is also found in these works.[117] In the subsequent two decades, "*zao-wu*" was referred to and used as a new term. The study and interpretation of "traditional Chinese everyday tools" were conducted from the thought and perspective of "*zao-wu*", thus expanding the research of "traditional Chinese everyday tools" centering on the term "*gong-yi mei-shu*" (craft art). But this does not mean that the discussions on "craft art" and "history of craft art" came to a halt. The discussion of "traditional Chinese everyday tools" in "history of craft art" has been further developed in the 1990s and the 21st century, until now, in a new form. Through two and three decades' of effort and construction, Zhang Daoyi observes, "To summarize people's basic activities, I use the term '*zaowu de yishu*' (art of creation of objects) to generalize architecture, environmental art, craft art and what is now called industrial design and design art etc. The art theory of '*zao-wu*' has become its basic theory, leading to philosophy, including the principle of creation of objects, history of creation of objects, aesthetics of creation of objects, and methodology of creation of objects, among others."[118]

In the 1990s, with the appearance of a number of *History of Chinese Craft Art* in new forms, a number of works on "traditional everyday tools" with the concept of "*zaowu*" were successively published. These works re-examine traditional Chinese thoughts on creation of objects, and return to historical literature, philosophical thoughts and historical materials of ancient times such as the Pre-Qin period and Song Dynasty in search of ancient Chinese design thoughts conducive to the development of modern

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[117] Zhuge Kai, "Academic Value of Zaowu Art Theory" in *Liebian zhong de chuancheng (Inheritance amidst Fission)* (Chongqing: Chongqing daxue chubanshe, 2007).

[118] Ibid, 2007, 61.

design. The descriptions and studies of "traditional *qi-ju* design" from different perspectives give rise to concepts such as "*zao-wu si-xiang*" (thought of creation of objects) and "*qi-ju she-ji*" (tool design), which were included under the name "*yi-shu she-ji*" (art design). The term "*yi-shu she-ji*" is established under the great framework of *yi-shu-xue* (art theory) proposed by Zhang Daoyi. In June 1994, Southeast University set up the first department of art theory with the proposal and organization of Zhang Daoyi.

In 1998, the Academic Degree Committee of the State Council decided to use "*sheji yishu xue*" (design art theory) to replace "*gongyi meishu xue*" (craft art theory) in the graduate program curriculum, which is a readjustment of the disciplinary direction made according to practical demand, reflecting the great importance attached to the design art relevant to people's daily lives in the new period. Design art is now at a new developmental period. It is not just the change of name. More importantly, it is the shift of concept, scope and topics. The expansion of vision demands reflection and new understanding of the history and development of design art itself".[119]

This series of works include: Xu Ping's *Zaowu zhi men: yishu sheji yu wenhua yanjiu wenji* (*Gate of creation of objects: collection of papers on art design and cultural studies, 1998*), [120] Xu Biao's doctoral dissertation *Chengqi zhidao: xianqin gongyi zaowu sixiang yanjiu* (*The way of object making - studies on craft object creation*

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[119] Li Lixin, *The Research of China Art Design History* (Tianjin: Tianjin Renmin Chubanshe, 2004), 16.

[120] Xu Ping, *Zaowu zhi men (Gate of Creation of Objects: Collection of Papers on Art Design and Cultural Studies)* (Xian: Shaanxi People's Fine Art Press, 1998).

thoughts in pre-Qin period, 1999),[121] Gao Feng's *Zhongguo dengju jianshi* (*A brief history of Chinese lamps and lanterns,* 1992), *Zhongguo qiju yishu* (*China's tool art,* 2001), and *Zhongguo sheji shi* (*History of Chinese design,* 2006, 2008),[122] Li Lixin's *Zhongguo sheji yishu shilun* (*Theory on design art history in China*, 2004), among others.

Li Lixin declares, in the preface to his book, that his design art history is from the perspective of "*zaowu* design", based on the discipline of "design art", with focus on the rearrangement of literature and archaeological as well as historical materials, synthesizing the vertical evolution of *zao wu* design and its horizontal structure, displaying a panorama of *zao wu* historical view which keeps evolving while retaining its overall unity; and restoring the historical phenomena of *zao wu* and analyzing the roots (production mode, organizational structure and various conditions and factors) of *zao wu* activities, so as to present a brand new view of the history of *zao wu*.[123] The author maintains that past studies on *zao wu* history stress "*gong-yi ji-shu*" (craft and technique), while sticking to the disciplinary name of "*she-ji yi-shu*" (design art) so as to highlight the essential power of humans in the *zao-wu* activities. He thinks that we should have "a holistic grasp of the history of *zao-wu* design, which means the relationships between people and things, and things and things."[124]

Xu Biao makes a survey from the development of *zao-wu* thoughts in the Pre-Qin

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[121] Xu Biao, *The Way of Object Making--Studies on Craft Object Creation Thoughts in Pre-Qin Period* (Nanjing Normal University Press, 1999).

[122] Gao Feng, *History of Design in China* (Chinese Academy of Fine Art Press, 2008).

[123] Li Lixin, 2004, 17. His original dissertation title (1999) is: *Trace of Zaowu: Introduction to History of Design and Art in China*, see postscript, p. 244.

[124] Li Lixin, 10.

period to the material culture in the Song Dynasty.[125] Her research focuses on *qi-wu* (tools) and *Cheng-qi* (tool making) activities, in an attempt to explain the *cheng-qi* experiences reached in the Song Dynasty, including the practice and experiences reached from practical *Cheng-qi* activities as well as design thoughts and experiences developed from reflection, criticism and exploration. She surveys the official handicraft industry, sources of "*yang*" (prototype), design management mode and folk handicraft industry in the Song Dynasty, and craft law summary, explanation and design criticism in the North Song Dynasty. Other design histories also proposed concepts of "*zao-wu*" and everyday tool design, which are reflected in a series of publications.

In *Zaoxing yishu xinshang* (*Appreciation of Zaoxing Arts*), Li Yanzu broaches the relationship between design and *zao wu*, concepts and definitions of design and art[126]. He discusses "design and *zao wu*" from three aspects: (a) stone as tool, beautified by ornaments; (b) molding into tools; (c) culture and art of *zao wu*. In the preface to *She ji zhi wei* (Dimensions of design, 2007), "My View on Design", he writes, "Design may be explained from different perspectives... Design is planning and conception before *zao wu*. Rather than definition, it would be better to term it as truthful description of all design histories. Therefore, the history of design in essence is the history of *zao wu* by humans, the evolutionary history of human civilization and culture, and history of human development from ignorance to living."[127]

In the spring of 2000, the traditional tools in the research titled "research of

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[125] Xu Biao, *Material Culture in South and North Song Dynasties* (Jiangsu Fine Art Press, 2007).

[126] Li Yanzu, *Zaoxing yishu xinshang*, 2002, 27.

[127] Li Yanzu, *Sheji zhiwei*, 2007.

Traditional Chinese Tool Design" directed by Feng Jian, Director of the Nanjing Academy of Art include all tools used in human life and production in the past, for example, tableware and cooking ware such as knife, spoon, oven, pan, chopsticks, bowl and pan, pot, furniture such as table, chair, stool, bed, curtain, lamp, small table and cases, travel tools such as carriage, boat and bamboo hat, farming tools such as plough, pestle and lamp. At the end of 2004, the Jiangsu Fine Art Press published the first volume of *Zhongguo chuantong qiju sheji yanjiu* (Research on Traditional Chinese tool design)[128] and then the second volume. The two volumes won the first government publication award in 2007. In April 2005, after the publication of the book, the "Conference on the Theory for Research on Traditional Chinese Tool Design" in the Nanjing Academy of Art was held, in which the method of case analysis adopted for the research by scholars such as Liang Baiquan, Zhang Daoyi, Liu Guanzhong and Zhang Fuchang, was considered highly innovative.[129]

These works demonstrate a common motive, that is, to construct the "*zaowu* art" system of traditional Chinese tool design. From these studies on the design of traditional Chinese tools, an interesting situation has developed in the Chinese academia in the six decades from the 1950s. Two design institutes of different specialties in the south and north, that is, the Central Academy of Craft Art Institute (present Institute of Art and Design, Tsinghua University) and Nanjing Academy of Art and Design, as leaders, construct two different design art orientations, theories,

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[128] Wang Hu et al. ed., *Research on Design of Traditional Tools in China* (Nanjing: Jiangsu Fine Art Press, 2004), 22.

[129] Nanbei, "Summary of Conference on Design Theory of Traditional Tools in China" in *Art and Design* 3 (2005): 152; Li Lixin, *Sheji Yishu Fangfa Xue (The Methodology of Design and Art)* (Nanjing: Jiangsu meishu chubanshe, 2010), 25.

writings, discussion approaches and methods in terms of academic research. What is observable is that the "craft art history" research in the north and the "*zaowu* art" system research in the south have gradually matured in recent years, as reflected in theory construction, methods and multiple perspective writings of history of art and design. The emergence of many papers, publications and articles has enabled the research of "ancient everyday tools" to receive more discussions and attention. Besides books and publications, The Journal of Nanjing Academy of Art - Art and Design in the south and *Zhuang Shi* (Decoration) in the north have become two leading professional academic journals on the field of design theory, especially research of design history, in the south and north respectively.

In two decades, these works have established the Chinese *zao-wu* design system themed "*zao-wu* art", a system which is ultimately arranged under the discipline of "art and design theories" (in particular, the Ministry of Education replaced "craft art" by "art and design" in 1998). From this we can see the shift of "craft art" research paradigm to "*zao-wu* art" in China's modern design (referring to two themes, the construction of traditional Chinese everyday tool design with different methods of writing history). The "History of Chinese Craft Art" equivalent to "design history" from the 60s to the 90s has been expanded to "*Zaowu* History in China" and "China's History of Art and Design".

2.2.3 Approaches from Other Disciplines and Perspectives

Studies on ancient Chinese tools in the recent decade have manifested a diversified pattern. Firstly, various kinds of history of Chinese craft art have been continuously published. Secondly, due to adjustment of disciplinary setup (in 1998, the Degree

Academic Committee of the State Council replaced "Craft Art Theories" with "Design and Art Theories" in graduate program list); the works titled *zaowu* history and design history have been successively published, developing a paradigm shift in the writing of design history. Such works include Zhu Heping's *Zhongguo sheji yishu shigang* (*Outline of Chinese history of design and art*, 2003), Chen Ruilin's *Zhongguo sheji shi* (*China's design history,* 2009), Xia Yanjing's *Zhongguo y-shu sheji shi* (*Chinese history of art and design,* 2011) and Shao Qi et al's *Zhongguo gudai sheji sixiang shilue* (*A brief history of ancient Chinese design thoughts,* 2009), and Zhu Chun and Shao Qi's *Zaowu sheji shilue* (*A brief history of Zaowu and design*, 2009).[130] Thirdly, in recent years, "*wuzhi wenhua*" (material culture) has received much attention from the design and art circles. These works examine everyday tools from multiple perspectives, such as archaeology and history. Additionally, their method of interpretation, by placing traditional tools under cultural and social frameworks, has given much inspiration to the academic circle of design history.

Representative works with impact on the design discipline include: Sun Ji's *Handai wuzhi wenhua ziliao tushuo* (*An Illustrated Description of Material Culture Sources in the Han Dynasty*, 2006), [131] which is based on archaeological relics and modern archaeological materials, examines ancient everyday tools from a purely archaeological perspective, and by investigating into farming, fishery and hunting, ceramic industry, smelting and casting, textile, coins, vehicles and ships, weaponry,

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[130] Zhu Heping, *Outline of Chinese History of Design and Art* (Changsha: Hunan Fine Art Press, 2003); Chen Ruilin, *China's Design History* (Tsinghua University Academy of Art, 2009); Xia Yanjing, *Chinese History of Art and Design*(Shanghai: Shanghai People's Fine Art Press, 2011); Shao Qi et al., *A Brief History of Zaowu and Design* (Shanghai: Shanghai Bookstore Press, 2009).

[131] Sun Ji, *An Illustrated Description of Material Culture Sources in the Han Dynasty* (Shanghai: Shanghai Ancient Book Press, 2006).

architecture, furniture, clothes, stationery, medicine, cooking and table ware, lamp, censer, jadeware, gold and silver ware, musical instruments, acrobatics, entertainment and ethnic cultural relics etc., displays in detail the accomplishments of farming, handicraft and material cultures in the Han Dynasty. It sets a traditional interpretation pattern for the research of ancient Chinese everyday tools and craft art.

Those studying traditional everyday tools from a unique perspective of literary interpretation include Taiwanese archaeologist scholar Chen Wenju and Chinese Scholar Yang Zhishui with social science background. Chen Wenju's *Shijing qiwu kaoshi* (*Textual Research of Tools in the Book of Poetry*)[132] and Yang Zhishui's *Gushiwen mingwu xinzheng* (*A New Research of Tools in Ancient Poetry and Essays*, 2004)[133] examine ancient literary works according to archaeological relics, and study as well as explain everyday tools in *Shijing (Book of Poetry)* respectively. Chen classifies over two hundred tools into ritual instruments, clothes instruments, carriage and horse tools, weapons and miscellaneous tools for everyday use, and then explains as well as verifies tool shape and making, material and ornamentation one by one, in addition to providing an introduction of their history of evolution. Besides examining relevant records in literature and classics, the author corroborates her findings with reference to modern archaeological research journals and unearthed physical objects. She puts forward a reasonable explanation, more consistent with the factors of the age rather than literary works alone, for the study and identification of each tool.

Yang Zhishui's *Gu shiwen mingwu xinzheng* (*A New Textual Research on Names and Descriptions of Things in Ancient Poetry and Essays*) employs the social history

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[132] Chen Wenju, *Shijing qiwu kao shi* (Taibei: Wenjin chubanshe, 2001).

[133] Yang Zhishui, *A New Research of Tools in Ancient Poetry and Essays* (Beijing: Forbidden City Press, 2004).

research method valued by the circle of historian in recent years, in an attempt to restore some details of historical situations at the juncture of literature, physical objects and images, and recover the life aura of everyday existence in the ancient times. Historical details are recovered by starting from textual research of specific names and descriptions of things. Three different languages and texts of historical literature, ancient poetry, essays and painting images are "combined as one", for mutual verification. The 26 topics collected in the book cover a long period from the Pre-Qin Period to the Ming and Qing dynasties.

All start from the research of "names and descriptions of things" and go deep into the everyday tools used by the literati in the ancient times, as well as the developmental history of life scenes, customs and interests collected along with them. The research encompasses a wide variety of objects, involving each aspect of everyday life in the ancient times, with the common characteristic of not only being in-depth, with particular and meticulous historical details but also reaching the effect of historical richness and vividness in the reconstruction of everyday life history of ancient times, an effect unable to be achieved by just meta historical narratives.[134]

For instance, she writes about small things such as gold and silver ware in the Song, Yuan and Ming dynasties, especially jewelry, in her *Shehua zhise:Song Yuan Ming jinyinqi yanjiu* (*Color of Luxury: Research on Gold and Silver ware in the Song, Yuan and Ming Dynasties,* 2010).[135] By sorting out the sources and roots of small things,

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[134] Ibid.

[135] Yang Zhishui, *Shehua zhise: Song Yuan Ming jinyinqi yanjiu* (Color of Luxury: Research on Gold and Silver ware in the Song, Yuan and Ming Dynasties), Vol. I; Gold and Silver Jewelry in Song

and analysing the construction of their composing elements, she delineates the effort and techniques of ancient ornament designers, tracing their interaction with the vogue of the time, and reflecting the true appearance of ritual and customs in the ancient lives, such as how the ancients manufactured, wore and collected gold and silver jewelry. In addition, the names of jewelry are determined by the method of mutual verification of images and physical objects based on cultural relics per se, to disclose the evolutionary history of tools - things in the history of social life as well as the design *yi-jiang* (idea & craftsman) implicated therein.

Such methods of placing archaeological relics amidst history, culture, society and literature are called research of the category of "*wuzhi wenhua*" (material culture) as a branch of historical studies or archaeology. As for "*wuzhi wenhua*" (material culture), Japanese scholars have given a definition centering on art and design, that is, "a series of things relevant to life such as housing or furniture, farming tools or fishing tools, weapon, clothes or ornaments, tableware or cooking utensils, tool implements and transportation tools." [136]

Other people engaging in "*wuzhi wenhua*" (material culture) studies such as Wang Shixiang stop at the purely historical studies method for cultural relic following the "traditional technique", which focuses on "*shou cang*" (collection) and "*wan jia*" (player), which is substantially different from the attention paid to the "modernity" spirit by those focusing on "*yishu sheji*" (art and design) who stress creation and

and Yuan (Beijing: Zhonghua Book Company, 2010); Yang Zhishui. Gold and Silver Jewelry in Ming, Vol. II (Beijing: Zhonghua shuju, 2011).

[136] Zhu Shuai, *Ten Lectures on Chinese Culture and Chinese Design* (China Electricity Press. 2008), 185.

development. Some works have again sparked people's attention and appreciation of traditional antique classics of China by re-publication in the recent academic scene. The Shandong Pictorial Publishing House, in the first decade of the 21st century, published the "*Zhongguo gudai wuzhi wenhua jingdian tushuo congshu*" (Series of Illustrated description of ancient material culture classics in China) (in ten volumes).

The works are re-annotated, with illustrated descriptions, in the hope of better interpretation of the original works, including *Kao gong ji* (*Book of diverse crafts*, 2003), *Xue huan xiu pu* (*Principles and stitchings of Chinese embroidery*, 2004), *Ying zao fa shi* (*Architectural techniques*, 2004), *Changwuzhi tushuo* (*Illustrated superfluous things*, 2004), *Yuan zhi* (*Landscape architecture*, 2006), *Tian gong kai wu* (*Exploitation of the works of nature*, 2006), *Tao shuo* (*On pottery and porcelain*, 2006), *Jingdezhen tao lu* (*Records of ceramics in Jingdezhen*, 2006), *Ge gu yao lun* (*Critical essential of antiquity*, 2003), *Zhuanghuang zhi tu shuo* (*Illustrated work on decoration,* 2003), *Gu yu tu kao* (*Illustrated work on jade antique*, 2004), *Xiu pu* (*On Embroidery*, 2004), *Xiu shi lu* (*On lacquering decoration*, 2007), which is the only work on lacquering techniques from the ancient times in China.

These interdisciplinary studies and writings of a diverse range of traditional tools have offered much diversity in the research and interpretation of everyday tools, while providing new possibilities for the writing of design history.

2.3 Problem Identification and Evaluation

Based on above literature review of historical background, terminologies, three

research paradigms for "Traditional Chinese Everyday Tools" after the foundation of New China, this section gives a critique of the research paradigm and methodologies used in the study of "Chinese traditional *qi-ju*" in past fifty years at Chinese academy. This section discusses the issue from several aspects: the Narrative Patterns of "Craft Art History", the features of craft history writing costume, and the evaluation of this writing method, with analysis on their advantages and limitations.

2.3.1 Narrative Patterns and Writing Tradition

First, the content analysis of contemporary publications on "Chinese craft art history" and the nature of research in this area shows that studies of this kind are actually "crafted object-focused studies", indicating that most studies of ancient products have stressed craft issues in a historical context. Second, when observing the two approaches of *craft art history* and *the creation of objects*, the underlying methodology is historical narrative. Historical narrative became the mainstream pattern influencing following scholars and led to more than ten versions of Chinese craft art history being produced between 1960 and 2000 in which the structure and approach adopted were almost the same, somewhat limiting other writing alternatives. These historical descriptions provide a panoramic picture (the historical timeline usual ranges from Neolithic China to the Qing Dynasty) of a long history of the development of various objects during various periods. In this picture, ancient objects are exhibited in a social, economic, and cultural context, and the transformation of materials, technological improvements, and associated decoration of objects are typically introduced.

Following sections then specifically discuss the writing method of Chines craft art history, which is generalized into three key features: (a) Object Classification – the Emphasis on Materials; (b) Interpretation - aesthetic rather than functional description; (c) Unbalanced Studies – Division of the "Object Study".

Object Classification – the Emphasis on Materials

Study of daily objects, after founding of the New China, generally follows the history of China's arts and crafts. The study is conducted in the sequence of time, from New Stone Age to Qing Dynasty, from Republic of China to modern times, delineating the development of arts and crafts. The objects of study are mainly technical activities concerning building, food, clothing, shelter and transport such as vessels, garments and textiles, wagons and chariots, and furniture. The stories are told in a generalized way following the sequence of time. As there were many kinds of objects in ancient China, the arts and crafts historians classified them based on the unique materials occurring in different periods of time. For example, New Stone Age was a period when stone tools were used; the dynasties of Xia, Shang and Zhou were characterized by the bronze ware; Qin and Han by iron, silver and gold ware; for the dynasties of Tang and Song, the historians have devoted a lot of space in their works to characteristics and development of ceramics; and for Ming, the concentration is on wood furniture. The scholars mainly study the features and interrelationship of the objects from the shapes (structure and pattern) pursueing the classification and analysis method. They first compare the specific objects in terms of their respective characteristics, classify them with appropriate symbols of type, then they organize them into different families according to the interrelationship among them and finally

find out the law for them to appear, evolve and become extinct. This way of research is greatly influenced by the ancient objects classification concept (stone ware, bronze ware, pottery, oracle bones) as proposed by Liang Qichao in the 1920s.

Another key element influencing interpretation is the pattern of classifying artefacts in terms of the nature of their materials in different historical periods. Ancient objects were classified according to their materials and were usually divided into those of stone, pottery, jade, bronze, lacquer, wood, ceramic, gold, and silver. Every chapter of modern publications following this emphasis is designed according to the representative material produced in the period in question.[137] The material approach led the descriptive focus into the nature of materials and the aesthetics of an object rather than its function and utility. In addition, the focus on materials potentially presents the author's preference on crafts and techniques, so that objects of the imperial household and objects of the literati can satisfy such interpretative motivation. A result is that common tools made of stone, pottery, or wood using simple techniques and forms were not esteemed.

Consequently, the material privilege classification led to the study of objects being separated into different levels in which the description of high-level objects was more extensive than objects of low-level-use. This resulted in an emphasis on the interpretation of high-ranking objects, with the study of common living tools often overlooked.[138]

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[137] In the description of the history of craft art in China, for instance, the chapter describing objects made of stone is set in the Neolithic period; the chapter describing objects made of bronze is set in the Xia, Shang, and Zhou periods of China.

[138] Li Lixin, *Research on Chinese Art Design History* (Tianjin: Renmin chubanshe, 2004).

Unbalanced Studies – Division of the "Object Study"

The historical and social, material and cultural, and technical and aesthetic knowledge relating to design activity was fruitfully interpreted in the context of history. However, alternative interpretations were not explored satisfactorily. Design principles and design thinking focusing specifically on utility, experience, and interaction with objects in the three main approaches to ancient tools described above were given only limited appreciation.

Another problem is that when writing about Chinese craft art, the history of research into ancient objects has been one of gradual separation into three layers: intellectuals (*wen-ren*), the imperial household (*di-wang*), and the common people (*bai-xing*).

Since the Song dynasty, *Tsing Shi Xue* (epigraphy, or the study of ancient objects) has been conducted by intellectuals; on the other side, the design and manufacturing of royal objects was recorded and arranged by professional governors of the collection department (such as the Forbidden City). The survival of extensive historical archives on royal objects and intellectual objects therefore affects subsequent descriptions of ancient objects; however, descriptions and records of everyday objects and tools are fewer in number and have generally been overlooked,[139] leading to an unbalanced research situation.

Specifically, three types of object have been examined. The first is *objects used by the*

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[139] This is detailed in the methodological review – Chinese methodological underpinnings.

literati, the interpretation of which mainly involves the aesthetics and cultural significance of ancient objects for scholars and intellectuals at the artistic, cultural, and personal levels. The second is representative *objects* used in the imperial household that embody imagery, for which the investigation focuses on craft techniques and the use of complicated decorations and imagery indicating position and power with the intention of inspiring loyalty and conformity to authority. The third is *common objects*, a category that has been widely overlooked and is therefore covered by few publications.

The historical and social, material and cultural, and technical and aesthetic knowledge relating to design activity was fruitfully interpreted in the context of history. However, alternative interpretations were not explored satisfactorily. Design principles and design thinking focusing specifically on utility, experience, and interaction with objects in the three main approaches to ancient tools described above were given only limited appreciation. As the Chinese design historian Li Lixin commented on the research phenomenon of the above approaches: "The descriptions (in craft art history) of Chinese ancient objects are superficial, isolated and selective. There is a lack of complete description with systematic logic". Object analysis focused on the historical background and context, while the object studied was regarded as a phenomenon. However, the birth, growth, prosperity, and termination of a type of object are not synchronous with a particular era or dynasty. It actually has its own development process and evolution.[140]

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[140] Li Lixin, *Zhongguo sheji yishu shilun* (The research of China art design history)(Tianjin: Tianjin renmin chubanshe, 2004),9.

2.3.2 Evaluation

To conclude, most research on ancient objects carried out in China before 1980 falls into the "craft art history" category. Since the 1980s, scholars have used "design history" as a substitute for the earlier term. This represents not merely a change in terms, but a shift in research content, research emphasis, and research methods. In general, the research target has shifted from decorative craft art to common everyday objects; the research emphasis has shifted from the craft-making process and personal techniques to design thinking. As for research methods, these have been extended from general and experiential description to the analysis and interpretation of design concepts and experiences.[141] In 1998, the event of the Ministry of Education replaced "craft art" by "art and design" implies that it is not just the change of subject name, more importantly, it is a shift and the extent of research concepts, scope, and theme, and the extended view of design and craft art will lead to more reflection on the past and future of design.

Undeniably, this transformation has improved the knowledge accumulated on and people's perception of the Chinese history of making objects, providing new research space. However, behind this phenomenon of transformation, older patterns of historical narrative and interpretation have firmly continued in Chinese design academies and as a typical prevailing description have influenced scholars' approaches for several decades. The new opportunities to create research patterns more appropriate to understanding the past still have not been fully valued or explored.

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[141] Xu Biao, *Liang song wuzhi wenhua* (The Introduction ofMaterial Culture in the Song Dynasty) (Nanjing: Jiangsu yishu chubanshe), 19.

This can be observed from the terms used, an ancient product being regarded first as a *craft* and only later as a *design*. Though the discussion is centered on objects (*qi-wu*) or tools (*qi-ju*)[142] themselves, the terms *"craft art history"* and *"design history"* reveal the fact that design has been treated as a historical manifestation related to design activity, social behavior, and cultural meaning.

Design history research, rather than straightforward (*Qi-ju*) *research*, reveals that the products themselves are still not the major focus. Accordingly, the approach to the topic and the terms used determine the method selected or applied. As there is no standard way to evaluate how to describe, analyze and interpret ancient objects, the methodological issues are usually avoided. This results in the nature of the design of Chinese objects not being coherently revealed. In other words, the design knowledge hidden in common everyday tools needs to be further explored and this requires a method and methodological theory to support it, as discussed later in the thesis.

The Chinese have a strong historical narrative tradition of ancient objects, but methodological discussions are scant, with few publications on methodology appearing over the course of Chinese history. Since 1980, Chinese design academies have been influenced by modern Western design analysis frameworks that yield unsatisfactory results because China has its own historical experience in describing the design of ancient objects. Therefore, understanding the original design system, context, and methodological approach will help to find the key to approaching Chinese ancient tools and reveal the design knowledge embedded in them.

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[142] In Chinese, *Qi wu* is equivalent to "objects" (it is usually a term used in material culture studies). *Qi ju* is equivalent to "tools" and "products". This is described in the section of the thesis dealing with the *Qi wu* and *Qi ju* systems.

Furthermore, how could an analysis of everyday tools made complete? This requires a research system to support this specialized field of study with theory and methodology. The research system employed can set the analysis in a framework with a purpose and certain guidelines, while the theory will help to steer practice in the appropriate direction and ensure it does not leave the mainpath. On the basis of such analysis, design-targeted knowledge can be obtained, in which the maker and the user are both situated in a life-world (an environment with specific geography, culture, and history) context to be studied around the objects themselves.

Above all, after examining the main approaches and interpretations discussed above, it is reasonable to ask: are there alternative interpretations to the craft art, are there only material, and historically focused approaches? Is there any interpretation that can expand visual knowledge such as craft techniques and material aesthetics to reveal the design meaning deeply hidden in tools?

To approach these research questions, it is necessary to relocate the study of Chinese everyday tools in design. This, firstly, involves returning to the original historical context of Chinese design, recovering the ancient theory on the *Qi-ju* system in design, including its definition, philosophy, and cases, establishing the significance of research on ancient tools, and developing the theory in terms relevant to product design of today. It also involves developing models for analyzing and interpreting everyday tools in design and establishing a methodological foundation for interpreting ancient tools.

III. METHODOLOGY

It should be noted that this chapter presents the logic and flow of the research behind *Qi-ju design knowledge: an historical and methodological exploration of Chinese texts concerning everyday tools and utensils*, based on a clear epistemological stance, research paradigms, theoretical perspectives, and the choosing of a research method. The explanationof epistemological and methodological preferences of the thesis set an important basis for the whole research project. The application of theories such as *constructivism* and *hermeneutics* to the specific research method - interpretative analysis of Chinese ancient texts provides an important methodological guidance. The consideration of research methodology serves as a guide toward appropriate means of data collection and interpretation. In this thesis, design knowledge is not measured by quantitative research methods, but rather through a qualitative approach. Through understanding and interpreting the data, and by putting the data in its historical context, the design knowledge design is finally constructed and represented.

To make the thesis is more focused on the text analysis and the discussion of research findings of *Qi-ju* design knowledge; researcher puts the contents of methodological consideration and research method in Appendix C and Appendix D. Appendix C introduces the basic concepts and theories that are borrowed from social science, and are applied in this research; Appendix D elaborates the research method and introduces the qualitative research method, the characteristics of the research, and the source and standard of research data.

This chapter therefore mainly focuses on the explaination of the research design of the thesis, including the reasons for choosing certain standards of data collection and data

analysis, and the reason for choosing Chinese ancient literature as data. This chapter also presents the research analysis and discussion issues, and finally, the response to initial research questions. This chapter presents the research design from four aspects, which are based on the research questions and research objects, including data collection, data analysis and the development of research process.

3.1 Research Design

3.1.1 Data Collection: Chinese Historical Texts

The Ancient Literature Considered

As the research data of this thesis are documents from Chinese ancient literature and classical books about Chinese utensil design and technology, all these data have historic characteristics, but they do not carry the meaning of our understanding of the term "document" or "text". These Western termscannot pertinently express the characteristics of these texts in relation to the study of history and the Chinese scholars'address of the historical literature. Therefore, this thesis adopts a compromise approach in the use of 'social science', 'anthropology', and other commonly-used terms. In the terms of qualitative research, weadopt the "text analysis"method, but the specific texts refer to "ancient literature". Whether we call them documents or texts, the research data in this thesis fall into three main categories: (1) historic literature—documents which were composed in the past; (2) texts categorized as ancient Chinese official documents; and (3) folk publications.

In collecting the relevant documents, there were several questions to consider. Why not choose myths, histories, legends, poems and other genres as historical literature data? How do we identify the authority, authenticity and reliability of the data? The

selected historical documents have been incorporated into the category of official publications, i.e., they are certified as classic works after passing the tests of time. For example, classic worksbelonging to the traditional six Confucian classics, works of various schools of scholars' thoughts and exponents during pre-Qin era, the authoritative dictionary *Shuo-wen Jie-zi*, as well as literary notes, are all representative works of those historical eras. In the selection of text data, according to the perspective proposed by John Scott, four criteria should be considered: (1) Authenticity; (2) Credibility; (3) Representativeness; (4) Meaning. [143]

The selection of texts for this study is also based on a common similarity: They focus on describing people's livelihoods and their daily utensils, which gives a starting point to construct knowledge on these topics. The selected texts have authenticity and representativeness, and they include many "types". Some are classic works of various schools of philosophy, or official technology guides representing certain periods of time. Some texts give the thoughts of various scholars on the livelihoods of ordinary people, including perspectives on society, economic life, and people's everyday utensils. Some works are written non-mainstream narrative Confucian scholars, such as the *Tian-gong Kai-wu*; and the text *Chang-wu-zhi* (Treatise on Superfluous Things), which is written from the angle of design appreciation, literati tastes. Other selected texts record reflections on the state of industry after the spread of Western technology into China, such as the *Qi-qi Tu-shuo* (The Best Selection of Diagrams and Explanations of the Wonderful Machines of the far West), and the *Kao Gong Ji* (The Diversity of Crafts and Arts).

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[143] John Scott ,1990, 2006.

Obviously, the Chinese system of recording, classifying, and sorting historical documents is different from that of the Western tradition. China has formed its own unique academic tradition. Research into Chinese academic culture is called study of "NationalLiterature".[144] Chinese National Literature has a very extensive scope, which comprises all Chinese academic disciplines. During the Qian Long regime in the Qing dynasty, Yao Nai (1731-1815) divided the Chinese academic literature into the categories of argumentation, textual criticism, and poetry and prose. During the Jiaqing and Guangxu periods, Zhu Ciqi (1807-1881) proposed to add economics (or pragmatism), which formed a fourth category. Later, Mr. Gao Zhonghua divided the four categories into several sub-categories in his article *Chinese Academic System.* [145]

3.1.2 Why Choose Chinese Ancient Literature as Data?

Why should we choose the review of Chinese classic ancient texts to construct design knowledge of daily utensils? There is a problem, i.e., since the research object is daily utensils used in ancient China, why should information on this subject be constructed from classical literature, works of philosophy, literati's notes, and other intellectuals' narrations, rather than from rural craftsman and their oral impartment and transmission, folklore, mythology, poetry or folk customs? The scenes where memory of ancient common utensils survives should be in rural areas and their local families. It seems that there is a contradiction between high culture and low culture.

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[144] "National Literature" refers to Chinese academics, which is proposed relative to Western academics called "Western learning". Early in the late Ming Dynasty, European missionaries came to China to preach and meanwhile introduce Western academics and culture to China. They translated many works on the Western calendar and mathematics, collectively referred to as the "Western learning".

[145] Lai Tianyuan, "Introduction to National Literature", In *Guide to National Literature,* edited by Qiu Xieyou, Zhou He, and Tian Boyuan (Taipei: Taiwan san min shuju, 1993), 1-49.

Just as Robert Redfield put forward in his *Peasant Society and Culture*, the cultural concepts of "great tradition" and "little tradition" have become important tools for contemporary scholars to analyze cultural structure.[146] Redfield feels that the "great tradition" in a culture is the culture created by the elites, and this is also a kind of cultural tradition that is conscious, recorded, and inheritable. In contrast, the "little tradition" is the culture accepted and maintained by most common people in the traditional agriculture society, which is also the so-called rural culture. This "little tradition" commonly involves customs that are too customary for people to call into question.[147] The classifications of "great tradition", "little tradition", "high culture", or "low culture" are obviously relative, because Redfield clearly knew that in reality, the "great tradition" and "little tradition" are interrelated with each other.

If the traditional scholars lay more emphasis on the adversarial relationship between these two traditions, and divide them into two different traditions but ignore the relationship between the two, then the established tradition must be regarded as irrelevant to the research topic. The conventional studies on ancient Chinese ideology and culture have focused mainly on the rational thinking tradition, emphasized the superstructure of a few elites, and perused metaphysical knowledge systems and concepts. These scholars attached great importance to the value of folk culture as a mode of thought and a psychological archetype, but they generally ignored the

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[146] Huang Yue, *Myth Narrative and Collective Memory: Cultural Interpretation of Huainan Zi*, edited by Ye Shuxian (Guangzhou: Southern Daily Press, 2010), 91.

[147] Robert Redfield, *Peasant Society and Culture* (Chicago: University of Chicago: University of Chicago Press, 1956), 12.

relationship between the two traditions.[148] This problem also appears in the present studies on Chinese arts and crafts history and design history. Utensils are divided into utensils used in imperial palace, utensils for use by the literati, and utensils for daily use by common people.

Human societies have different levels of knowledge systems, but there are certain differences in both the system levels and the issues they are concerned with.But in ancient China, the two kinds of knowledge systemswere not like the classifications of Western sociologists. In terms of mental categories, culture was distinctively divided into "great tradition" and "little tradition" according to the subject's sphere of influence. But in fact, these realms of culture overlappedand interpenetrated with each other within most communities, and they even coexisted in the same person. Literati at that time couldwithout contradiction accept two kinds of systems. For example, in the pre-Qin period, the theories recorded by intellectuals commonly dealt with the daily life of common people, including the tools and utensils they used.

In the Ming Dynasty, interaction between the literati and craftsmen improved, resulting in the classic design of Ming-style furniture. At the beginning of twentieth century, studies on works such as *Shi Jing* (Book of Songs) and other ancient classics of folk culture involved claims that the folk religion of ancient China was the root of the so-called elite culture. Scholars such as M. Granet helped to demonstrate that the elite culture grew out of the folk culture. The two cultures basically had had much in common.

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[148] Huang Yue, 92.

Another reason to use documents written by the literate elite is the limitation and uncertainty of popular myths, histories, legends and poetry. In China, the academic study of fairy tales is still in the initial stage. In early works such as "Huainan Zi", Chinese legends concerning the origin of arts and crafts are dominated by the sages' creations. These accounts arepermeated with colorful myths, but modern scholars' interpretations and textual criticisms of these mythsremain mired in controversies. Information from folklore is all the more characterized by oral impartment. On the one hand it isorally transmitted byaged artists, and on the other hand, the written accounts are sparsely scattered in records of unofficial history. Such records are far more difficult to locate than records of official history. These sources of folklore are products of popular creativity, and they constitute a largely "imaginary"story frame for constructing the design knowledge of daily utensils.

Though some classic works such as *The Book of Songs* present scenes of the working people's daily livesand social customs during pre-Qing era, they have few descriptions of daily utensils andtoo little correlation to the knowledge system for constructing daily utensils. In considering these factors for selecting source texts, it seems best to focuses on the classical works, i.e., the time-tested texts confirmed by orthodox historians, andverified by multiple parties of textual research. The ancient official government also paid attention tothesetexts, and such works played an important guiding role in the design and production of technology in that era.

3.1.3. Data Analysis: Interpretative Text Analysis

Qualitative research has four main characteristics. (1) The researcher is concerned not

only with the documentation of specific events or behavior, but also the meaning of the social phenomenon or behavior. Qualitative research usually seeks to understand and interpret the social world. (2) The researcher is curious about the context of the research object and it pursues interaction between social phenomenon and its context. Therefore, qualitative researchers insist that any social behavior cannot be isolated from its context in the wider world; otherwise the interpretation of social behavior will be deficient. (3) The researcher's focus is not limited to exploratory issues; it also involves the development of theory regarding social phenomena. In other words, it enables theory to be gradually shaped through the process of collecting data, and using an inductive method to abstract meaningful core concepts from these data. (4) The researcher emphasizes the process of research into phenomenon, events or behavior, and tries to link these events in a chronological order to construct the whole picture of phenomenon and events.[149]

Based on above perceptions of qualitative research, this thesis practices these core values of qualitative research through an historical approach, to show a picture of Chinese traditional design, and to construct meaningful design knowledge of Chinese traditional *Qi-ju* through efforts to understand and interpret historical contexts of representative classical texts on design. As these social phenomenon represent a dynamic state, in constant change and reformation, the researcher acknowledges that every social phenomenon is complex and cannot be completely constructed.

Interpretative Analysis and Discussion: Historical Context, Author, and Text

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[149] These characteristics of the purpose of qualitative research researcher adopts is the reference from Pan Shuman, *Qualitative research method*, pages 111-112; GaoXunfang, Lin Yingzhu and Wang Xiangkui 2001, 26-27.

To achieve this aim of presenting a general picture of design knowledge regarding Chinese traditional *Qi-ju*, this thesis sets out a model to complete the research, as described below. In this simple model, the researcher investigates the historical context of the topic, interprets the representative texts, and finally constructs a meaningful description of design knowledge concerning Chinese traditional everyday tools. The thesis displays an application of the hermeneutical approach and method. Interpretative text analysis in this section involves analyzing and interpreting Chinese ancient classical literatures of *Qi-ju*. This historical analysis takes the text of *Qi-ju* as the unit of analysis. The contents for analysis are designed as follows:

(1) Historical context, including social, economic and cultural background of *Qi-ju* design;

(2) Texts considered representative and valuable concerning the theory or thought related *Qi-ju* design, manufacture, philosophy, etc.,

(3) Authors who show the basic motivation, style and knowledge to develop valuable theories or arguments in their publications, and whose credentials are attested in other sources.

Specifically, the historical context of this study includes the texts and other literary works (literature), the collections where these texts are found, the authors, and their roles in the cultural, historical, and social background of that era. This architecture of research and interpretation methods comes from hermeneutics, or the study relationship between these factors. As Oeming said, "a further philosophical precondition is the post-modern insight that all understanding is contextual and that

truth is part necessarily situational, perhaps even in total.[150] The meaning of a work can only be understood fully by focusing on the various meanings it has had in different historical and geographic contexts. Part of this focus is the place of a particular work within the large context of all literature. "theories that focus on the history of reception not only allow us to understand a work in its various situations, but also to place this work in its literary order", to recognize its status within the experience of literature as such.[151] The historical interaction between author and reader leads to a continual increase in the role of the reader, especially as the author who wrote for an actual audience could not have foreseen the varying audience his text would address in the future.[152]

Comprehensive analysis of these texts and their historical context will be related to the extraction of their thoughts on daily utensils and rationalization of these thoughts, classifications, and perspectives. Knowledge about daily utensil design can be thereby constructed. Investigation of Chinese daily utensils involves two aspects of analysis on the text: analysis of historical documents, and analysis of text discussion. The content of discussion is summarized as follows:

(1) Traceability and interpretation for the origin and development of utensils, objects and other terms for these devices;

(2) Traceability and reconstruction of the knowledge system regarding daily utensils;

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[150] Manfred Oeming, *Contemporary Biblical Hermeneutics: An Introduction*, translated by Joachim F. Vette (Ashgate, 1979).

[151] Jauss, H.R., "Literaturgeschichteals provocation der literaturwissenschaft", in idem, *literaturegeschichteals provocation* (Frankfurt, 1970), 189. This paragraph is quoted from Manfred Oeming, *Contemporary Biblical Hermeneutics: An Introduction*, translated by Joachim F. (Vette, Ashgate, 1979), 77-78.

[152] Jauss, H.R., 78.

(3) Epistemology and methodology of the knowledge system of Chinese ancient daily utensils.

3.1.4 Development of Research Process

The method used in this research was designed according to the research questions and hypotheses, which were generated according to the literature review. Thus, the developmental logic of the research design is as follows.

Literature Review
Statement of Problems
Research Questions
Research Hypothesis
Data Collection
Data Analysis
Discussion

Table 3.3 Development Process of Research Design

Research Questions

From the selection of text, text analysis and the final construction of text analysis, application of these methods will provide answers to the initial research question and research hypothesis. The thesis initiates three specific research questions, which are

(1) How did the original Chinese design happen, and how it was expressed, debated, and interpreted during the pre-Qin dynasty period? How did the original design knowledge develop over the course of design history?

(2) What are the particular features of design knowledge for Chinese everyday tools (or *Qi-ju*) that have been featured in historical texts and cultural life?

(3) How did philosophical thoughts and observations specifically guide and influence the theory and practice of *Qi-ju* design and "methodology"?

Research Hypothesis

In responding to the problems identified in the study of Chinese everyday tools in contemporary design research, the researcher proposes a hypothesis that "Chinese original design on everyday tools is an integrated and logical knowledge system". This concept suggests that the researcher should return to the original historical context of Chinese design to investigate the ancient theory on the *Qi-ju* (Utensils and Tools) system of design. And the original design system of Chinese *Qi-ju* (such as philosophy, theory, and practice of design) was rooted in Chinese daily life and local culture. Therefore, the investigation of the original system on *Qi-ju* not only establishes the significance for studying ancient tools, but also provides insight for today's industry design in China.

However, although China has had successful achievements in building on the original design system of *Qi-ju*, the system that shaped that historical context may not be suitable for today's economic and living situations. The system should be transformed, developed, and represented in a new way. The representation ofthe *Qi-ju*system should be established and developed upon a theoretical and methodological basis. To achieve this requirement, the researcher suggests that a theoretical framework and research method should be worked out as a guidance to make the study of Chinese everyday tools possible.

Research Objectives

As stated in Chapter 1 of this thesis, the research project initially intends to answer two main questions, one question concerns "what" and another concerns "how". In other words, the researcher asks what China's original design knowledge system was like, and then tries to suggest how to use and adapt this design knowledge system. In order to answer above research questions and complete the research task of "what" and "how", the thesis expects to achieve the following objectives.

According to the problem identified in previous studies concerning the interpretation of objects, the researcher seeks new ways to interpret Chinese ancient objects, and respond the main research questions of *what this original state of Chinese Qi-ju design knowledge*? And h*ow can we approach this design knowledge system*?

This thesis adopts a historical and methodological approach to achieve the following objectives.

(1) To construct a possible picture of the original state of Chinese *Qi-ju* design knowledge by examining the descriptions of Chinese *Qi-ju* presented in the relevant Chinese literature in the pre-Qin dynasty and other selected dynasties.

(2) To identify the features of this original design knowledge system, by tracing the genealogy of Chinese *Qi-ju* terms, the recorded design concepts, thoughts and philosophy in the Chinese classic literature.

(3) To develop a methodological framework for the study of Chinese *Qi-ju*, and to provide a theoretical framework for future studies of Chinese traditional everyday tools.

The core problem, then, lies in what is the design knowledge presented in ancient

Chinese texts of design, and how to approach this design knowledge system. According to the research method already described, the researcher plans the thesis according to the following logic:

(1) Research Analysis and Discussion—Investigation on historical classical texts on utensils

(2) Research Findings and Discussion—Traceability and reconstruction of original utensil knowledge system

(3) Research Application—Proposition of Methodological Framework

(4) Based on this investigation of historical classical texts on utensils and the traceability and reconstruction of the original utensil knowledge system, the formation of a theoretical foundation to support the research applicationand build the proposition of a methodological framework

3.3.5 Summary

This chapter presents the rationale of methodological flow in the research design of this project. The researcher's underlying methodological considerations and the research methods chosen are explained.

IV.   RESEARCH ANALYSIS AND DISCUSSION

This chapter responds to the research problems identified in Chapter Two[153] and the research suggestions of returning to the original historical context of Chinese *Qi ju* (Utensils and tools) design system. This chapter re-examines the past literatures on "daily tools" by setting the text in the historical context. It provides an overview of historical research and development of this topic and presents a chronological review of landmark work. The reviews, of representative descriptions of traditional everyday tools in three selected dynasty, demonstrate the historical interest in this topic and illustrate the different approaches taken according to viewpoints and methods that prevailed in different historical periods. All of this establishes the significance of research on ancient tools and displays the Chinese design knowledge system in Chinese everyday tools.

This Chapter presents and discusses the research analysis of representative descriptions of everyday tools in three selected historical periods: pre-Qin, Song and Ming dynasty. The chapter begins with a brief introduction to timeline and historical resources, followed by sections focusing on three historical periods: the pre-Qin period (before 221 BC), the Song Dynasty (960-1279 AD), the Ming Dynasty (1368-1644 AD). Every section aims to address three issues. First, the historical context of every chosen dynasty is introduced; second, research on daily tools is reviewed and intertwined with related literature; and the final issue is the specific text analysis of one selected classic design literature.

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[153] i.e., the investigation of ancient objects was in a superficial, isolated and selective situation which lacks of complete description with systematic analysis and logic. Detail refers to chapter two of the thesis, section 2.3.

4.1 Representative Descriptions of *Everyday Tools* in pre-Qin Period

4.1.1 The Statement of Historical Literature and Background

4.1.1.1 The Timeline
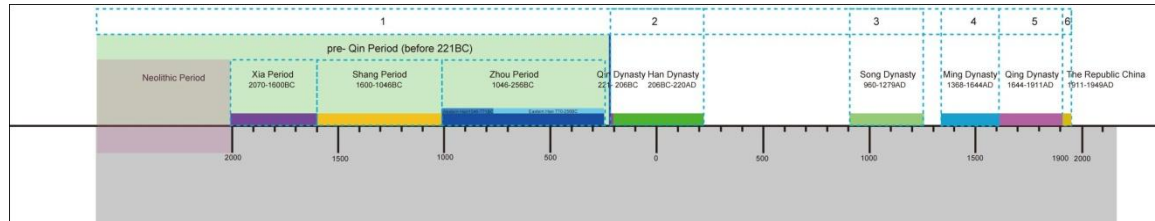
Table 4.1 The six historical periods in Chinese history

As the timeline shows in the table 4.1, the historical literatures in this thesis are focused on three historical periods: the pre-Qin period (before 221 BC), the Song Dynasty (960-1279 AD), the Ming Dynasty (1368-1644 AD). According to some historians, these historical periods is called as "traditional Chinese" or "classical Chinese" which refers to the two thousand years of China from the *Qin* and *Han* Dynasties 221 BC to the end of the *Qing* Dynasty in 1912. They believe that during this period China maintained the consistent national traditions, and the changes of tradtions are not 'all' changed but 'adaptive' changed.[154]

Though it is true that the study of *everyday tools* in each dynasty is a specialized area of research, this chapter seeks to provide a general introductory perspective rather than giving a comprehensive description of all tools used throughout China's history. The criterion used is whether a historical period is considered to be one of the important stages in the emergence of everyday tools. Each period selected represents

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[154] Detailed explanation see Introduction of thesis, and Ambrose King 1995, Liang Suming 1963; Qian Binsi 1951, Toynbee 1964.

either an essential turning point in the shaping of knowledge on *everyday tools* or has seen the emergence of important attributions in the study of traditions. However, it should be stated that the absence of related historical records in some dynasties does not mean that no tools were manufactured in that period. On the contrary, daily tools continued to be produced and manufactured along traditional lines, passed down through generations in every community, whether large or small.

4.1.1.2 Historical Resources as Literature

Historical resources in these selected three historical periods are the main form of literature available for examination due to the belief that they represent a means of approaching and understanding the deeper meaning of ancient tools. *Traditional Chinese everyday tools* cannot be investigated in isolation from their historical and social context. Furthermore, historical texts also have a function that is independent of the language used and is revealed by the tools themselves. Historical texts about tools represent reliable evidence that helps to reconstruct the story behind the design of daily tools.

Secondly, though many typical Chinese-style products have been excavated, exhibited in museums, and displayed in handbooks, corresponding descriptions of ancient design and manufacturing are few and far between. The extant literature on this topic does not apparently match the achievements recorded in the production of *everyday tools*. Few monographs of *Chinese daily tools* and their associated design knowledge have survived the course of history. Part of the reason for this is the loss of craftsmen's voices in formal descriptions, as most existing studies have been penned

by government representatives and scholars.[155]   Therefore, the few existing studies written by the literati in various historical periods have become the only sources available for study and examination by contemporary scholars with different purposes and focuses.[156]

Thirdly, it should be acknowledged that it is impossible to present all related literature on this topic throughout the various dynasties, and to review the topic of "*design knowledge in traditional Chinese everyday tools*". It is not a straightforward task because descriptions are widely scattered throughout Chinese history, philosophy, and monographs; it is difficult to discern and assess the value and relevance of a description of *everyday tools* in the review process, therefore, it becomes critically important to look for significant descriptions. To avoid unnecessary indulgence and becoming lost in the large amount of historical texts, this thesis focuses on representative and design-related classics of *Chinese daily tools*. It attempts to provide a framework showing the general trend of research on *everyday tools*. To clarify the main theme, the specific literature discussed has been selected according to its influence on and relevance to the topic.

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[155] There are many complex reasons for this. Traditionally, design experience and knowledge were usually passed on under the apprenticeship model and through oral description, the result of which is that written records are scarce.   Another explanation is that people's records on tools and manufacturing were lost in frequent wars.

[156] In Chinese history, three representative literary works have been treated as the key craft and design-related manuals: *Book of Diverse Crafts*, a manufacturing handbook edited by the government in the Western Zhou period; *TianGong Kai Wu* (Heaven's Craft in the Creation of Things) a description of tools and their manufacture from a scholar's perspective in the Song Dynasty; and *Chang Wu Zhi* (*Treatise on Superfluous Things*), a personal description of tools included in the object study literature, all of which are described in detail in this chapter.

4.1.1.3 The pre-Qin Period (before 221 BC)[157]

This section first addresses the Neolithic Period because this was the first period in which tools with a basic form and function appeared, symbolizing that the human design capacity began changing Chinese people's lives. The Chinese term *Qi-ju* comes from a term linked to utensils and tools, and the origins of tools are significant for an understanding of Chinese design.

The Xia, Shang and Zhou dynasties are important periods for Chinese history because China had become a civilization, written records first appeared, and the Chinese culture was primarily shaped during this period. The concept *Qi ju* (utensils and tools) emerged and developed on the basis of the strong philosophical and theoretical underpinnings of the Zhou Dynasty. The concept of *Qi ju*, with its manufacturing and social functions and ethical significance, has been interpreted from various perspectives, mostly by philosophers such as Confucius, Laozi, Mozi, Zhuangzi, and Xunzi. Their thoughts have strongly influenced subsequent generations and have become inspirational sources for artists and designers. An examination of this period helps to show how the Chinese design knowledge system was built up. It is also an essential step in establishing the research framework for this thesis in later chapters.

This section presents the main thoughts in this period through representative literatures *the book of diverse crafts* and the thoughts of Laozi, Mozi, Confucias, Zhuangzi as Table 4.2 shows.

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[157] Pre-Qin is a generic term for the time before 221 BC (the beginning of the first united empire in China) that usually includes "high antiquity" and the Xia, Shang, and Zhou dynasties.

Dynasty	Literatures	Author	Characteristics
Neolithic	No records	Inventors	No literal records
Xia (2070-1600 BC)	-	-	
Shang (1600-1046 BC)	-	-	
Western Zhou (1046-771BC)	*Kao Gong Ji* (The book of Diverse crafts)	Government	The ancient design knowledge system was gradually shaped.
Eastern Zhou (770-256 BC)	The thoughts of Hundred Schools	Laozi, Mozi, Confucius, Zhuangzi	

Table 4.2 Representative literatures in pre-Qin Period

The Neolithic Period

Archaeological discoveries show that China entered the Neolithic Period about ten thousand years ago. During this period in which agriculture and animal husbandry emerged, people began making and using grinding stone tools and invented pottery. The Neolithic Period is commonly divided into four stages in China. The earliest stage was around 10000-7000 BC, the second stage was about 7000-5000 BC, during which the *Ci shan* culture appeared; the third stage was about 5000-3500 BC, during which the *Yang shao* culture, the *Da wen kou* culture, and the *He mu du* culture were

representative cultural systems; and the final stage was about 3500-2000 BC, featuring the *Long shan* culture and the *Liang zhu* culture, in which the combination of stone and bronze was used.

It is assumed that the Neolithic Period marks the beginning of the creation, invention and development of tools in China. Given that no written record of this time has been found, it is speculated that in the Neolithic Period, over thousands of years, tool manufacturing techniques were passed on by example and through oral means. By example meant learning by doing - basically trial and error. Taking the *Ci shan* culture as an example, among the relics of *Wu an*, *Ci shan* in Hebei province, a round cave containing a stone grinding plate and stick was discovered. Pottery and cooking utensils had been mounted around the cave for storing food. These relics are regarded as some of the earliest products in Chinese design history. During this period, *everyday tools* were apparently used to satisfy people's basic needs, but tool manufacturing technology developed over the course of different cultural periods, such as when plain pottery gave way to painted pottery and later to splendid bronze ware during the Shang Dynasty.

The Xia (2070-1600 BC), Shang (1600-1046 BC), and Zhou (1046-256 BC) Dynasties

The Xia, Shang, and Zhou dynasties form part of pre-Qin history, which is also known as the "three-dynasty period". It is accepted that the Xia was the earliest dynasty and that China became a civilization at this time, although scholars have not reached a consensus on the exact date on which the Xia began and other details of this dynasty. In the Shang Dynasty (1600-1046BC), oracle bone inscriptions and bronze inscriptions marked the beginning of Chinese written history. By the time of the Zhou Dynasty, complete political and legal systems had been set up. Politics, society, and

culture reached a level of maturity, indicating that Chinese culture was formed primarily by developments in the three-dynasty period.

The Zhou Dynasty lasted for 791 years, making it probably the longest dynasty in Chinese history.[158] Legislations passed at the beginning of the Zhou period not only reinforced the feudal economic order, but also raised the social importance of career orientation. Concepts relevant to the Chinese primary culture were brought together in the *Shang Shu* (The Book of History),[159] which records "people's living and materiality, life and behaviours, politics and teaching, natural knowledge, principles of administration, moral practice and the concept of blessings and disaster."[160] In *Counsels of the Great Yu* (part of *The Book of History*), the important concept of "upright morality, taking into account things of nature, and considering people's livelihood" appeared, which became the basis of political rule in the Zhou Dynasty in terms of " teaching of morality as a foundation" and "people's livelihood as an important aspect."[161] This concept influenced many following generations and has even permeated into current national policy.

In the Western Zhou Dynasty, important handicraft industries were controlled by the royal household and feudal vassals were made to serve nobles. On one hand,

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[158] The Zhou Dynasty is divided into two periods: the Western Zhou (1046-771 BC) and the Eastern Zhou (770-256 BC). The Eastern Zhou comprises two periods: the Spring and Autumn period (770-476 BC) and the Warring States period (475-221 BC).

[159] *Shang-Shu* (*The Book of History*) is a collection of historical literature of ancient China. *Shang* means ancient times, s*hu* means history written on bamboo slips, and *Shang Shu* means historical book of ancient China. It mainly records the words of governors during theShangand Zhou dynasties.

[160] Details see *Shang Shu Da Yu Mo (Counsels of the Great Yu)*.

[161] Cai Renhou,"The History of Chinese Thoughts" in Qiu Xianyou, Zhou He, Tian Boyuan eds.,*Guo Xue Dao Du* (The guidance of Chinese study), Volume 3 (Taibei: San Min Publications, 1993), 53.

craftsmen were organized and led by the *Si kong* (governor), who was in charge of various kinds of handicrafts including the important industry of bronze modelling (see *Book of Diverse Crafts*). One the other hand, the government spread innovative tool techniques among villages to encourage and guide the handicraft industries. Products could be exchanged and used by families. In the Spring and Autumn period, iron was first used in agriculture and the handicraft industries. Hoes and hatchets made of iron were sharper than those made of wood, stone, and bronze. In the Warring States period (475-221 BC), architectural techniques were also developed to an exalted level. The famous craftsmen *Lu-ban* (also known as *Gong-shu-Ban*, a person of country *Lu*) was a representative figure. His tool-related inventions and techniques became a legendary part of Chinese history.

Kao Gong Ji (Book of Diverse Crafts) is a work that describes the situation at this time, and in particular introduces the career of *Gong* and their product manufacturing techniques. The government official position of *Gong* (craftsman) was initiated during the Shang Dynasty, but was later abolished in the Warring States period. Relevant descriptions can also be found in literature such as *Shi Jing* (Classic of Poetry)[162] (the first anthology of Chinese poetry). Texts of this genre describe many tools people used in their daily lives such as cooking utensils, drinking utensils, farm tools, and means of transport.

The pre-Qin period marked an end to self-consciousness in literature and the breaking down the distinctions between literature, history, and philosophy. When tracing

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[162] *Shijing (Shih-ching)*, *Chinese Literature Wade-Giles Romanization* (Chinese: "Classic of Poetry"). It was compiled by the ancient sage Confucius (551–479 BC) and cited by him as a model of literary expression.

original writings on "Chinese everyday tools", it is necessary to go back to these historical descriptions. Texts recording the civilization, politics, society, life, and thoughts of the Western Zhou Dynasty (1046-771 BC) began to emerge at the end of the Spring and Autumn period. These also include descriptions of *Qi-ju* and their manufacturing. Relative treatises and discourses related to handicrafts include those of *Xun Zi, Lao Zi, Zhuang Zi,* and *Mo Zi,* as well as *Li Ji (The Book of Rites),* and *Zhou Li (The Rites of Zhou).* The discourses are especially revealing of the relationship between society and tool making.

Viewpoints on daily tools that appear in the relevant historical texts of the Zhou period are summarized into three categories in this thesis: the first is historical texts: *Shi Jing* (Classic of Poetry)*, Shang Shu, Zhou Li,* and *Shi Ji*; the second is the doctrines of the Hundred Schools: *Xun-zi, Lao-zi, Zhuang-zi, Mo-zi,* and *The Book of Rites;* and the third is government records: *Kao Gong Ji* (which was traditionally compiled in the historical book *Rites of Zhou*. This section mainly addresses two main representative works: *Kao Gong Ji (Book of Diverse Crafts)* and the theories of *Mohism, Confucians, Lao Zi*, and *Zhuang Zi* on *Qi* (tools).

4.1.1.4 Pre-Qin Period: *Zao-wu* (Object creation) and *Cheng-qi* (Making utensils)

The pre-*Qin* era was in the original position in the developmental history of Chinese academics, this position is mostly laid by all *Classes of all Authors* of the *Spring and Aautumn* period (770-221 BC) and the *Warring States* (475-221 BC) period, therefore, when we talk about pre-*Qin* from the academic angle, it is not just in the general sense. In fact, it refers to a certain historical period, specifically imparting the history of a

particular era, a source region. Its historical period is about 300 years from 530 BC to 230 BC and it belongs to the history of our country during the *Spring and Autumn Period*.[163]

From the pre-*Qin* ancient books and archaeological finds, in the *Spring and Autumn Period* (770-221 BC) *Qi wu* (utensils and objects) manufacture has constituted a basic element of social reality. During this period *Zao wu* (object creation) involved are handmade activity items, there were different types of *Qiju* (utensils and tools) that related to *Yi-Shi-Zhu-Xing* (clothes, food, housing, and transportation), such as daily life utensils, productive labor tools, military equipment (such as weapons) and sacrificial vessels etc., and these utensils *and tools* are closely related with everyone's daily life of different social classes. These who engaged in the process of *Zao wu* (object creation) were called *Gong* (craftsmen) and they have become one of the four major components of the national labour force at that time, which implied the activity of *Gong* (craftsmen) constituted a fundamental part of social economy. The relationship of social life and *Riyong qiwu* (Daily utensils) and *Qi wu* (utensils and objects) manufacture has experienced a sudden and strengthening process, and after that the work of *Bai gong* (Hundred workers) was closely related to people' social work and life.

Gongyi zaowu (craft of object creation) and Academic thoughts shared the same prosperity and development: First, at that time, tool makers have been able to make

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[163] The descriptions of *Cheng qi zhi dao* (utensial making) and *zaowu yishu* (object creation) in pre-Qin dynsty here is referenced: Xu Biao, *Cheng qi zhi dao: xan Qin gongyi zaowu siig yanjiu* (*The way of making Qi: research of craft and object creation in Pre-qin*)(Nanjing: Jiangsu Yishu chubanshe, 2008), 4.

beautiful *Qi wu* (utensils and objects) and compiled a craft book which was handed down to modern times, known as *Kao Gong Ji* (Book of diverse crafts). This book categorized the craft skills of more than two thousand years ago and then recorded and elaborated them, and it became the design principles and set process standard of *Qi wu* (utensils and objects) making and designing at that time; Second, the thriving private schools brought the prosperity for the academic, and the study of *Zhu Zi* (Scholars) paid close attention to the reality of application. It discussed the ideal society and their ideals and principles of *Cheng qi* (the process for making objects), gradually became the designing thought of *Qi wu* (utensils and objects) in pre-*Qin* era. These two types of text embody the historical experience which was acquired from the process of *Gong-yi zao-wu* (craft of object creation) through practice and thoughts. This section attempts to make a survey of these two kinds of text towards developing the research situation of Chinese everyday tools.

4.1.2   Text Analysis: *Kao Gong Ji* (Book of Diverse Crafts)

4.1.2.1 Writing background and Versions

Kao Gong Ji (Book of diverse crafts) is a treatise of *Guan Shu* (government books) - this kind of treatise was completed in the Western Zhou period (1046-771 BC). [164] Scholar Guo Moruo pointed out that it is an official book recorded by the people of

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[164] The date of publication of *Kao Gong Ji* (*Book of Diverse Crafts*) was not recorded, although there are several possibilities: (i) at the end of the Spring and Autumn period, (ii) during the early Warring States period, (iii) at the end of the Warring States period; (iv) in the middle of the Warring States period, (v) during the Qin and Han dynasties. Most of its chapters were shaped at the end of the Spring and Autumn period and completed during the early Warring States period, with a few chapters being added during the Qin and Han dynasties. Quoted in Dai Wusan ed.,*Kao Gong Ji Tu Shuo* (Shandong Huabao chubnshe, 2003), 3.

the Kingdom of *Qi.*[165] *Kao Gong Ji,* therefore, has local features and is official, meaning it recorded the official handicraft industries rather than folk handicraft industries that existed in feudal society. The featured content of the book was later compiled as the *Rites of Zhou* (classical history texts) by Confucian scholars in the Western Han Dynasty to make up for the lost part of *Dong Guan* (the name of governor).

Book of Diverse Crafts once was lost. Legend has it that 献王刘德 *Xianwang Liu De* of Hejian in *Western Han Dynasty* (202 ~ 9 BC) thought the book 六官 *Liu Guan* (*Tian-Sky、Di-Earth、Chun-Spring、Xia-Summer、Qiu-Autumn、Dong-Winter*) of 《周官》*Zhou Guan* was short of 《冬官》*Dong Guan*, hence he added this book to be part of the *Zhou Guan*. At that time, there were Ancient draft and Present draft. After the revision of the parent-child Liu Xiang and Liu Xin, they have the new *Li Ding* draft. Liu Xin changed the *Zhou Guan* to *Zhou Li* (Rites of Zhou), therefore, also called 《周礼•冬官•考工记》*Rites of Zhou, Dong Guan, Book of Diverse Crafts. Kao Gong Ji* (*Book of Diverse Crafts*) was part of the Confucian classics, long favored by people; celebrities had commented on it, was sung and recited by public, thus spreading far and wide.

There are a lot of versions of *Rites of Zhou*, plus the sole solution edition of *Kao Gong Ji*, including the original *Kao Gong Ji*, in fact, up to hundreds of versions. This paper extracts was selected from Wen Renjun's, *Annotation to Book of Diverse Crafts*, *Shanghai Ancient Books Publishing House*, 2012. This version's master copy is from

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[165] Qi was a prosperous kingdom at the end of the Spring and Autumn period.

the *Si Bu Cong Kan* in 1929, published by *Shanghai Commercial Press*, and is based on the reprinted Yue family's 相台 *Xiang Tai Version*, the twelve volumes' photocopy of *Rites of Zhou,* which was stored in 观古堂 *Guan Gu Tang* on *Ming Jiajing* period (A.D. 1522 ~ 1566).

The reason why we choose *Kao Gong Ji* is that it only has 7100 Chinese characters but it expresses the pre-*Qin's* science and technology and natural science, just like the *Mo Jing* (Mohist Canon) did. Both represent the two possible directions of science and technology in pre-*Qin* dynasty. *Mo Jing* (Mohist Canon) is similar to *the Ancient Greek Deductive Science*. But later the ancient society chose the system of *Kao Gong Ji* (*Book of Diverse Crafts*).[166] Besides, *Kao Gong Ji* not only put forward the social function of *Bai Gong* (hundred craftsmen) in a country and the design contents, i.e. the principle of *Qi wu* (utensilsand tools) designing and making, but also put forward the ancient Chinese concepts of *Chuang wu* and *Zao wu* (creation of Objects).

For example, just like what Zhang Daoyi said, (1) It incorporated the relationship between people, things and society; it not only recorded the manufacturing technology, but also encompassed the theoretical discussion stage, and directly moved to the relationship between people and society. (2) It put forward the concepts of *Chuang-wu* and *Zao-wu* (*creation of objects*), distinguishing the names of *Zhi zhe (wise man)* and *Qiao-zhe* (skilled man), the former is the creation and invention of objects and the latter is to make objects according to the fixed mode. (3) It provided the concept and definition of *Gong-yi* (craft). (4) It delineated the principles of *She-ji* (design) and *Zhi-zuo* (Manufacture). (5) It was in human scale. (6) It covered full paly

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[166] Wen Renjunm, *Annotation to Kao Gong Ji* (Shanghai: Shanghai Guji chubnshe, 2012), 1.

of function. (7) It focused on: (a) unification of utility and aesthetics; (b) the general planning and design; (c) the integrated use of craft skill; (d) the achievements of science and technology; (e) Humanistic ideas; (f) symbolic significance.[167]

Therefore, it is essential to perform the analysis of *Kao Gong Ji* to help understand the formation of Chinese ancient utensils design and technology systems. I will make detailed introduction to the following three aspects: (1) the definition of *Bai gong's* (hundred craftsmen) duty and contents in *Kao Gong Ji*; (2) the raising of concepts of *Gong (craftsmen), Yi (art), Qiao* (skilled) and thoughts of *Zao wu* (creation of objects) and designing principle; (3) *Kao Gong Ji* as a way to put forward the main types of the officially owned handicraft and small family handicraft.

4.1.2.2 *Bai gong* (Hundred Craftsmen) and the Duty

In the general narration of *Book of Diverse Crafts*, the emperor *Kai Zong* of *Ming dynasty* declared *Bai gong's* (hundred craftsmen) duty, "the country has six kinds of jobs, and *Bai gong* is one of them."

> "国有六职，百工与居一焉。""坐而论道，谓之王公；作而行之，谓之士大夫；审曲面执，以饬五材，以辨民器，谓之百工；通四方之珍异以资之，谓之商旅；饬力以长地财，谓之农夫；治丝麻以成之没，谓之妇功。"

> Sit and prattle about the general principle, is known to be done by *princes and dukes*; get up and carry out the statecraft, is as the job of *scholar-officials*; to

[167] Zhang Daoyi, "The Science and the Humanities spirit of Kao Gong Ji", in *Sheji Zai Mou* Chongqing University press, 2007), 45-46.

observe the forms and characteristics of various materials and arrangements of materials (gold, wood, fur, jade, pottery) and to make *Qiju* (tools) is as the duty of *Bai-Gong*'s (hundred craftsmen); to make all rare goods circulate without hindrance for people's purchase, is the job of *travelling businessman*; cultivate land and make it the grow with wealth, is done by *farmer; and* spinning silk and making clothes, is known as *women's work*.[168]

The country has six jobs *Wang gong* (princes and dukes), *Shi da fu* (scholar-officials), *Bai gong* (hundred craftsmen), *Shang lv* (travelling businessman), *Nong fu* (farmer), *Fu gong* (women's work). Since all the functions of social work have its division, working man must also define the generic and be positioning themselves. Therefore, at that time, *Bai gong* (hundred craftsmen) is a kind of social division of social functions, including handicraft industry and all walks of life, but also refers to *Gong guan* (work officers) of various artisans who managed handicraft industry. *Bai gong* is the official name of a person who was in charge of construction production in Zhou dynasty; it can also refer to a variety of craftsmen.[169]

Zhang Daoyi provides an explanation, he says that "workers" is one of the six social functions, and provide a definition of *Bai-gong qiao-yi* (hundred craftsmen and crafts techniques) as: men whose work were "审曲面势，以饬五材，以辩民器" (1) *Shen-qu-mian-zhi,* (2) *yi-chi-wu-cai,* (3) *yi-bian-min-qi*), were called *Bai gong* (hundred craftsmen). They observed the forms and characteristics of various materials

[168] Wen Renjun, Annotation *to Kao Gong Ji* (Shanghai Guji chubanshe, 2012), 1.

[169] The further discussion can be seen in Zhang Daoyi's "The Science and the Humanities spirit of Kao Gong Ji" in *Sheji Zai Mou* Chongqing University press, 2007) 46; Wen Renjun's *Annotation to Kao Gong Ji* (Shanghai Guji chubanshe, 2012), 10.

and arrangements of materials (gold, wood, fur, jade, pottery) and they made Qi ju (utensil and tools). *Kao Gong Ji* has summed up three standards for *Bai gong* as following:

(1) The first one is 审曲面执 *Shen-qu-mian-zhi* (to observe the forms and characteristics of various materials), 执 *Zhi* is similar to 势 *Shi* which means *characteristics*.[170]

(2) The second is 以饬五材 *Yi-chi-wu-cai*，饬 *Chi* is to rectify, repair, and make *Qi wu* (*utensils and objects),* with a meaning of *Qiao* (skilled). 五材 *Wu cai* (five materials) means *gold, wood, fur, jade, pottery.* Here is a saying that 天生五材， 民并用之 (the naturally born five materials should be used together by all people);[171] 五才（材）之用， 无或可废 (the use of the five materials, not a single one can be omitted).[172]

(3) The third is *yi-bian-min-qi*, to arrange all kinds of materials (gold, wood, fur, jade, pottery) and to make *Qi* (utensils); 辨 *Bian* (discern) is similar to *Tong* (same)同, which means *arrange*. In summary, these three rules can be said to have defined the term *Bai gong* (hundred craftsmen). No matter what kinds of activities of making objects and what types of work, all can be summarized in this definition.[173]

4.1.2.3 The *Creator* and *Maker* of *Qi*

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[170] Ibid.

[171] Zuo Zhuan, the 27the year of Xiang (a king).

[172] Fan ye, *Latter Han book, Ma Rong* (Beijing: Zhonghua Shuju, 1982).

[173] Zhang Daoyi, "The Science and the Humanities spirit of Kao Gong Ji" in *Sheji Zai Mou* Chongqing University press, 2007), 38.

In addition, *Kao Gong Ji* has a further explanation about *Bai gong* (hundred craftsmen); also put forward the concept of *creator* and *maker*, namely *wise man* and *fine man*. The former refers to the invention of objects, and the latter refers to making things based on the fixed model.

> "知者创物， 巧者述之；守之世， 谓之工。百工之事， 皆圣人之作也。烁金以为刃， 凝土以为器， 作车以行路， 作舟以行水， 此皆圣人之所作也。"

Wise men can make *Wu* (objects), ingenious people followed the wise man's ways, and these who kept this as an occupation were called *Gong* (workmen). *Utensils or tools* made by *Bai gong* (hundred craftsmen) are saints' creation. To melte down metal and produce *Qi* (utensils) with a sharp edge, to make the soil solidified and then make pottery, to make the ship travel on the water: these are saints' creation.

4.1.2.4 *Gong* (Craftsmen), *Yi* (Art), *Qiao* (Technique)

Kao Gong Ji put forward a principle for designing and making, that is 天有时， 地有气， 材有美， 工有巧. Only by combining these four, can we get good work.

> 天有时， 地有气， 材有美， 工有巧， 合此四者， 然后可以为良。材美工巧， 然而不良， 则不时， 不得地气也。橘逾淮而北为枳， 鹳鹆不逾济，貉逾汶则死， 此地气然也。郑之刀， 宋之斤， 鲁之削， 吴粤之剑， 迁乎其地而弗能为良， 地气然也。燕之角， 荆之干， 妢胡之苟， 吴粤之金锡，此材之美者也。天有时以生， 有时以杀；草木有时以生， 有时以死；石

有时以洳；水有时以凝， 有时以泽；此天时也。

The nature has its season and the earth has its breath (favorable geographical position), there are excellent materials and fine art works: only through combining these four with each other can we make excellent artifacts. Materials of good quality and fine craft skills, still cannot make the exquisite *Qi wu* (*utensilsor objects)*, only because of the wrong natural season and unfavorable geographical position. If tangerine planted in Huaibei (Northern Huaihe Area), it will be orange, crested myna would never fly overt the *Ji-shui* river, raccoon dog won't live if he moved across the Wenshui River (in Shandong Province): these are caused by the geographical positions. The knife of Zheng (a state in the Zhou Dynasty), the axe Song (a state in the Zhou Dynasty), the pare of Lu (a state in the Zhou dynasty), the sword of Wu (a state in the Zhou Dynasty) and Yue (a state in the Zhou Dynasty), without being produced and made in the specific local place, but it won't be that good in a different area: these are caused by the geographical positions. The horn of Yan, the bow of Jing, and the arrow of Shi Hu, the gold and dent of Wu and Yuethese are excellent materials. The nature sometimes makes things grow, and sometimes it makes things die; grass and trees grow sometimes and sometimes die; Stone sometimes cracks; Water sometimes solidified, and sometimes ice will melt: these are caused by natural seasons.

The text presents four principles of making quality tools: "天时，地气，材美，工巧" *Tian-shi, Di-qi, Cai-mei, Gon- qiao. Tian-shi* means the desingning of objects requires *Cai-mei* (the quality of material), *Gong-qiao*, first of all should adapt to the weather, season, solar term, and geographical environment. And the requirment of *Gong* is

skilled and *fine*. Only by perfectly matching these four together, can we make beautiful objects. These four conditions need to cooperate with each other, not a single one can be omitted. Especially in the industrial age, all materials depend on the nature, the same material: *Tian-shi* (the time of seasons) means nature, indicating that it is necessary to understand the rules of nature through careful observation; *Di-qi*, (the breath of earth) refers to the elements of geography, geology, and the ecological environment; *Cai-mei* (the quality of material), means a craftsman has the capability of understanding the characteristics of materials (physics, chemistry, and aesthetics) so that he knows how to choose suiable materials; *Gong-qiao* means fine craft. This concept is regarded as a sound principle of ancient Chinese object making and has been applied to hand-tool design in China for thousands of years.

4.1.2.5 The Type of Official andFamily Handicraft Industry

Kao Gong Ji put forward the main types of the officially owned handicrafts and small family handicraft. *Kao Gong Ji* narrated the origin and characteristic of *Bai gong* (hundred craftsmen). Then, in the main pages, each is separately discussed focusing on types of the officially-owned handicraft and/or small family handicraft industry. In fact, about thirty kinds of jobs are stated. That is:

> "凡攻木之工七、攻金之工六、攻皮之工五、设色之工五、刮摩之工五、搏埴之工二。攻木之工：轮、舆、弓、庐、匠、车、梓；攻金之工：筑、冶、凫、栗、段、桃；攻皮之工：函、鲍、韦军、韦、裘；设色之工：画、贵、钟、筐、荒；刮摩之工：玉、榔、雕、矢、磬；搏埴之工：陶、瓬。[174]

> The craftsman has access to seven kinds of materials and Skills; the metal

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[174] Wen Renjunm, *Annotation to Kao Gong Ji* (Shanghai: Shanghai guji chubnshe, 2012), 10.

craftsmen have six kinds, leather craftsmen has five kinds, dyeing craftsmen has five kinds, scraping craftsmen has five kinds, clay craftsmen have two kinds. The craftsmen who manage the wooden materials are: 轮人 Lun people、舆人 people、弓人 Gong people、庐人 Lu people、匠人 Jiang people、车人 Che people、梓人 Zhi people. The craftsmen who manage the metal are: Mr. Zhu, Mr. Zhi, Mr. Xiao, Mr.Shu, Mr.Shu, Mr.Duan, Mr.Tao. The craftsmen who manage the leather are: 函人 Han people、鲍人 Bao people、韗人 Yun people、韦人 Wei people、裘人 Qiu people. The Dyeing craftsman are: 画人 Hua people、绩人 Ji ren、钟氏 Zhong people、筐人 Kuang people、荒人 Huang people. The Scrape craftsmen are: 玉人 Yu people、椰人 Lang people、雕人 Diao people、矢人 Shi people、磬氏 Qin people. The clay craftsmen are: 陶人 Tao people, 瓬人 Fang people.

In the *Western Han Dynasty*（206 B.C.-A.D. 24）, when people made these catagories, the narration sequence of all types work were regulated according to the narration words left, and then edited as two volumes with similar words (namely, the eleventh and the twelfth volume of *Rites of Zhou*), and name it as *Kao Gong Ji*. According to work types recorded in the eleventh and the twelfth volume of *Rites of Zhou*, scholars summarized them from six different kinds of aspects:

1. The car-making system represented by 轮人 Lun people, 舆人 Yu people, 辀人 Zhou people and 车人 Che people.

2. The bronze making system of 金有六齐（means six metal-making families),

including Mr. Zhu, Mr. Zhi, Mr. Xiao, Mr.Shu, Mr.Shu, Mr.Duan, Mr.Tao.

3. The bow arrow military weapon, leather armor system represented by 弓人 Gong people.

4. The rites, music and archery system represented by 梓人 Zi people.

5. The hydrological system represented by 匠人 Jiang people.

6. The pottery-making system represented by 陶人 Tao people and 㐀人 Wa people.[175]

4.1.3 Main Concepts of *Qi-ju* from Hundred Schools

4.1.3.1 Thought towards *Cheng qi zhi dao* (the Way of Making *Qi*)

The rapid social change and the establishment of new feudal system in *the Spring and Autumn period* (770-221 BC) and *the Warring States period* (475-221 BC) makes it possible for the prosperity of unprecedented active situation of 诸侯异政， 百家异说 *Zhu-hou-yi-zheng, Bai-jia-yi-shuo* (vassal states of different government, different opinions of different philosophers and authors), and some rulers such as 齐威王 Qi-wei-wang, (378 BC - 320 BC), 齐宣王 Qi-xuan-wang (350 BC - 301 BC) (the king of king of Qi Kingdom) and 吕不韦 Lv buwei (*prime minister of Qin kingdom*), all attached great importance to 礼贤下士 *li-xian-xia-shi* (be courteous to the wise and condescending to scholars) , recruiting intellectuals to write and propound ideas and mould public opinion, breaking the close situation of 学在官府 *Xue-zai-guan-fu*

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[175] This categorization makes a reference fromWen Renjun, Annotation to *Kong Gong Ji* (Shanghai: Shanghai Guji chubanshe, 2012), 2-5.

(Education was controlled by Governments), therefore, there appeared a number of active intellectuals called 士 *Shi* (scholars)[176] in society. Some of them either wrote and propounded ideas, went canvassing everywhere or attached themselves to 诸侯 *Zhu hou* (the feudal princes), all of these had a profound impact on the academic circles. Some people focused more on science and production technology, which made rulers start to attach serious importance to craft skill.[177]

At that time, the social productive forces have experienced an unprecedented development, and appeared as prosperous social economy, with many discoveries and inventions emerging. The key development was smelting iron technique in the steelmaking technology. And because of the frequency of wars, weapons also gained enough room to develop, and quantity and quality of weapons were greatly improved. Daily life pottery became the necessaries of live, official and private ceramic workshops spread throughout the vassal lands, and of various kinds, such as black pottery, painted pottery, and geometric stamped hard pottery was popular in the southeastern and central China. In the *Shang Dynasty* a pottery, which was relatively close to the celadon pottery, appeared. For example, the tomb of *Warring States* unearthed more than 130 potteries and most of them are for civil use, such as cups and bowls. In the middle of *the Warring States Period*, the emerging handicraft industry,

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[176] *Shi*, is a particular social class has a certain status in ancient Chinese society, the evolution of the intellectuals. Shi, refers to the original pragmatic end of primitive society and clan tribal leaders and dignitaries fellow, after entering the class society, they become a part of the ruling class. Since ancient times, only with nobles have the cultural knowledge, therefore, became a name of these men with a certain knowledge and skill. This explanation is referenced from XiaYanJing, *Zhongguo yishu sheji shi* (Chinese history of art and design) (Shanghai: Shanghi remin yishu chubanshe 2011), 49.

[177] Ibid.

lacquer made an appearance, which had been separated from the wooden work.[178]

From this we know that the *Qi ju* (utensils and tools) making has become a basic element of social reality. The *Zao wu* (creation of objects) of pre-*Qin* involved, in this period, hand-made activities and hand crafted items.The types of instruments are basic necessities of daily life utensils, production labor tools, military equipment (such as weapons), sacrificial vessels, etc. – indeed, these utensils are closely related with everyone's daily life in different social class. It is not difficult to know that the relationship of social life and *Riyong qiwu* (daily utensils) and the *Qiju* (utensils& tools) manufacture had experienced a sudden and strengthening process because of some advantages they had enjoyed, and after that the work of *Bai gong* (hundred craftsman) was closely related to people''s lives as well as national social life.[179]

From the daily utensils modeling, material unearthed, and former way of making tools, we know that the craftsmen engaged in the manufacture were having a clear understanding of function and value of *Qi ju* (utensils and tools), and their understanding of the objects' function is from the mentoring or generations of inherited technical experience and personal accumulated experience in the practice of handmade crafts. And the Pre-Qin public, who had wisdom, also had a clear understanding and recognition of the function and value of everyday tools. But the understanding of everyday objects were not just confined to a device; intellectual were doing a complete and thorough theorising, starting from the overall correlation

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[178] Xia Yanjing, *Zhongguo yishu sheji shi* (Chinese history of art and design) (Shanghai: Shanghi remin yishu chubanshe 2011), 36.

[179] Xu Biao, Xu Biao, *Cheng qi zhi dao: xan Qin gongyi zaowu siig yanjiu* (Nanjing: Nanjing shifan daxue chubanshe, 1999), 3-4.

between objects with social reality, to the social value of artifacts. Their works from different angles elaborated their view of objects; they discussed and debated the livelihood of the people, and all aspects of real life namely political, economic, military, educational, and aesthetic. Therefore, in the pre-Qin period, collision and debate of various factions gradually formed their own theory, later known as the thoughts or "doctrines" of the hundred schools.

In the pre-*Qin* period, the original meaning of *Gongyi* (craft) is very complex. In *the Warring States* era, *Zhou Royal Family* had declined to give recognition to craftsmen and vassals were seeking hegemony like a rising wind and scudding clouds, which made craftsmen that represented the advanced productivity force at that time stood out on the stage of history, and, this, in fact, was a special time in the history of Chinese technology. And all their thoughts seek to find ways saving nations through the debates of the relationship between social, individuals, and objects.

The discussion of the relationship of *Tao* and *Qi,* righteousness and profit, were abnormally prosperous. *Tao* and *Qi* here are the relationship of man, nature and artificiality in terms of technology. Righteousness and profit can actually be extended for the beneficial relationship bought by ethics of social justice and extends to ethics of social justice to artificiality circulation, the pre-Qin scholars' thought of: 修身治国齐身平天下(*First free yourself of wrong-doings and evil thoughts, then bring order to your family, after which govern your people well and the land is yours*) – and all these illustrated through examples of craft.[180]

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[180] Hang Jian, *She ji Dao: Sheji de jiben wenti* (Design: the Basic problems of Chinese design) (Chongqing: Chongqing University press, 2009), 77.

Of those craft, the most prominent are *Qi cang yu li* (utensil is hidden in the ritual) of *Confucianism, Qi yi yu li* (utensil is for people's benefit) of *Mohism*, and *Zi-ran* and *Wu-wei* (natural organic state of living) of *Taoist*. Since each premise is constantly debated and then gradually developed into their own theories, and each theory involves a wide range of issues i.e. discussion of the social problems of all aspects of life. This thesis only focuses on the theories of daily utensils and views of *Confucianism*, *Mohism*, and *Taoism*.

4.1.3.2 The Thought of Mo Zi

As mentioned above, utensils for daily use in the pre-*Qin* era has penetrated in all aspects of people's livelihood and covers all basic necessities. At that time, the social and political thought reflected the color of the Doctrine of the People. Most of the thinkers generally held a positive view of the functions of utensils to the people's livelihood and modest attitude, i.e. "prepare materials for future use, utensils ready-made for all people", which is taken from *Zhou Yi Xi Ci* (the changes of Zhou• copulative). Considering the widespread mainstream tendencies that the then handicraft manufacturing services for dignitaries was in place and ignored the civilians totally, Mo Zi strongly advocated a model in which handicraft development completely served the people.

> 子墨子言曰，是故古者圣王制为节用之法，曰：'凡天下群百工，轮车（革贵）（夸包），陶、冶、梓、匠，使各从事其能'。曰:'凡足以奉给民用，则止'。诸加费不加于民利者，圣王弗为。

> *Mo Zi* said, this is why ancient sage kings made principles for economical

arrangements: 'letting *Bai gong*, every kinds of craftsmen who are professional at carriage, pottery, metallurgy, and carpenter fulfill their ability.' Secondly, 'where there is enough property, give it to people for using.' Those who ask more from people but do not serve people are not good emperors.[181]

Mo Zi thinks clothing, palaces, travel, utensils, all appearing in ancient times, were to meet people's needs for survival. In his articles 辞过 *Ci Guo*, used examples of four areas as common, namely palace, clothing, cooking, travel, and manufacturing, these indicated the most basic functions of daily utensils of the ancients in the start-up period of ancient utensils:

古之民未知为宫室时，就陵阜而居，穴而处，下润湿伤民，故圣王作为宫室。为宫室之法，室高足以辟润湿，边足以御风寒，上足以待雪霜雨露，宫墙之高足以别男女之礼。谨此则止，凡费财劳力，不加利者，不为也。

古之民未知为衣服时，衣皮带茭，冬则不轻而温，夏则不轻而清。故作诲妇人治丝麻、梱布绢，以为民衣。为衣服之法。

古之民未知为舟车时，重任不移，远道不至，故圣王作为舟车，以便民之事。其为舟车也，全固轻利，可以任重致远。其为用财少，而为利多，是以民乐而利之。

When the ancient people did not know the palace they lived in cave. But the wet underground did real harm to people, so the sage-king constructed the palace. The rules of the palace are as follows. The chamber is high enough to stop wetting, edge is enough to keep out cold, the roof is enough to hold snow, and

[181] Original text is from Sun Zhirang (1848-1908) *Mo Zi Jian Gu*, Proofread by Sun Qizhi, Book 1 (Beijing: Zhonghua Book Company, 2001), 161-162.

the palace walls should be high enough to keep the courtesy between men and women. If it is a waste of money and labor, and it is not beneficial, the palace should not be raised.

When the ancient people did not know clothes, they wore fur and belt straw. In winter, their wearing was not light but they were warm, while in summer their wearing was not light but they were cool. So, the women were instructed to plant polyandrous and make cloth, i.e. silk to make clothes for the people. This is the law of clothes.

When the ancient people did not know about cars or boats, the important task was steady work, and the far journey was not taken. So the sage-king made car convenient to carry out arduous tasks and reach places far away. This uses less money but creates more profit. People were happy and felt facilitated by this invention.[182]

From these words, we can see that the 'sage kings' are the inventor of the utensil technology. Mo Zi thinks the purpose of the creating system for utensils of ancient people is to solve people's basic needs for survival, the laws of the design was directly related to this purpose. For example, the height of the foundation of the house only needs to avoid moisture; sidewall thickness is enough to shelter the cold, the strength of the roof can withstand the pressure of the snow, in winter it is enough just to be warm; summer clothes should be cool. Therefore, to meet beyond these requirements, the design would waste financial resources without any favor to the people. Secondly, *Mo Zi* stressed that the utensil design should facilitate the body, that is to say, one should take full account of the created utensils should suit the physiological condition

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[182] Sun Zhirang, *Mo Zi Jian Gu*, 30-37.

of the people. For example, "sage makes clothes to cover the skin. That's enough. It is not to cater for the senses or to watch the foolish people dress up."[183] Moreover, security in the design of the cars and boats is included, "The car was for the people to do heavy tasks and go to places faraway. It is beneficial to use them, safe without hurting people, useful to reach the destination quickly. These are the merits of cars.[184]

And Mo Zi thinks the practical utensils are often reasonable for daily use. His famous saying: "strong cars and good horses, I do not think they must be expensive; the engraved strands of literary talent, I do not feel I like them more. Why is it so? They are supposed to be so". Judging from the organic theory of Mozi, he actually reminds us that strong cars and good horses or engraved strands of literary talent - all should first be of practical value. The day-to-day stuffs are reasonable, because they are common for being reasonable. Pay attention to its practicality, it is, indeed, reasonable, it is because of the reasonableness makes them have practical value.[185] He opposed the decoration which has nothing to do with the function on the utensils, and this leads to objects without usage. Mo Zi was opposed to design for purely decorative beauty and, he said:

> "当今之王, 其为衣服, 则与此异矣, 冬则夏清, 皆已具矣, 必厚作敛于百性, 暴夺民衣食之财, 以为锦绣文采靡曼之衣, 铸金为钩, 珠玉以为佩, 女工作文采, 男工作刻镂, 以为衣服, 此非云益暖之情也。单财劳力, 毕归之于无用也。以此观之, 其为衣服非为身体, 皆为观好。
>
> Today's kings, their clothes are different from before. Their clothes are warm in

[183] Sun Zhirang, *Mo Zi Jian Gu*, 33-34.

[184] Sun Zhirang, *Mo Zi Jian Gu*, 37.

[185] Hangjian, *Zhongguo gongyi meixu shi* (*China Aesthetic History of Crafts)* (Beijing: Renmin meishu chubanshe, 2007), 23.

winter and cool in summer. But they gather greedily from the civil society and violently snatch the property which people use to buy food and clothing, so as to make extravagant investment in clothing for themselves. They cast gold for the hook, gems for the Baldric. And the female workers made the pictures and male workers worked at carvings that make clothes beatiful. This is not useful to make the clothes warm. It is just a waste of money and labor, all of which ended up useless. From this perspective, they just made the clothes but not make it suitable for their body. This is just for the eyes.[186]

Having the origin of a craftsman, Mo Zi, with experience in the design and manufacturing, has simple and clear evaluation criteria to judge if the utensil is good or bad: whatever can effectively achieve the objects of their function is good, is worth recommending; Conversely, whatever cannot fully realize the functions, and the decoration is not useful to the utensil's function, and therefore, should be rejected?.

4.1.3.3 The Thought of Confusion: *Li* (Rites) is embodied in *Qi* (Utensils)

"Chinese attach great importance to harmony, this is to emphasise the *Li* (rites) logically, because the *Li* (rites) is to create a world order in a harmonious manner. 'Rites' is the core value of Confucianism," and the *Li* (rites) has become a very important word / concept in Confucius ethics.[187]

About the *Li* (rites), in *Li Ji • Li Qi* (*Book of Rites • ritual*), it is written: "rites means

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[186] Sun Zhirang, *Mo Zi Jian Gu*, 34-35.

[187] Ambrose King, *From the Tradition to The Modern* (Tai bei: Shi Bao Press, 1991), 62; *Qian Xuan • The Book of Rites• Li Yun*, (Chang Sha: Yue Lu Press, 2001), 314.

to come to the origin and repair ancient version, but not to forget their origin. That is

to say, when one is to pursue the origin of civilization, not forgetting the origin is the

fundamental purpose of regulating the rites." 左传 *Zuo Zhuan* featured a famous

saying of Confucius the repute and *Qi (*utensils*)* cannot be the dummies, they are what

the people with virtues pursue. Repute comes from credit, the credit is to keep *Qi*

(utensils), and *Qi* is to contain rites.[188]

In Pre-Qin era, in addition to purely technical principles, the *Bai gong* possessed

courteous nature. "The possession of rites" put forward by Confucius was a

fundamental principle of creation at that time. For example, in the agricultural

civilized ancient China, the *Li* (rites) emphasized on the use of utensils without

violating seasonal differences. "In rites, *Shi* (time) is most important."[189] So the use

of water, fire, gold, wood, and diet should obey the rule of *Shi* (time).[190]

Li- Yue Ling (the rites • monthly order) had set out the following: In the spring, the

emperor uses "sparse to achieve the purposes,", that is to say utensils pattern must be

simple and concise, and the patterns are mainly composed of straight lines.   In the

summer, the emperor uses "tall and sparse" that is to say, the utensils should be tall

and thick, less of tattooing, even no tattooing. In *Ji Xia* (季夏 the time between

summer and fall), utensils should be round and big.   In autumn, utensils should be

inexpensive and deep. While in winter, utensils should be closed (阂以揜). "This

system of using utensils reflects that in the pre-Qin time, decorative artifacts were

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[188] Zuo Qiuming, *Zuo Zhuan-The third year of emperor Cheng* (Shanghai: Shanghai Ancient
Books PublishingHouse, 1997), 720.

[189] *Qian Xuan • The Book of Rites*, the Application of Rites (Changsha: Yuelu Press, 2001), 314.

[190] Ibid, 295.

restrained by ritual rules, and in the selecting of utensils, one should make sure that the decoration and colors should suit the *Tian Shi* (the time of seasons)." [191]

The concept of decoration is restrained by the *Li* (rites), and the decorative patterns have also been delineated in the scope of etiquette. Duke of Zhou made the rites, and the system of objects were established, the craft decorative patterns and color systemis were fairly strict. The utensils of high level were made of precious materials and were allowed to use vibrant colors and exquisite decorative patterns. Material of the low level utensils was inferior and of impure colors, had fewer tattooing, which belonged to the lower classes in society. The level of craft decoration changed in accordance with the class it would serve[192]. The Confucian scholars believe that the difference in the hierarchical order in the use of materials of different social classes is reasonable; we can see the sense of hierarchy. Etiquette impacts the decorative concept of the pre-*Qin* craft.[193]

Thirdly, the Confucian has held the ideal of realizing *Wen-zhi-bin-bin* (To behave in a gentle way). Confucius said, "When quality wins the literary, it is wile. And when the literary surpassed quality, it is historical; Possessing both literary and quality means *Wen zhi bin bin* (Analects • Yong)." The surface meaning of *Zhi* (Quality) is the material, which is untouched; Confucius uses quality as a metaphor to mean people's rustic conscience, and the true feelings in human heart. *Wen* (text), defined as literary

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[191] Specific examples can be seen in *Book of Rites • ritual*, *Book of Rites • YuZao* where the emperor's costumes, the style of the crown are provided. Quoted from Qiu Chunlin 2009, 6-7.

[192] Quoted from Qiu Chunlin 2009, 6-7.

[193] Detail refers to Qiu Chunlin, *Sheji yu wenhua* (Design and culture) (Chongqing: Chongqing daxue chubanshe 2009), 7, 8.

styles, means the external form of each item. *Wen zhi bin bin* (To behave in a gentle way) means *Zhi* (Quality) and *Wen* (text) are parallel, although it is in terms of morality, and to achieve this morality, the *Zhi* (Quality) and *Wen* (text) should match properly.

While the explanation that *Zhi* (Quality) and *Wen* (Text) is a group of relative concepts used by scholars of modern technology and history, but the explanation means, if *Zhi* refers to the function of artifacts, *Wen* refers to artifacts modeling; if *Zhi* refers to the material used by the artifacts, the *Wen* can be added to material pattern and ornamentation, decoration or general processing technology; if *Zhi* refers to artifacts' functioning parts and features, *Wen* means attached decorative parts, and so on. It seems that Confucian's "cultural" idea of *Wen* and *Zhi* have rich connotations on the functions and forms of utensils.[194]

Confucius also called the piling and harmony of *Wen* (Quality) and *Zhi* (Text), as well as *He* (Harmony): "Among the purposes of ritual, harmony is precious. In he practices of ancient Kings, this is virtue (Analects: Xue Er). *Rites •the Mean* recorded:" Emotions not expressed are called inner-thought, if expressed and stopped in the middle of the way, the emotions are called harmony. It is said in Yang Yufu's book, *Lun Yu Shu Zheng* (The correction of Analects) that he claims: things interconnected are referred to harmony, not just emotions,... harmony, nowadays is used to mean suitable, appropriate and to the point, which expanded the scope of the *use of He* (Harmony, to mean interconnection and personal. *Creating ideal behavior of humans may well be one aspect of personal.* In this case, the proper *Wen* (text) and *Zhi*

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[194] Xu Biao, *Liang Song wuzhi wenhua daolun*, 268.

(Quality), and the beauty of *He* (Harmony) and its interconnection can also be applied to standard form and design of utensils.[195]

4.1.3.4 The Thought of *Zhuang Zi*: *Ji-jin-hu-dao* and *dao-yi-he-yi* (Skills are Close to *Tao* and *Tao* is Art as a a Whole)

The famous concept of *Qi*, Zhuang Zi[196] proposed that *Tao and art united in Qi* (utensils). His main idea about handicraft was *Ji jin hu dao* (skills are close to Tao) and *Tao yi he yi* (Tao and art make a whole), and he integrated this philosophy into specific forms of handicrafts. These ideas were represented by specific *Qi* (utensils) designs in the Kingdom of Chu, at that time and are still enlightening sources for present day design. Zhuang Zi and his followers were the co-authors of a well-known work called *Book of Master: Zhuang Zi*. The book contains numerous records on object making, production techniques throughout the pre-Qin period.

This thesis is based on the text of *Zhuang Zi, it* is one of the most important classical Daoist texts. The version of the text we have (thirty-three chapters) was compiled around 300 CE and is widely agreed to be the product of multiple authors. The chapters are usually divided into three parts: (1) the inner chapters (Chapters 1-7) whose author is considered to be the historical figure Zhuang Zi; (2) the outer chapters (chapters 8-22); and (3) the miscellaneous chapters (Chapters 23-33). The

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[195] Ibid, 206.

[196] Zhuang Zi (or Chuang-Tzu), (given name "Zhou": 375-300 BCE) was born in the Song state, a region roughly corresponding to today's Henan province in the Warring States period (475-221 BC). This information of Zhuang Zi comes from Bo Mou, *Chinese Philosophy A-Z* (Edinburgh University Press, 2009), 190-191.

authors of the chapters in the second and third parts are considered to be Zhuang Zi's followers. The most important chapters to gain an understanding of Zhuang Zi's thoughts include Inner Chapter 2 *Qi Wu Lun* (On the Equality of Things). The last chapter (Chapter 33) contains the first philosophical history of classical Chinese thought.[197]

In "技进乎道" *Ji-jin-hu-dao* (skills are close to *Tao*), Zhuang Zi came up with the concept 有道进至于道"*You-dao-jin-zhi-yu-dao*" (reaching *Tao* from the skills) basing on the relationship of *Tao* and *Ji* (*skills*)". "能有所艺者， 技也" *neng-you-suo-yi-zhe, ji-ye* (*What makes art is skill*) (*Tian Di* "Heaven and Earth*") , *"Craft"* and the *"art"* believed by Zhuang Zi are linked to each other, and both of them are different from *Craft* in the sense of natural science, or the simple crafts. To be open-minded, one is to achieve the stage of forgetting the artistic realm of mind and matter, which is to say, "*Reaching Tao from the skills*".[198]

A most well-known example to most of the Chinese people about *Reaching Tao from Ji (skills)* is the story about *Paoding* (cook) dissects the cow in the book *Yang Sheng Zhu* (The Health Master). A man called *Ding* was a cook. He was devoted to understand the composition of the cattle. In the process of dissecting the cattle, his

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[197] This introduction of *Zhuang Zi (Chuang Tzu)* makes a reference from Bo Mou, detail can see his *Chinese Philosophy A-Z* (Edinburgh University Press, 2009), 192. The translated version of *ZhuangZi* can be seen at *Chuang Tze: The Inner Chapters*, Graham, Angus C. trans. (London: George Allen & Unwin, 1981; Indianapolis, IN: Hackett, 2001) (with textual notes). And The Complete Works of Chuang Tzu, Watson, Burton trans. (New York: Columbia University Press, 1968).

[198] The Editing group of Chinese philosophy history, *Chinese Philosophy History*, Volume A, (Beijing: People's Press, Higher Education Press, 2012), 122.

hands were in accordance with his shoulder and his foot and knee met with the cattle, the body of cattle seems be one in his mind. The overall drift was coordinated and beautiful. *Liang Hui Wang* (King Hui of Liang Kingdom) was amazed at the sight of the *Liberation* scenes he saw, which was knife, cattle and person, three-in-one performing a high art.

The cook of poor skills broke the off the bone with knife, thus the knife was useless after a month; the cook of good skills cut flesh with a knife, thus a year later the knife was blunt. And *Paoding* (cook) dissects the cow basing on its body's the natural joints' texture and gap, entering into these gaps with thick blade, so he would not break the bone or cut the flesh. He can easily decompose the cattle completely. *Paoding*'s knife had been used for 19, and he had decomposed thousands of cattle, but it still was similar to the new knife in terms of grinding and sharpness. For the cook of poor *Ji* (skills), the knife was just a tool; for *Paoding*, the knife was more than a tool, and it was an art activity of liberation with a knife.

Thus, Zhuang Zi essentially distinguished "Technical" and "skill". "Craft" refers to the use of "mechanical" - engaged in the activities of the object; while the "technical" is defined from the terms of tools and instruments. The so-called "technical" put forward by Zhuang Zi means "art". "Craft, is with matter, and matter is with justice, justice is with *De*（virtue）, *De*（virtue） is with Tao, and Tao is with the heaven" (Heaven and Earth). Art is always within the organic relation with the people and things, that is *De*（virtue. Craft is not to butcher the matter, but to let the authentic moral principles and *De*（virtue）of the heaven present through the experience of the physical and mental. This "craft" is not human ingenuity, but the natural process of

unity with Heaven. Zhuang Zi said: What is preferred is Tao, which is got through craft. Yang Sheng Zhu (The Health Master) contemplatedThat "'Craft' must go beyond the mechanical activity of the instrumental and become Art, and Art in the end must be in accordance with the Tao. Craft is guided by Tao, and in fact is living in Tao. When presented, it states, as it is, Tao is more art than the skill."[199]

But there is a process for *Ji* (skills) to enter into *Tao*. *Paoding* (cook) describes the three stages of the dissection of a cattle. "At the beginning, when I discomposed the cattle, what I saw there was nothing but cattle. After three years, I did not see the whole cattle.   Now, I see the cattle with my mind but not my visual sight. My senses can stop but my mind is still working."

The concepts - *Shi* (at the beginning), *San Nian Zhi Hou*（after three years）and *Fang Jin Zhi Shi* (now) - show the three realms of *Paoding*'s dissectionof cattle. When at the beginning, *Paoding* (cook) and cattle were within the external relations of the subjective and objective opposition. So *Paoding* was *Paoding*, and the cattle was the cattle. For *Paoding,* it was impossible to start with facing the cattle philosophically, "seeing nothing but cattle". After a long time of practice, human and cattle were merged with each other, what *Paoding* saw was no longer the object of cattle, but inherent natural structure and texture of the cattle, and this is steted as "Not to see the whole cow." Now, not only the cow was no longer seen, but *Paoding* also disappeared. In this case, human and the cattle are all forgotten, and the mind and the cattle were in the original unity in its natural line. Chef *Ding* and cattle are assimilated into Heaven,

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[199] Editing group of Chinese philosophy history, *Chinese Philosophy History*, Volume A, (Beijing: People's Press, Higher Education Press, 2012), 122-123.

it is not *Paoding* dissecting the cattle, but *Shen* (spirit or mind) did, so the "My senses can stop but my mind is still working".

The three stages were successively progressive, from Craft to Art, from Art to Tao. On the one hand, it is the artistry into Tao, the process of artistic creation is superb; on the other hand, the *Ji* (skill) does uniquely reveal *Tao*, reaching the harmony between man and nature, indeed, this is the realm of *Ta*o.[200] In the designation, the mastery of natural materials, textures, and the art of manufactured object is also through three processes, from *Ji* (skill) to Tao, this is the real realm of design.

4.1.4 Conclusion

It is important to note that in the Zhou Dynasty (1100-22BC), various philosophical debates and dialogues stimulated political reform of the social structure, economic strategy, and military improvement, and were expressed in different aspects of life. Various perspectives such as Confucius' *Li* (rites), Lao Zi's *Tao* (ways), and Mo Zi's *Li* (utility) provided practical ways in which the social structure, perceptions of the Universe, and the practice and method of design could achieve the aim. They were significant in constructing the Chinese philosophical system, not only ideologically, but also in practical terms.

It can be seen that in the pre-Qin era, product making or manufacturing was always seen an important issue worthy of serious discussion because it determined people's livelihood and the country's economy. The emergence of new materials, innovative techniques, and new inventions for tools were essential in raising work efficiency at

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[200] Ibid,123-124.

every level of society, which not only increased agricultural production, but also boosted the country's military power, leading to economic and political stability. The government managed and organized the handicraft industries in a systematic and rational manner. Large-scale manufacturing and corporations of specialized craftsmen emerged. The concept of *Bai gong* (hundred craftsmen), whereby different kinds of craftsmen work together on the same manufacturing task, also gained control in this period. The systematic form of management and manufacturing recorded in *Kao Gong Ji* became a uniquely important government handbook on the handicraft industries.

The foregoing review of literatures in the Zhou period demonstrates that a knowledge system on everyday tools was well-established on philosophical grounds that were reflected in the handicraft industries and were closely linked with political, economic, and social construction. The manufacturing of everyday tools in the social economy led to the emergence of government-led industry and extended to the handicraft industries based on the family unit, which benefited the accumulation of knowledge and experience of design. The various philosophical schools of thought provided different perspectives on *Qi ju* (utensils and tools) and enriched the knowledge system on the design and manufacture of daily tools.

Therefore, Warring States is apparently at the initial stage of the history of the development of our process of creation. However, from the 8th century BC to the 3rd century history, we find that the Spring and Autumn Warring States reached a peak period of development. At that time, people were accustomed to some concepts of manufacturing activities, but these ideas were also put into words to express the core

activities. In ancient China people have gone through hundreds of years of manufacturing history. Although the pre-Qin scholars did not form *Qi* (utensils) and the process issues were not put into thinking or discussion as the central theme, there is, no doubt, that it is their idea that had a great impact on the concept of *Qi* (utensils) and its manufacturing.[201]

4.2 Representative Descriptions of *Everyday Tools* in Song Dynasty (960-1279 AD)

This section investigates literature from the Song Dynasty by adopting a kind of methodological approach that addresses the issue of how scholars of that time studied "daily tools". This approach is different from that taken in examining literature in the pre-Qin period (section 4.1), both in terms of purpose and actual research content. These two historical periods featured a different historical outlook in terms of research motivation, attitude, interest, and interpretation. If philosophers in the pre-Qin period were the founders of thought, then the scholars of the Song Dynasty were their successors.

The hundred schools of the Zhou Dynasty in particular provided original thinking and practical perspectives on society and individuals, and their scholars intended to convey their doctrines through social construction and reform. In comparison, the scholars of the Song Dynasty admired the cultural achievements of the "three dynasties" and attempted to revive the classic system of rites and canons with the support of several Song emperors whose political needs motivated a great interest in

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[201] Xu Biao, *Cheng qi zhi dao: xan Qin gongyi zaowu siig yanjiu* (*The Way of Making Qi: Research of Craft and Object Creation in Pre-qin*)(Nanjing: Nanjing shifan daxue chubanshe, 1999), 18.

ancient objects and literature. The study of ancient objects then blossomed and led to a series of descriptions in the middle Song before being transformed into a specialist subject termed *Qi-wu-xue* (the study of ancient objects).

As a result, a high-level culture with a research motivation of methodological presentation was generated in the world of the Chinese literati. Many descriptions of ancient objects appeared in the academic movement of *Qi-wu-xue* (the study of objects), most of which center on bronze, pottery, weapons, and antiques. Although this field of study mainly emphasized external factors such as the verification of origins, form of documentation, material categorization, aesthetics, and style, rather than the inner nature or utility of objects or even techniques employed in making them, it has still contributed to subsequent research in the Ming and Qing dynasties. *Qi-wu-xue* started a tradition of a methodological approach to studying antiques and had a large impact on scholars in later generations, its influence extending even as far as contemporary scholars.

This section comprises three parts. The first part introduces the historical background; the second reviews the tradition of *Qi-wu-xue* (the study of objects); in the third section, the literature relevant to *daily tools*, Shen Kuo's (1031-1095) *Sketchbook of Dream Brook* as the representative work is addressed and evaluated.

4.2.1 Historical Background

"Between ... 960 and ...1127, China experienced unprecedented economic development, perhaps also in world history. It depended on a combination of commercialization, urbanization, and industrialization that has led a comparison of

this period in Chinese history with early modern Europe six centuries later."[202] The Chinese economy had grown spectacularly for several centuries. During the Song Dynasty, technology became highly advanced in such fields as agriculture, iron-working, and printing. The population grew rapidly during this time, with more and more people living in cities. The improved agricultural technology promoted food output; the development of commodities exceeded that previously seen, and craftsmen in the handicraft industries took their technology to a new height.

In this period, the invention of tools reached a crescendo and was the hallmark of the time. The four great inventions of ancient China – the compass, gunpowder, paper making, and printing – became widely used in people's lives. A large number of educated men showed an interest in engineering matters and the physical world during this period. One of these men was a senior official named Su Song (1020-1101), who became famous for designing and constructing a mechanical clock tower of almost 40 feet in height by adding a chain-driven component to the existing water-powered clock. The clock told not only the time of day, but also the day of the month. In contrast, there were fewer studies conducted in which daily tools were recorded and depicted systematically.

4.2.2 The Origins of *Qi-wu-xue* (the study of objects)

During the Han Dynasty, spanning nearly eight hundred years, bronzeware was continually unearthed, although collection records were seldom found. This situation changed in the Song Dynasty. The loyal courts and literati encouraged the study of ancient objects. Song Taizu, the founder of the Song Dynasty (its first emperor),

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[202] Philip D. Curtin, *Cross-Cultural Trade in World History* (Cambridge: Cambridge University Press, 2008), 109.

believed that　the turbulence of the Five Dynasties was caused by the incompleteness of the *Li Zhi* (system of rites and canons), an important concept in the construction of social order and rule over the people. He attempted to revive the canons and institutions of the Xia, Shang, and Zhou dynasties in order to facilitate politics. The North Song emperor Song Huizong ordered his chancellor to edit 《宣和博古图》 *Xuan-he-bo-gu-tu*, which incidentally promoted the collection of and research into bronze.

The politics of the time encouraged the literati to study ancient objects. Underlying this tendency was the philosophical tradition of Confucianism and research into the revival of the "three dynasties". This ideology even influenced *Qi-wu-xue* (the study of objects) in the Ming and Qing dynasties. *Qi-wu-xue* research was targeted at bronze relics and analyzed their utility, function, form, decoration, inscription, and modeling methods. The categorization of bronze formed the basis of typology, a research method adopted even by today's academics.

Generally speaking, the collection of and research on ancient objects originated with the officials Ou Yang-xiu and Liu Chang in the earlier Song. They compiled monographs of collections and built a sound basis for future endeavors, their efforts being mostly presented in Ou's *Ji Gu Lu* (Records on Collecting Antiques, 1060) and Liu Chang's *Xianqin Gu Qiwu Lu* (The Outline of Pre-Qin Ancient Objects, 1063). The objects listed in these catalogues include daily tools, ritual objects, weapons, and measuring tools, etc., from the Qin and Han to the Song dynasties. The study of ancient objects gradually developed into a formal research activity termed *Gu-qi-wu-xue* (the study of ancient objects).

Lu Dalin's *Kao-gu-tu* (*Research on Archaeology Illustrated*) (finished in 1092, North

Song) was a landmark work in *Qi-wu-xue* (the study of ancient objects). Every object was depicted in detail in terms of its size, capacity, weight, decoration, and inscription, with an illustration placed beside the text for comparison. The depiction also comprised the place of excavation, collection source, date of manufacture, and region. As a pioneer in the organization of information on bronze, *Kao-gu-tu* finally set up a system for classifying bronze by period and influenced the pattern of following studies on ancient objects.

Painter Li Gong-lin presented some significant viewpoints on the use of ancient objects. He indicated that the form and decoration of ancient objects were not only for the purpose of visual appreciation, but also illustrated moral and mental meaning, individual and group morals, and social value. This concept indicated that the interpretation of ancient objects should emphasize both natural meaning and object meaning.[203]

Compared with Li Gonglin's understanding of ancient people's intentions in making objects, Lu Dalin extended this field of study to a new level; he established the link between ancient objects and their age. In his theory, an object symbolizes an era as well as a society and demonstrates peoples' thoughts and aesthetic preferences. This approach is different from previous interpretations of ancient objects (like *Jin-Shi-Xue*, metal-stone inscriptions) in which the research content includes the object's name, shape, inscription, decoration, and substance. Instead of the rational and logical scrutiny of objects, an alternative approach based on sensitive perception emerged in the study of ancient objects, and this trend has largely influenced subsequent scholars'

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[203] Xu Biao, *Liang Song wuzhi wenhua yinlun* (The introduction of material culture in Song dynasty) (Nanjing: Jiangsu Meishu chubanshe, 2007), 210.

interpretation of such objects.[204]

In a radical change, the literati were dynamic in their appreciation of antiques. Individuals focused on personal experience by observing shape, decoration, material, texture, craft techniques, traces of age, etc., thus gradually improving their experience and knowledge of objects. This approach was exhibited by literati who became connoisseurs of antiques.[205]

4.2.3 Shen Kuo's (1031-1095) *Sketchbook of Dream Brook*[206]

The original version which this thesis quoted from was: *Wen-Yuan-Ge's Si-ku-Quan-shu*, subpart 10, category 3 of Zhajia (A category with miscellaneous works), *Sketchbook of Dream Brook* (Hongkong Di zhi Press 2002); Annotations were referred to Hu Daojin's the *Correction of Sketchbook of Dream Brook,*[207] and Wang Xiang's *Notes to Sketchbook of Dream Brook.*[208]

4.2.3.1 Literature Introduction and Significance

Shen Kuo's (1031-1095) *Sketchbook of Dream Brook* was published in the *Song Zhezong* (the seventh emperor (1085-1100 BC) of Northern Song dynasty, the year of

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[204] Ibid, 212.

[205] Ibid, 213.

[206] This text is based on Hu Daojing's the *Correction of Heavenly Creations*, Shanghai Ancient Books Publishing House, 1987 edition. Song people have already given a high evaluation of the *Sketchbook of Dream Brook*, and a lot of scholars in the Southern Song Dynasty referred and debated about it.

[207] Hu Daojin, *Correction of Sketchbook of Dream Brook* (Shanghai Ancient Books Press, 1987).

[208] Shenkuo, *Notes to Sketchbook of Dream Brook,* annotated by Wang Xiang's (Zhejiang: Jiangsu University Press, 2011).

Yuan you (about 1091). [209] After the *Sketchbook of Dream Brook* finally came out as a book, it was engraved and then spread throughout the country, cited and praised by authors of the time. For example, Wang Bizhi's book *Sheng Shui Yan Tan Lu*, which was wrtitten in the second year of *Shaosheng* (1095)[210] period, was once repeatedly cited the *Sketchbook of Dream Brook*'s contents. It is the second reign designation of Song dynasty's emperor Song Zhezong. Zhang Lei, one of Su-Shi's four disciples once said, "Shen Cunzhong's *Sketchbook of Dream Brook* was very popular in recent years, what he recorded indeed has its bright points." [211]

Classics of Chinese Scientific History also recorded a large number of records of natural science and social sciences; Chinese historian of ideas, and natural historian of philosophy Professor Feng Qi said in *Logic development of Ancient Chinese Philosophy* that, "*Sketchbook of Dream Brook* has made many creative contributions in many fileds like Mathematics, Astronomy, Geography, Physics, Chemistry, Biology, Medicine, Engineering Technology etc., it is a work of academic encyclopedia)".[212]

The style of *Sketchbook of Dream Brook* is traditional Chinese *Bi-ji-ti* (*Note-style*). *Bi-ji-ti* (*Note-style*) refers to notes, which is a nature of memory, and was taken down by the author himself after questions or matters being discussed with guests or friends at ordinary times, and in the brief preface of *Sketchbook of Dream Brook*, Shen Kuo talked about the reason why this book was called *Dream Brook* Essays:

予退处林下，深居绝过从，思平日与客言者，时纪一事于笔，则若有所晤

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[209] The year of *Yuanyou* (1086-1094) is the first reign title of Song dynasty's emperor Song Zhezong.

[210] The year of *Yuan you* 绍圣 (1094-1098).

[211] Quoted from Hu Daojing and Jin Liangnian,*Meng xi bi tan daodu* (Introduction to *Meng xi bi tan*)(Beijing:Zhongguo guoji guangbo chubanshe, 2011), 1-5.

[212] Ibid.2.

言，萧然移日。所与谈者，唯笔砚而已，谓之《笔谈》。

> Shen Kuo said the actual conversations what he talked about were just writing brushes, ink sticks, paper and inkstones, so he called it *Dream Pool Essays*. Stories that involved fundamental policies or court anecdotes cannot be recorded personally or privately; what recorded were daily life jocular stories that was casually talked about, not the interpersonal relationship, but, in effect it contains everything such as street talks and vulgar customs.[213]

But in fact, Shen Kuo's *Dream Brook Essays* was decidedly different from the orthodox note-style, Chen Renzi of *Yuan dynasty* also pointed out that *Dream Pool Essays* was not what is known as ordinary "notes".[214] Shen Kuo took observation, verification and comparison – these methods were employed to discuss natural science, and the natural phenomena, so things discussed were different from the traditional note-style. As far as note-style is concerned, there are three different note-styles in Song dynasty: (a) Shen kuo's note-style is one of them, and the other two are (b) Hong Mai's 《容斋随笔》*Rong Zhai Sui Bi* and (c) Wang Yingling's "《困学纪闻》*Kun Xue Ji Feng*. Relatively speaking, the *Qing Dynasty* paid more attention to *Kun Xue Ji Wen*, which is mostly due to the orientation and interest of orthodox classics textual criticism. But in modern times, the popularity of *Sketchbook of Dream* in the world is far above Hong and Wang's work, mostly due to the great importance that modern people attached to science and technology.

Sketchbook of Dream did not list the category technology and science individually, because in ancient China, in addition to astronomy, geography, medicine, agriculture

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[213] Hu Daojing and Jin Liangnian, *Meng xi bi tan daodu* , 5-6.
[214] Ibid.13.

and weapons - these government-controlled disciplines, other inventions were often not regarded as knowledge, not to mentioned obtaining its due attention. Ancient China paid more attention to classics and history in these ancient books and records, while inventions and skills were put in the second place.[215] Therefore, the writing perspective, and contents of *Sketchbook of Dream Brook* existed a little dissimilarly, with the orientation of orthodox classics textual criticism.

Shen Kuo was also affected by the Confucian orthodox education for twelve years, and his knowledge, and self-cultivation also inherited from Mencius,[216] but what made him different from other literati of the same age was the attention he paid to objects invention, design and skills discovered in the folk, and this was closely related to his great interest and thoughts towards the skills, instruments and people's inventions since he was a little child. When he was about 30 years old he proposed in his book that:

> "至于技巧、器械、大小尺寸、黑黄苍赤，岂能尽出于圣人!百工、群有司、市井、田野之人莫不与预焉。"[217]

> "The skills and tools, big or small, black or yellow, grey or red, are not all from the Sage! All the craftsmen, government officials, townspeople and peasants have taken their part in it."

In his subsequent twenty or thirty years of his political career, he paid more attention

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[215] Ibid.7.

[216] Wang Jinguang and Wen Renjun, "scientific achievements and contributions of Shen Kuo" in *Research of Shen Kuo*, edited by Song History Research Room of University of Hangzhou (Zhejiang People's Press, 1985), 125-126.

[217] Shen Kuo (1031-1095), *Chang Xing Ji* (19 Juan) (Hongkong: Di zhi wen hua Publication, 2002), Volume 19.

to skilled people and achievements of every industry or trade, and his records about this field became the unique materials of technological history and design history.[218]

Therefore, the important significance that *Sketchbook of Dream Brook* brought to the design history and the study of design science also lies in his detailed observation of the surrounding things, which was different from *Jing* (classics) that the *Han dynasty*'s scholars had emphasized, but he focused more on *Wu* (Objects), the daily things or objects that can be seen everywhere in the real life.[219] The author not only meticulously observed the natural phenomena, the ancient and contemporary utensils, but also based his observation and study on the ancient books, such as the Ancient costume (hu clothing, Vol.1, Story 1), Weapons (crossbow, volume18, utensils), Ancient musical instruments (materials used to make Qin, Vol. 5, Temperament 1), Ancient painting (volume 17, paintings and books). Ancient books were used by him to study other cultural objects, the detailed observation about their ages, functions, shapes, patterns, and words, and then these were examined, corrected and traced to their sources, if necessary.

Shen Kuo said that various kinds of cultural objects were made for their own special reasons, neither rashly nor thoughtlessly made. The study of cultural objects was not for appreciating and enjoying, but for their essential reasons and knowhow what makes them in a certain way. He verified documents with unearthed cultural relics, and corrected fallacies of ancient books and prevalent customs, enriched the historical research, what's more, the author's view of sciences, skills, objects and epistemology, were also shown in different parts of different volumes in the book.

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[218] Wang Jinguang and Wen Renjun,110.

[219] Hu Daojing and Jin Liangnian, *Meng xi bi tan daodu* (Introduction to *Meng xi bi tan*) (Beijing: Zhongguo guoji guangbo chubanshe, 2011),14.

After five hundred years, Song Ying xing of *Ming Dynasty* wrote *Tiangong kaiwu* (Heaven's Craft in the Creation of Things) (also an encyclopedic-style technology work), and before its publication he said regretfully: "The *Tao* of the two volumes *Guan Xiang* (Observation of astronomical phenomena), *Yüe Lü* (Temperament) was too profound and beyond my understanding, I cannot figure it out for myself, so I deleted them during the process of block printing."[220] Shen Kuo eruditely made his *Sketchbook of Dream Brook* become an academic text of high value, and the reference material of important historical documents of history,[221] archaeology, art history, history of science and technology, design history, material culture and other disciplines.

4.2.3.2 Text Analysis

In this chapter, the observation and study of the text of *Sketchbook of Dream Brook* mainly focused on discussions of relevant utensils, objects designing, techniques, objects creation or thoughts. Because the discussions of *Utensils* were scattered over different volumes, therefore, the text analysis selected some representative *Tiao-mu* (clauses and sub-clauses) to analyze and discuss.

In this encyclopedia style *Dream Pool Essays*, in three volumes, Shen Kuo respectively, there were discussions of the Books and Paintings (Vol. 17), Skills (Vol. 18) and Utensils (Vol.19). In the Utensils Volume, he commented on some archaeological and cultural objects, and spoke highly of ingenious designing of some utensils. For example, he mentioned a 玉臂釵 *Yu-bi-cha* (*Jade hairpin, formerly worn by women for adornment*) and thought its design was the most skillful of all ancient

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[220] This description is at the volume order of *Tiangong kaiwu*. Quoted from Wang Jinguang and Wen Renjun, 126.

[221] Wang Jinguang and Wen Renjun, 157-173.

objects.

曾見一玉臂釵，兩頭施轉關，可以屈伸，合之令圓，僅於無縫，為九龍繞之，功侔鬼神。世多謂前古民醇，工作率多鹵拙，是大不然。古物至巧，正由民醇故也，民醇則百工不苟。後世風俗雖侈，而工之致力不及古人，故物多不精。[222]

Once I saw a Jade hairpin in the tomb of *Six Dynasties Period* (A.D 220-581), on each end of the hairpin there was a rotary gear, it can bend and stretch freely, and become a round without any gaps when it is folded together. This ancient object was ingeniously made, which should be due to the simple quality of ancients and their simple folk customs, thus the craftsmen were conscientious and rigorous when making such objects. And the workmanship of later generations was not as good as the older ages, therefore, the utensils designing and making can never be exquisite like ancient objects.

In the Skill Volume, Shen Kuo introduced his elder brother Shen Pi's skills and experiences in making excellent bow, that is, the six key points of making an excellent bow, how to judge the quality of a bow and reasons why the bow is good or not.

"予伯兄善射，自能為弓。其弓有六善：一者性體少而勁，二者和而有力，三者久射力不屈，四者寒暑力一，五者　聲清實，六者一張便正。凡弓性體少則易張而壽，但患其不勁；欲其勁者，妙在治筋。凡筋生長一尺，乾則減半，以膠湯濡而梳之，復長一尺，然後用，則筋力已盡，無復伸弛。又揉其材令仰，然後傳角與筋，此兩法所以為筋也。凡弓節短則和而虛，

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[222] Shen Kuo (1031-1095), *Meng xi bi tan zhu* (26 Volume), Wang Xiang annotated (Zhejiang: Jiangsu University Press, 2011), 424.

（虛為挽過吻則無力。）節長則健而柱,（柱謂挽過吻則木強而不来。節謂把梢禆木,長則柱,短則虛。）節得中則和而有力,仍絃聲清實。凡弓初射與天寒,則勁強而難挽;射久、天暑,則弱而不勝矢,此膠之為病也。凡膠欲薄而筋力盡,強弱任筋而不任膠,此所以射久力不屈、寒暑力一也。"[223]

Shen Kuo proposed in the *Way of Making Bow* that: First, we should bend the material used for the bow towards the direction that is opposite to the direction we will be drawing the bow, and then attach the reinforcement material to improve the elasticity of the bow. This process is consistent with the effect of today's compound beam pre-stressing force. As another example, he put forward *Jiao Yu Bo*, which means to reduce the glue's residual deformation caused by the increasing temperature and time under certain pressure, and to narrow the gap between bowstave and bowstring, thereby avoid the rapid decline of bow weight.

These specific making processes are related and analyzed through the making of bows from the angle of elastic body materials and mechanical property of structure. Not until the seventeenth century, the British artisan, Hooke (Robert Hooke, 1635-1703), has finally put forward Hooke's law, and laid the foundation for the material mechanics and elastic mechanics.[224]

In the book, Shen Kuo also mentioned that the *Zaowu* (objects creation) designing should be associated with factors like geographical environment, materials, craft and other issues. Among them, choosing an excellent material is of great importance, for a

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[223] Ditto, 387.

[224] This translation makes the reference of: Shen Kuo (1031-1095), *Meng xi bi tan zhu* (26 Volume), Wang Xiang annotated (Zhejiang: Jiangsu University Press, 2011), 388.

bow, we should choose the material according to its 理 *Li* - lines of the material, rather than by manual correction and then making it meet the standards. We should not only consider the features of material lines, but also need to pay attention to a bow's partial torsional phenomenon, which is caused by the relationship between material lines and the stress-strain.

> 弓所以为正者，材也。相材之法视其理，其理不因矫揉而直中绳，则张而不跋。此弓人之所当知也。

> The reason why the bow is upright is because of its material. When choosing the material, attention should be paid to its material lines, and never correct it to meet the standards, otherwise it can stretch but cannot keep balance. One must know this if one wants to make a bow.

About materials, Shen Kuo has specially mentioned the importance of materials when making 古琴*Gu Qin* (anancient seven-stringed plucked instrument).

> "琴虽用桐，然须多年木性都尽，声始发越。予曾见唐初路氏琴，木皆枯朽，殆不胜指，而其声愈清。"（琴材，卷五，乐律一）

> *Qin* is made from Tung-tree, but the older the wood, the louder the sound produced. I once saw a *Qin* of *Chu Lu* family, of early *Tang* dynasty, the wood has already withered and rotten, even could not bear the weight of one finger, but the sound was very clear (Materials of making *Qin*, Vol. 5, Temperament 1)

The Guchin-making is very fastidious about the suitable materials. Because the sound is not only depending on the string vibration, but also on the resonance of materials, we use the withered and rotten materials to make *Qin*, just in order to make the

materials accept the vibration easily. Shen Kuo's skills of making *Qin* provided valuable reference for the materials-choosing of making any objects.[225]

Shen Kuo attached great importance to the skills and experience of utensil designing and making, in the Skills Volume, he specially recorded Bi Sheng's Movable-type printing. What was interesting was not only that he introduced the famous craftsman Yu Hao's architectonic monograph *Mu-jing* (*a book about housing construction*),[226] but also recorded a story in which Yu Hao gave directions to craftsmen to build a tower, to express the importance of craftsmen's superb experience for designing and making a craft (these two records about Yu Hao, also became the few ancient materials written by scholars and preserved from the history of Chinese architecture).

> 錢氏據兩浙時，於杭州梵天寺建一木塔，方兩三級錢 帥登之患其塔動匠師云未瓦上輕故如此，乃以瓦布之而動如初，無可奈何密使其妻見。喻皓之妻略以金釵問塔動之因。皓笑曰，此易耳，但逐層布板訖，便釘之，則不動矣。匠師如其言，塔遂定。蓋釘板上下彌束，六幕相聯入胠篋，人履其板，六幕相持，自不能動。人皆伏其精練。[227]

Once in the Northern Song dynasty, craftsmen built a wood tower but found the tower was shaking when built up to two or three floors. Originally, they

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[225] Hu Daojing and Jin Liangnian, *Meng Xi Bi Tan Dao Du* (The introduction of *Meng Xi Bi Tan*) (China Radio International Press, 2009), 63 - 64.

[226] Yu Hao, is a famous Chinese architects in the late tenth Century, good at building tower and high-rise building, responsible for the construction of Kaifeng Kai Pagoda Temple. According to Wang Jinguang, Wen Renjun's point of view, Yu Hao mentioned in this story played an important role in building the tower, but the plot was obtained from hearsay, not reliable. See Wang Jinguang, Wen Renjun, "Scientific achievements and contributions of Shen Kuo" in *Researc of Shen Kuo,* edited by Song History Research Room of University of Hangzhou (Zhejiang People's Press, 1985), 112.

[227] Shen Kuo (1031-1095), *Meng Xi Bi Tan* (26 Volume) (Hongkong: Di zhi wen hua Publication, 2001), Volume 18.

thought this problem will be solved after the tower was covered with tiles, but it did not work, then they tried to consult the famous craftsman Yu Hao for suggestion and he recommended that: "After each floor was covered with floorslab, then they should be secured with nails, thus the problem of tower body shaking was solved, because of this, people all admired him for his refined capability.

Unlike the previous books of arts and crafts, Shen Kuo not only pays attention to explore the experience of folk objects creation, and adopt methods like observation, reasoning, test etc.,[228] to carry on his research, but also clearly distinguished *Ji* (skill) and *Li* (principle). *Ji* is a method or skill gained from production practice and experience, while *Li* is a knowledge system of nature, which cannot be easily grasped by general craftsmen.

4.2.3.3 Evaluation

Despite the lack of tool-related studies, Shen Kuo (1031-1095) presented a valuable perspective on daily tools in his work *Sketchbook of Dream Brook*,[229] which was ignored by mainstream scholars of the time. His work is an encyclopedia based on independent investigation with 26 volumes, 17 categories, and 609 items. He made significant contributions to a diverse range of fields such as astronomy, mathematics,

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[228] Yuan Yunkai, *The Achievements of Natural Science and Scientific Thoughts of Shen Kuo*, *Magazine Nature*, 1996, 43.

[229] Shen Kuo is especially known for the explanation of natural phenomena found in his famous 11th-century book, *Meng-Xi-Bi-Tan* (*Sketchbook of Dream Brook*) written in 1086-93. He presents his theories on a variety of topics in this work.

physics, geography, economics, medicine, chemistry, biology, architecture, engineering, and archaeology mainly arising from his personal interest in science and technology. His achievements in archaeology[230] provided plenty of first-hand collections and object-based observations, and he took a realistic and natural approach towards ancient objects. He observed, investigated, and conducted scientific experiments on the objects he unearthed.

In his writings, Shen Kuo placed a high value on folk inventions and everyday tools and expressed his appreciation of creative inventions, techniques, and craft skills. Shen Kuo also highlighted folk experiences in making daily tools, such as he explained in detail how Bi Sheng made movable clay in the first attempt at printing and how carpenter Yu Hao[231] compiled the *Mu Jing* (Timberwork Manual), an architectural work, along with some other inventions of anonymous folk. He commented that "a most exquisite object" was typically created owing to "the simple personalities of the folk laborers" and the "meticulousness of the handicraftsmen"; he also proclaimed that "The skills and tools, big or small, black or yellow, grey or red, are not all from the Sage! All the craftsmen, government officials, townspeople and peasants have taken their part in producing it."[232]

The Skill Volume of *Sketchbook of Dream Brook* has recorded contents of architecture,

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[230] The Sketchbook lists twenty-odd items relating to archaeology, including a classification of "objects", with fifteen items relating to antiquarianism and seven relating to ancient tomb excavation and cellar storage.

[231] Yu Hao (fl. 970 AD) was an eminent Chinese structural engineer and architect during the Song Dynasty period (960-1279).

[232] Xia Nai, *Kaoguxue lunwen ji* (Archaeology Treatise) (Shijiazhuang: Hebei jiaoyu chubanshe, 2000).

movable-type printing etc., and the Utensils Volume recorded discussions of some unearthed cultural objects, but viewed from the proportional length, most of the space is held by mathematics and medicine. The book also involved calligraphy, and chess, therefore, it cannot be regarded as the monograph of science and technology. And the scientific and technical materials contained in *Dream Pool Essays* were scattered over each kind of category. Hu Daojing believed that, *Book of Diverse Crafts* is the earliest surviving comprehensive book which recorded the handicraft industry, but the description of handicraft industry is too simple and short. *Sketchbook of Dream Brook* is a wide-ranging handwriting works, which involves knowledge of industry, as well as agriculture and it has volumes that involved technology and utensils, but the thoughts of science and technology were scattered over the whole book, thus, it can't be called a monograph of craft skills.[233] But these craft skills and experience that scattered over in his book are of great significance to the study of design science.

4.2.4 Summary

The study of ancient objects was somewhat limited during the Song Dynasty. As modern scholar Craig Clunas has pointed out, "The ancient object study reflected deficiencies in the record-keeping by bringing to light examples of objects mentioned in the classics but the focus was bounded to the text with the support of objects, while the inscribed object was merely a mute witness of the past and of little use for serious antiquarian study."[234] From another perspective, the significance of *Qi-wu-xue* (study

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[233] Hu Daojing's notes, *Correction of Heavenly Creations* (Shanghai: Shanghai Classics Publishing House, 1987).

[234] Craig Clunas, *Empire of Great Brightness: Visual and Material Cultures of MingChina, 1368-1644*(London: Reaktion Books, 2007), 95.

of ancient objects) for contemporary research on daily tools and their design, is publications such as the printed catalogue on the woodblock of vessels provided such visual resources as the shape, material, and basic function of the vessels for subsequent craftsmen; the texts not only explored the origins and technical evaluation of the wares, resulting in the a richer understanding of ancient objects, but also demonstrated their value as art and antiques. These three modes of recording unexpectedly resulted in an integrated picture of ancient objects. The above method and pattern of analysis influenced the analysis of daily tools in early Chinese craft history and became highly important reference points.

4.3 Representative Descriptions of *Qi-ju* in the late Ming Dynasty（1550-1644）

4.3.1 Historical Background

As has been said, in the *Warring States period*, *Kao Gong Ji (Book of diverse crafts)* has put forward *bai-gong*'s position, content, as well as the affirmation of skills from the society. The six occupations are *wang-gong* (princes and dukes), *shi-da-fu* (Scholar officials), *bai-gong* (hundreds of craftsmen), *shang-lü (Travelling Businessman)*, *nong-fu* (Farmer) and *fu-gong* (Needlework specialists). [235] *Confucianism*, *Mohism*, *Taoism,* of pre-*Qin* period, all put forward their own theories about *bai-gong* (hundreds of craftsmen) and daily *zao-wu* (objects' creation). However, since the *Han Dynasty,* Confucian unification of all thoughts had appeared (Dong Zhongshu advocated suppressing the Hundred Schools of Thought and making Confucianism the state ideology) and said 德成为上，艺成为下(*The achievement of moral cultivation come first and then comes skill achievement*). So the traditional

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[235] Wen Renjun, *Annotation to Kao Gong Ji* (Shanghai: Shanghai Classics Publishing House, 2012), 1.

mainstream culture treating moral as inferior to craft throughout history, was the kind of idea that had no positive affirmation towards the social value of craftsmanship, and did not give craftsman a reasonable social status.

However, to the late Ming Dynasty, because of various facet of influences of changing social structure, economy, politics, the view towards *bai gong*'s (hundreds craftsmen) value and skills have also been greatly changed. These changes make the designing of everyday tools of the Ming dynasty quite unique. In the middle of Ming dynasty, the status of *bai gong* were re-evaluated and large numbers of good works and excellent design emerged. Some scholars participated in the discussion of everyday tools' design, which stimulated the publications on design. It seems that scholars' attitudes to *Bai gong* were positive and affirmative. As Tian Zibing's wrote, Ming Dynasty is the mature period of Chinese craft art that possessed the basic characteristics of modern craft and art.[236]

In the mid and late *Ming* dynasty, the openness of society, the unique form of economy, and the development of handicraft and daily utensils designing all have its peculiarity in China's history. The reason is the result of various factors, including the social, political, economic, and the influence of all kinds of ideological trends. But the main reason is the social structure change in the late Ming dynasty (1550-1644), which leads to the change of lifestyle. Under the great change of social structure and social culture, people's lifestyle, material culture, the production and design of *Qi-wu* (utensils) - all reached at a very prosperous situation.

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[236] Hang Jian, *Zhongguo gongyi meishu shi* (History of Chinese craft art) (Beijing: Beijing gongyi meishu chubanshe, 2007), 115.

There are several following reasons: Firstly, the change of social structure and social culture; Secondly, the demand of consumer social consumption brought by the city's prosperity, and the trend of collecting articles of present dynasty led to the production of excellent craftsmen and works. The literati's' intervention, discussion and participation in the design made the design of objects develop towards a somewhat elegant culture. Finally, the open thought at that time, such as the influence of "the thought of people's everyday-tools", induced a group of literati to actively improve the value of *Bai-gong* (hundreds of craftsmen).

Firstly, the social economic change leads to the change of social order; the society was in the process of transformation of both social structure and values. And there had been a huge economic, social and cultural change in late *Ming* dynasty. The joyous and prosperous situations typical of commercial economy, directed the regional and national markets to boom, and this resulted in rapid industrial growth, large scale of changes in agricultural field, and astonishing population growth. To the beginning of the seventeenth Century, as a result of multi-aspect and multi-level's of accumulation, appeared to bring in a new way of life and this gradually became the representative of the new culture.[237]

He Liangjun (1506-1573) of Hua Ting (Today's Jiangsu province), in the second half of the sixteenth Century, had observed that the society at that time has experienced a radical change when compared with the fifteenth Century, for example, about sixty or seventy percent of the farmers gradually left the land to seek other occupations, if there were some occupations available for them. Merchants and craftsmen had increased three times in number comparedwith the previous time. The general

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[237] Zhang Chunshu and Luo Xuelun, *Ming Qing Shidai zhi shehui jingji jubian*, 111.

situation of economic life, at that time, was that the agriculture had declined, while the industry and commerce had risen. However, the traditional Chinese social political theory is based on agriculture, and the industry and commerce was only a supplement. That is the hierarchical concept of 本末 *Ben Mo*, which refers to *the whole course of an event from beginning to end, here Ben is the basis and Mo is the last important thing*. For He Liangjun, attending to trifles and neglecting the essentials will shake society to its foundations. However, the economy neither faded nor was in chaos, instead, it became more and more thriving and prosperous. And society was in the process of transformation of social structures and values.[238]

Secondly, the prosperity of city economy, and the rise of new towns, in some rich southern Chinese areas, people began to pay attention to the quality of daily life dress, diet, residential garden, resulting in handicraft industry and commercial prosperity. With the development of commodity economy and the market in the *late Ming Dynasty*, bought the consumer society, the pursuit of luxury taste become citizens' purpose. [239] Consumption demand stimulated not only the development of craftsmanship, but also design level of everyday-tools and craft level. These demands and technical innovations, formed a virtuous circle, encouragingthe creation of skillful craftsmen in various fields.

Celebrities were seeking the good handmade works, ordinary citizens followed their example, and tried to learn some tricks to recognize of appreciate craft objects. In the

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[238] From Zhang Chunshu, Luo Xuelun, 2008, page 111. Original: He Liangjun (1506-1573), *Si you zai cong shuo* (Beijing: 1959), 111-112, 312; and *Siyou Cong Shuo Zhaichao*, filed in *Cong Shu Jicheng Chubian* (Changsha: 1937), pp. 171-172, 354-355.

[239] See Wu Renshu, *Pinwei shehua: wan Ming de xiaofei shehui yu shidafu* (Taste luxury: the consumption society and literati of late Ming dynasty (Beijing: Zhonghua shuju, 2007) 40-54.

Jiangnan (regions south of the Yangtze River) region, bureaucratic gentry established their private gardens, which further reflected the material and cultural prosperity at the time. In addition, the rise of a trend for acquiring collectables was favored by many people. But the favor for collecting things in the late *Ming* dynasty are different from the *Song* dynasty in one aspect, that is the collectible was not only limited to the antiquities' collection, the crafts made by famous craftsmen or objects of new craft were also favored by collectors. The reason why those objects could compare favorably with antiques was due to their excellent craft skills.[240]

Thirdly, a change in thoughts was apparent, because *Li xue* (Neo-Confucianism) makes people feel bound and repressed, so Wang Yangming (1472-1528), a philosopher in the *Ming Dynasty*), avoided *li* (reason) and made a fuss about the relationship between *xin* (mind) and *wu* (object).[241] Wang Yangming's heart and mind theory propagated its beliefs on a large scale, some later generations who learned Wang's theory took the pragmatist position, thinking Confucian moral self-cultivation as emphasizing the achievements and gaving affirmation to *Bai gong*'s social value. Wang Gen (1483-1541), Li Zhi (1527-1602) and other people from *Tai zhou School of thought*, which is derived from the Wang Yangming School of thought, have put forward the idea *Bai xing ri yong zhi dao* (*Tao* of people's every day-use).

Wang Gen said, 即事是学，即事是道 (working is learning, working is *Tao*). He advocated that the Confucian learning cannot be separated from the practice of

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[240] Qiu Chunlin, *Sheji yu wenhua* (Design and Culture), 161.

[241] This is still the attention of idealism and metaphysical philosophy, but from the aesthetic point of view, Wang's philosophy of the mind still freed the *Li xue* (a Confucian school of idealist philosophy of the Song and Ming Dynasties).

production and living. He also said, 圣人之道，无异于百姓日用，凡是有异者，皆谓异端也 (*Tao of sages, is tantamount to the common people's everyday use, those who are different, are called heathens*). Wang Gen made a new interpretation of *Tao*; *Tao* is neither the illusory, and an inexpressible *Tao*, nor the Confucian orthodoxy of saints, but the *Tao* of common people's everyday use. This kind of utilitarian learning manner affirmed that *Bai gong's* social status cannot be ignored.

Later generations who learned Wang's theory, had a breakthrough on Confucian moral thoughts. In fact, they proved that inside the thoughts of Confucian school, which have always occupied the orthodox social thoughts, emerged a new perspective towards the skills of *Baigong*, which combined knowledge with practice, utility with *Baigong's* value. These thoughts influenced the understanding of scholars on the daily *Baigong* objects, for example, under the influence of Wang Yangming's concept of 四民异业而同道 (people engaged in different kinds of jobs but engaged in the same pursuit), [242] Zhang Daishou bravely expressed his respect for the handcrafts and excellent craftsmen in his work entitled *Taoan Mengyi*. This kind of respectful consciousness to the craftsmen's labor and their skills reflected the change of scholars' view of art in *middle-late Ming dynasty*.

Fourthly, the published worksin *Ming* and *Qing* Dynasties have the most abundant documented literatures in the Chinese design history, and these documented literatures can be roughly divided into the following three types, based on their attributes:

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[242] Wang Yangming (1472-1529), *Wang Yangming quanji*, edited by Wang Shouren, Wu guang et al., Vol. 25 (Shanghai: Shanghai Guji chubanshe, 1992), 940.

(1) Topical writings, such as the book specially designed for 《园治》*Yuan Zhi* (Art of Garden Building) (written by Ji Cheng of *Mimg* dynasty), the monograph of paint 《髹饰录》*Xiu Shi Lu* (Art of Painting) (Huang Cheng of *Ming dynasty*), books about purple objects, such as, Zhou Gaoqi's 《阳羡茗壶系》*Yang Xian Ming Hu Xi* of *Ming* dynasty, Wu Qian's 《阳羡名陶录》*Yang Xian Ming Tao Lu* of *Qing* dynasty, works of decoration, like 《装潢志》*Zhuang Huang Zhi* (Records of Decoration, written by Zhou Jiazhou in *Qing* dynasty), books written to state study objects, Tu Long's *Wen Ju Ya Bian* (the Elegant Edition of Writing Materials), books written to discuss embroidery, 《绣谱》*Xiu Pu* (Embroidery Book, Ding Pei of *Qing* dynasty), and for ceramics like *Tao Shuo* (Study of Pottery , written by Zhu Yan of *Qing* dynasty).

(2) Writings for Connoisseurship includes *Wenren* (literati)'s Connoisseurship for everyday objects that contain the content of appreciation. Such as the following books of *Ming* dynasty:

Gao Ling's 《燕闲清赏笺》 *Yan Xian Qing Shang Jian*, Wen Zhenheng's Chang Wu Zhi (Superfluous Things), Dong Qichang's 《筠轩清秘录》 *Jun Xuan Qing Mi Lu* and《骨董十三说》*Gudong Shisan Shuo* (*Thirteen Speeches on Boutique)*, Chen Jiru's 《拟古录 》*Ni Gu Lu*, Cao Zhao's 《格古要论》 *Ge Gu Yao Lun*, Zhang Yingwen's 《清秘藏》*Qing Mi Cang*, Lv Zhen's 《宣德鼎彝谱》*Xue De Ding Yi Pu*, and Li Yu's 《闲情偶寄》 *Xian Qing Ou Ji* of Qing dynasty etc. This kind of writings are similar to the Zhao Xihu's 《洞天清录》*Dong Tian Qing Lu* (Record of the Pure Registers of the Cavern Heaven) of *Song* dynasty, but because many factors, such as, aesthetic taste, there exists little difference between the

accuracy of discourse analysis and profundity of such representative writings like *Chang Wu Zhi* (Treatise onSuperfluous Things) and Li Yu's *Xian Qing Ou Ji* etc. There are also some similar records and discussions in the *Wenren* (literati)'s Connoisseurship for everyday objects, such as Zhang Han's 《松窗梦忆》 *Song Chuang Meng Yi*, Xie Zhaozhe's 《五杂俎》 *Wu Zha Zu* etc.

(3) Comprehensive writings such as Song Yingxing's *Tian Gong Kai Wu* (Heavenly Creations), Xu Guangqi's *Ji He Yuan Ben* (Elements of Geometry) and *Tai Xi Shui Fa* (Introduction to the Western Water Conservancy Science), Wang Zhi's *Yuan Xi Qiqi Tushuo* (Description's of Far Western New Odd Objects), and *Xin Zhi Zhuqi Tushuo* (Description of Newly Created Objects). In these comprehensive writings, the books are not only related to product *Technology*, *Craft*, but *Products* also are involved with *ao-wu* (Creation of Objects), *She-ji* (design) etc. The above classifications are not totally accurate, for example, Tu Long's *Wen Ju Ya Bian* (the Elegant Edition of Writing Materials) can be regarded as connoisseurship writings and topicality writings.[243]

For the research of traditional everyday-tools and utensils in this period, according to the above categories, this paper chose two of the representative texts about everyday-tools and utensils to analyse. The first one is the classic works of *Wen ren* (literati)'s connoisseurship for everyday objects: *Chang wu zhi* (Treatise on Superfluous Things). The second is the classical works of people's livelihood in terms of daily utensils and utensils - Song Yingxing's *Tian gong kai wu* (Heaven's craft in the creation of things).

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[243] Li Yanzu, *Wisdom of Design--Outline of Ancient Chinese Design Thought History*, Journal of Nanjing Arts Institute Fine Arts & Design. 2008, Vol. 4, pp27-32.

4.3.2 *Wen ren* (literati)'s Connoisseurship for Everyday Objects

The *Ming and Qing* dynasties' social economic ways were affluent and sufficient; there did appear a new life attitude towards the wasteful, luxuriou, enjoyble and recreational life, in such social conditions. After the *Song* dynasty artifacts' research tradition, collection of artifacts had become a fashion, the building of gardens also reached the peak.[244] These gardens, from the building materials to the subtle details, everything related to the architecture required best design and craft. At that time, *Wen ren* (literati) felt disappointed about the political morality, so they turned to build their own artifical worlds to achieve their dream of Hermit, and, in fact, some of them were addicted themselves to the landscape architecture art,[245] to build the Culture of the *Shufang* (Study room).

At this stage there appeared a number of delectable discourses published about Garden, Architecture, Bedroom Design, Gardening, Study Objects and Design of Painting and Calligraphy, Stone Inscription. And these include: Gao Lian (*Zun Sheng Ba Jian* published in 1590), Tu Long (1542-1608), Chen Jiru (1558-1639), Wen Zhenheng (1585-1645), Ji Cheng (1582-1644), *Yuan Zhi* (Art of Garden Building) of 1635, Li Yu's (1611-1680) *Xian Qing Ou*. These kinds of books are usually attributed to the connoisseurship work, because these kinds of books are all *Wen-ren* (literati)'s notes, and became the classics for the later study of *Ming's* literature, material culture, and design research.

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[244] During 1644-1646, there was a brief pause, but at the beginning of the Qing dynast it continued to flourish. See Zhang Chunshu, Luo Xuelun, 2008, 121.

[245] Zhang Chunshu and Luo Xuelun, *Ming Qing Shidai zhi shehui jingji jubian*, 119-120.

The Chinese scholars were called *Wenren* (literati), because they are comprehensive universal geniuses of literature, art, appreciation, and aesthetics; They are good at essay writing, poetry, and painting, thus, they possess the ability to appreciate ancient calligraphy and painting, stone inscription, *utensils*, and know more about designing (*what is the beautiful design, it is a design with excellent size*). Some *Wenren* even took hands-on design and creation work, such as Ji Cheng, and Wen Zhengheng participated in the garden making, Li Yu invented the warm chair etc. In the late Ming period, the interaction between the *Wenren* and craftsmen has stepped into a close and harmonious stage that was never there throughout history. As Clunas' observes of Ming materials culture and publications:

> The period of the sixteenth century to the fall of the Ming dynasty in 1644 was one in which the relationship between the manufactured things of the material world and the social order favoured by the power-holding elite was of particular concern to them. The placing of this concern in the foreground of public debate within this elite was achieved partly through the actual practices of social interaction (through the clothes they wore, the gifts they gave and the vessels they chose to use at the table) but also partly through the production of texts which were published, sold and circulated through the literate minority of society.[246]

Wenren's in *Ming Dynasty* played a role of leading the trend of design of daily utensils, and guided good and bad taste (elegance and vulgarity). *Wenren* kept a good

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[246] Clunas, Craig, *Superfluous Things: Material Culture and Social Status in Early Modern China* (Cambridge: Polity Press, 1991), 8.

interaction with craftsmen,[247] some of them even participated in the design work, such as Wen Zhengheng, Li Yu etc, and their tastes and opinions about *Qi-ju (utensils)* and garden design were published and then played an important role in promoting the mature *Zaowu* (creation of objects) in the late *Ming dynasty* period. The thought of *Tao of people's everyday use* influenced the group of *wenren* in the late *Ming* and early *Qing* dynasty; they expressed their respect for the excellent work and Manual Skills. The Literati actively elevated the social value of *Baigong's* skills; this was literati's change towards skill view in the late *Ming* dynasty.

"陆子冈之治玉，鲍天成之治犀，周柱之治镶嵌，赵良壁之治梳，朱碧山之金银，马勋、荷叶李之治扇，张寄修之治琴，范昆白之治三弦子，俱可上下百年，保无敌手。但其良工苦心，亦技艺之能事。至其厚薄深浅，浓淡疏密，适与后世赏鉴家之心力、目力，针芥相对，是岂工匠之所能办乎？盖技也而近乎道也矣。"[248]

The Jade-making of Lu Zigang, Rhinoceros-making of Bao Tiancheng, Mosaic-making of Zhou Zhu, Comb-making of Zhao Liangbi, Silver and Gold-making of Zhu Bishan, Fan-making of Ma Xuan and He Yeli, *Qin* (musical instrument) Qin-making of Zhang Jixiu, 三弦子 *San-xian-zi* (a three stringed plucked instrument) San Xian Zi - making of Fan Kunbai, - there were no people matching their skills in 200 years. Objects made with care and thought, also encompass excellent skills. Its thickness and depth, density, can just match the later connoisseurs' mind, eyesight, and the question remains: can this

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[247] Detailed discourses refers to Qiu Chunlin, see the interactive base between the scholars and craftmen of Ming dynasty from Tao An Meng Yi, page 154-163; and *Design and Culture* (Chongqing: Chongqing University Press, 2009).

[248] Zhang Dai, *West Lake dream -Memory in Tao cottage*, Xia Xianchun, note (Shanghai: Shanghai Classics Publishing House, 2001), 19.

kind of excellent work be done by merely the craftmen? Indeed it is because that the skill is also related to *Tao*.

Zhang Dai pointed out that, the reason why *utensils* made by craftsmen can meet the literati connoisseurs' requirements and got their affirmation is that these craftsmen possessed the same eyesight, thought, sense of beauty and knowledge structure as connoisseurs, so it can meet *Wen-ren* (literati)'s requirements and expectation. In that sense, Zhang Dai has expressed the craftsmen's state of 技进乎道 *Ji-jin-hu-dao* (When a skill, reached its peak, then further forward it can get close to *Tao,* namely the law of heaven and earth). And this is the long-term interactive results between the craftsmen and *wenren* on aspect of object designing and making. Literati, as design critics and connoisseurs, together with craftsmen led the design trend at that time. The social interaction between Literati and craftsmen is one of the most important factors that made the utensils-making, gardens, and architecture reach a design level that was beyond the later generation's range. Yi xing purple sand pot, *Ming's* hardwood furniture, garden designing has already become the Chinese classic works in the Chinese design history.

4.3.3 Wen Zhengheng's (1585-1645) *Chang wu zhi* (**Treatise on Superfluous Things**)

Influenced by Gao Lian's work, Wen Zhengheng's (1585-1645)[249]*Chang wu zhi* (Treatise on Superfluous Things) of 1615-1620 was composed of twelve chapters on material objects in which *Qi-wu* were described as natural objects as well as artificial objects and were later subdivided into utensils and other objects for pleasure. This

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[249] Wen Zhengheng, also called Qimei, from Changzhou (in today's Suzhou, Jiangsu province). Born in the thirteenth year of Ming emperor Wanli (AD 1585), died in the first year of Nanming Hongguang (i.e. the second year of Qing Shunzhi, 1645 A.D.).

book encompassed the whole range of *Qi-ju*, such as vessels and utensils, table and couches, clothing, etc. which were harmonized in a garden design by Wen Zhengheng.[250] According to Clunas' evaluation, "Wen's treatise on elite material culture … reveals the degree to which participation in debates about taste and style was accepted as a legitimate form of elite activity.[251]

Chang wu zhi was explicitly mentioned in 《四库全书总目提要》*Si ku quan shu zongmu tiyao* (Summary of comprehensive table of contents to the Imperial Collection of Four),[252] "far to the origin of Zhao Xihu's (1170-1242) 《洞天清录》 *Dong tian qing lu*, near to Tu Long's *Kao pan yu shi*."[253] Compilation officers like Ji Jun also pointed out that the origin had come from Zhao Xihu's (1170-1242) *Dong Tian Qing Lu*, Dong Qichang's *Jun xuan qing bi lu* etc. and only slightly changed its style, and its origin also came from the *Song Dynasty*, so it was kept and prepared for later use. There are four volumes of *Kao pan yu shi.*, and the first volume is the introduction to the edition, stone inscriptions, the second volume is the evalution of paper, ink, inkstone, painting and *qin* etc, the last two volumes recorded and included all objects and clothes, such as incense, tea, furnace, bottle, and living room, bonsai,

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[250] Studios and retreats; flowers and trees; water and rocks; birds and fish; calligraphy and painting; tables and couches; vessels and utensils; clothing and adornment; boats and carriages; placing and arrangement; vegetables and fruit; incense and teas.

[251] Clunas, Craig, *Superfluous Things: Material Culture and Social Status in Early Modern China* (Cambridge: Polity Press, 1991), 21.

[252] There are Jingbu, Shibu, Zibu and Jibu in*Si Ku Quan Shu*.

[253] Dong tian qing lu ji, *Record of the Pure Registers of the Cavern Heaven* written in the first half of the thirteenth century by Zhao Xigu, there are ten sections, covering antique qin zithers, antique inkstones, antique bronze vessels, curious rocks, table screen, brush rests, water vessels for the dest, antique manuscripts and calligraphy, antique and modern rubbings of stone inscriptions, and antique paintings.

and *Wen-fang* (Chinese study room).

All the listed title indicates in this book are trivial, but yet were related and analyzed in detail. Its contents reflected literati's living life, study tools, reference materials, as well as the literati artistic creation of objects and aesthetic tendencies. The difference is that *Chang wu zhi* (Treatise on superfluous things) appreciated utensils from ancient to contemporary implements, utensils' design focusing on the description of the material culture, the balanced statements for garden making, architecture, interior design, furniture, painting and calligraphy, birds and fish, flowers and trees (in parks or gardens), and balanced structural arrangement. And it not only showed the material culture and literati's portrayal of life, but also gave a guiding function to the creations of Literati and craftsmen. And it also served a consummate guide for the current design to understand the design, life-style, literati's taste, and rules of *Objects*.

About the definition and the meaning of the term *Chang wu* used in the title of the book, Wen Zhenheng's friend, Shen Chunze, gave the explanation in the preface in *Chang wu zhi*.

> "夫标榜林壑，品题酒茗，收藏位置图史、杯铛之属，于世为闲事，于身为长物，而品人者，于此观韵焉，才与情焉,何也？抠古今清华美妙之气于耳、目之前，供我呼吸，罗天地琐杂碎细之物于几席之上，听我指挥，挟日用寒不可衣、饥不可食之器，尊瑜拱璧，享轻千金，以寄我慷慨不平，非有真韵、真才与真情以胜之，其调弗同也。"[254]

> Success in the government examination, and apprediated rocks and trees, wine-tasting and tea-drinking, collection of famous paintings, other objects and so on, these are trivial things and cannot help us to defend the others' coldness in

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[254] Chen zhi, *Chang wu zhi zhu shi* (The annotation of *Chang wu zhi*) (Nanjing: Jiangsu kexue jishu chubanshe, 1984), 10.

winter, starvation in everyday life. They are just sundries and useless matters, but for me, they are precious though redundant things; and I regard them as invaluable like fine jade and buy it at all cost. Through these precious but redundant things, we can know whether a person has charm, talent and affection. And these who don't have charm, talent and affection cannot handle things well, so naturally, the style is also different.

What needs to be clarified is that, *Chang wu* (originally it refers to redundant things, later also refers to anything decent) here is not its literal meaning of 'redundant things'. Song Xu of Ming dynasty pointed out in his book *Song Shi Jia Gui Bu* that *Chang wu* is: Everything between heaven and earth, produced anywhere and anytime, and encompassing wonder and beauty loved by god. They might be things existed in the past but disappear now, or things only existing today, we cannot list them all. Wen Zhengheng took the word *Chang wu*, which originally meant redundant things, and actually referred to, in his book, not as redundant things, not common things or objects, but projection and deposition of literati's choice, personality and will. From life perspective, generally, they are not the daily things necessary for living, utensils are not used for production, food is also not the necessity to fill the stomach, so they are called *Chang wu* (originally it refers to redundant things, later also refers to anything decent). It may actually be useless, but an era of literati had set up all their spiritual life on it.

From another perspective, *objects* or *things*, is a word that covers a broad sense. *Wu* refer to natural as well as artificial things, for the Chinese literati, the natural plants cannot be separated from artificial plants, garden is the best harmonious unification of these two things. And the perfection of artificial things lie in its natural state, such as

rockery, pen, ink, paper, inkstone all made from natural materials, and makes full use of the materials. So in Wen Zhengheng's twelve volume *Treatise on Superfluous Things*, the Natural objects include Flowers and Trees (in parks or gardens), Water and Stones, Fowl and Fish, Vegetable and Fruits (volume 2, volume 3, volume 4 , and volume 11), Artificial objects, like House and Dwelling (volume 1), Books and Paintings (volume 5), Chairs and Beds (volume 6), Utensils (volume 7), Cloths and accessories (volume 8), Boat and carriage (volume 9), Arrangement (volume 10), Incense and Tea (volume 12). Among them, *Wei-zhi* means the arrangement of furniture. *Qi-ju* means the specific, signified utensils, refered to daily utensils in this book, especially the articles used in Chinese study.

Zhang Wu Zhi was divided into twelve volumes:

Vol 1. House and Dwelling

Vol 2. Flowers and Trees—43 chapters

Vol 3. Water and Stones - 18 chapters

Vol 4. Fowl and Fish—11 chapters

Vol 5. Books and Paintings - 26 chapters

Vol 6. Chairs and Beds—20 chapters

Vol 7. Utensils—58 chapters

Vol 8. Cloths and accessories—10 chapters

Vol 9. Boat and carriage—4 chapters

Vol 10. Arrangement—11 chapters

Vol 11. Vegetable and Fruits—27 chapters

Vol 12. Incense and Tea—24 chapters

The precise exposition and argumentation in *Chang wu zhi*[255] should be regarded as the summary of Wen's own practical experience; it is the reflection of the materialization of his design thoughts and the portrayal of his design ideas. Shen Cunzhe found Wen's design concept in the preface of *Chang wu zhi*:

"予观启美（文震亨）是编，室庐有**制**，贵其爽而倩、古而**洁**也；花木、水石、禽鱼有经，贵其秀而远、**宜**而**趣**也；书画有目，贵其**奇**而逸、隽而咏也；几塌有**度**，器具有**式**，位置有**定**，贵其**精**而**便**、**简**而裁、**巧**而**自然**也……[256]

To view Wen Zhengheng's book, house and dwelling have its own system, valued for its comfort and prettiness, old and clean; flowers and trees, waters and stones, valued for the beautiful and remote scene, suitable and interesting; books and paintings, valued for its leisure and strange contents, pretty and meaningful; beds and chairs are of right balance, objects have fixed styles and positions, valued of its refined but convenient design, simple, fine and nature....

Words marked out with boldface, such as 制*Zhi* (system), 洁*Jie* (clean), 宜*Yi* (suitable), 趣*Qu* (interesting) 度*Du* (measure), 式 *Shi* (style), 定*Ding* (fixed position), 精*Jing* (refined), 便 *Bian* (convenient), 简*Jian* (simple), 巧 *Qiao* (fine), 自然*Zi ran* (nature) etc., These wordsprecisely expressed the principles of design.

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[255] The literature text selected from *Wen yuan ge Siku Quanshu* (electronic edition), Hong kong: Digital Heritage Publishing Limited, 2002. Also referred Chen Zhi's collation and annotation and Yang Chao's revision: Chang Wu Zhi Jiao Zhu, Jiangsu science and Technology Press, 1984.Wrote by Wen Zhenheng, Translated by Wang Youyuan, Hu Tianshou: Tu Ban Chang Wu Zh (Chongqing University Press, 2008).

[256] Chen zhi, *Chang wu zhi zhu shi* (The annotation of *Chang wu zhi*) (Nanjing: Jiangsu kexue jishu chubanshe,1984),11.

Dwelling room, utensils, natural objects and Books and Paintings etc. are some examples. These elements should be harmonious and unified, and coordinated with each other. Wen Zhenheng has expressed his reviews towards the ancient and modern daily utensils' design and making, in the opening chapter of Vol 7. Utensils,

"古代器具讲求合用，不惜工本，因此制作及其精致，不像后人这样马虎粗糙。从钟、鼎、刀、剑、盘道笔墨、纸张，古人都以制作精良为好，不只是看中金石铭刻、书画题记。今人见闻不广，又一味趋附时尚，以致不能分辨雅俗；更有人只求华丽，不知古雅，居室器具，无一风雅，所谓陈设，不敢认可。"[257]

The ancient objects must meet the requirements; and spare no expense in making the objects, so the work is very delicate and even exquisite. Clock, vessel, knife, sword, pen and ink, paper, must be delicate and exquisite, only meeting such requirements can it be excellent work, not just engraving golden words and/or prefaces. Today's people only have limited knowledge, but blindly ingratiate themselves with fashion, as a result they cannot distinguish between elegance and vulgarity; someone who just pursues the gorgeous and beautiful look, knows nothing about classic beauty and elegant taste. Furniture and objects he owns are all without literary pursuits, the so-called arrangement of furniture cannot be appreciated.

Wen Zhenheng also gave an analysis and made comments on the making of beds and chairs in Vol 6. Chairs and Beds:

古人制作几、榻，长短、宽窄不一，安放居室，古雅美观，而且，坐卧依靠，都很方便、舒适。茶余饭后，用此阅览古籍，观赏书画，陈列文物，摆设佳

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[257] Chen zhi, *Chang wu zhi zhu shi* (The annotation of *Chang wu zhi*) (Nanjing: Jiangsu kexue jishu chubanshe,1984), 246.

肴果蔬，躺卧歇息都可以。现今制作的，只求雕绘装饰，以取悦世俗时尚，古时形制荡然无存，实在令人叹息。[258]

The ancients made desks, beds with different length and width, placed in the dwelling room, beautiful and elegant, besides, it was convenient and comfortable to sit, lie, and sleep on. At our leisure, we can use it for reading the ancient books, appreciating books and paintings, and displaying cultural objects, and placing fruits and vegetables, lying and sleeping to have a rest. Today's production, only pursues the carvings and decorations, for the purpose of pleasing the secular fashion, but the ancient shape and form have already gone, more is the pity.

The so-called *Ji Ta* (Chairs and Beds), *Ji* is a small desk, such as *Cha-ji* (*Tea table*), and *Ping-ji* (*Triangular Decorative Furniture*); *Ta* (*a long, narrow and low bed*) Ta is similar to the bed, and smaller and shorter than the bed, and was called in the book *Chang xia er bei ri ta* (a long, narrow and low bed is called *Ta*) in the book *Shiming* (The Explanation of Names). The wooden furniture were commented in the -Vol 6. Chairs and Beds include *Ji* (small desk), *Ta* (a long, narrow and low bed), *Yi* (chair), Zhuo (table), *Deng* (stool) etc., all together twenty kinds of furniture. The late Ming Dynasty was the golden age of Chinese furniture history; the famous so-called "Ming-style furniture" is a product of this era.

But from the above (Wen's discussion), we can see that Wen's ideological tendency is of preferring things of classical beauty as well as elegant taste while disparaging the current, at the same time. We can also see Wen's purpose of setting the Vol 6. Chairs and Beds, which is to advocate the ancient style which was utility oriented, and fight

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[258] Ibid.

against the prevalent gingerbread consumption trend. In the view of the scholars, the main function of furniture is to show the history, read books and appreciate paintings, lay out sacrificial vessels and used for eating and sleeping, it is suitable and comfortable to both sit and sleep. But the indoor furniture set, the first essential meaning is *Quaint and lovely*, in fact, old and elegant are the aesthetic standards of indoor furniture design and selection, and *Wu bubian shi (nothing uncomfortable)* is a measuring standard of the practical value. For example, he proposed that:

> 榻，座高一尺二寸，屏高一尺三寸，长七尺有奇，横三尺五寸，周设木格，中贯湘竹，下座不虚，三面靠背，后背与两傍等，此榻之定式也。有古断纹者，有元螺钿者，其制自然古雅。忌有四足，或为螳螂腿，下承以板，则可。近有大理石镶者，有退光朱黑漆、中刻竹树、以粉填者，有新螺钿者，大非雅器。他如花楠、紫檀、乌木、花梨，照旧式制成，俱可用，一改长大诸式，虽曰美观，俱落俗套。更见元制榻，有长一丈五尺，阔二尺余，上无屏者，盖古人连床夜卧，以足抵足，其制亦古，然今却不适用。

Ta (*a long, narrow and low bed*), the seat is of one foot two-inch tall, and the screen is of one foot three-inch tall, seven feet long, three feet five-inch wide, surrounded by wooden squares, and with bamboos passed through the middle of the body, thus making it stable and secure, with three seat backs (the back seat back and side seat backs), this is the fixed style of Ta. Then it is finished in natural and elegant style, with all kinds of ancient decorative patterns engraved or painted on it.. It can also have four legs, or just like legs of mantis, with a wooden board bearing under it.   In recent ages, there are *Ta* inlaid with marble, and red and black paint, with bamboo and trees engraved in the middle of it, and then decorated with powder (maybe gold powder), may well be fixed with new

screws and coins, but this cannot be called elegant objects. Others like terukan, red sandalwood, ebony, pear are made into Ta with its old styles, it sill can be used, both beautiful at the same time conventional. The Ta (*a long, narrow and low bed*), of *Yuan dynasty*, which is fifteen feet long, two feet wide, without screen covering overhead, so the ancients could sleep on it the whole night, but this kind of style is very old, not at all suitable for today's needs.

What he has listed are the commonly used objects of the literati study. It is the reflection of cultural accomplishment, aesthetic quality, and also the key of adjusting *Chang wu* (The Superfluous Things) by making it convenient for every day living. Wen had a good command of secrets that are hidden in it: the first is the set of arrangement of objects, *Wei zhi* (arrangement) has its own rules, namely the so-called Method of placing and arranging things; the second is that the method at least has either complicated or simple style, and these two styles have nothing in common with each other; the third is the difference between the four seasons, the arrangement in winter and summer are not in the same league; the fourth is the determination and arrangement of the indoor display position, and it must be arranged according to the structure and function, the criterion is *Ge you suo yi* (Each has its suitable place).

The fifth is its effects of setting and display should be like a picture, deliberate its position just like a painter's composition of a picture, eventually forming the picturesque effect as only a picture can do; Sixth, just like a picture, it does not only refer to the its form, but also the disposal and arrangement of objects, indeed forming a kind of space atmosphere, a tree with one stone, one desk and a small bed, the matter not lies in its number, but the 神骨具冷 (to the bone and soul, here used to

describe the amazing and breathtaking arrangement of furniture) effect brought by its charm andingenuity , forming an impressive power that directly touches the depth of heart. Therefore, Wen pointed out that the real dwelling of the celebrities and the persons of refined taste are such that when crossing the portal, an elegant and unique air blows on the face, but if there are chickens and pigs in front of your eyes, then no matter how elegant the stones and flowers of backyard are, this scene still cannot compare even with the desk full of dust.

From what have been discussed above, we can see Wen Zhenheng's consistent design thought, which is based on the principle of suitability for use, requiring elegance, and good taste. *Wenren* (*literati*) tried to create a pleasant, gentle world of high taste through design and the use of objects or their arrangement or furnishing positions. In this artificial world, *Wenren* (literati) read, wrote, painted and cultivated their moralities, and pursued the harmony and unification of material and spirit. And at the same time, they regarded the design, creation, and possession of living environment as a proof of their identity and status.

4.3.4 Song Yingxing's (1587-1663) *Tian Gong Kai Wu* (Heaven's Craft in the Creation of Things)[259]

4.3.4.1 Literature Introduction

When the first block-printed edition of *Tian gong kai wu,* published in 1637 (the tenth

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[259] The versions of*Tian Gong Kai Wu* used in this thesis is: Song Yingxing's *Tian Gong Kai Wu (Heaven's Craft in the Creation of Things)*(Shanghai Commercial Press 1939 Publication), the annotation was referred to Zhong Kuangyan's annotated *Heavenly Creations* (Hongkong Zhonghua Shuju 1978), and Pan Jixing's *Translation of Tian Gong Kai Wu* (Shanghai Ancient Books Press 1993).

year of *Ming* emperor *Cong Zhen*), soon attracted the academia and the inscribing circle's attention. In the late *Ming Dynasty*, Fang Yizhi quoted relevant discussions from *Tian Gong Kai Wu* in his book *Wu Li Xiao Shi* (Shallow understanding of Physics). In the late *Ming Dynasty*, there was someone who had carved the second edition and was ready to publish it. At the end of seventeenth Century, Heavenly Creations spread to Japan and it was continuously quoted by Japanese academia, Japan published an 汉籍 *Han Ji,* a block-printed edition, after which Japan engraved various versions of this book.[260]

During the next one hundred or two hundred years, *Tian Gong Kai Wu* was widely quoted by scholars of *Ming* and *Qing* dynasty. The book 《古今图书汇编》 (after being reviewed by the *Qing* emperor *Yong Zheng*, was renamed as 《钦定古今图书集成》 *Collection of Ancient and Morden Books Made by Imperial Order*) and completed in 1726 by Chen Menglei (1651-1741). He quoted a lot from *Heavenly Creations,* a lot of contents and illustrations were taken directly from the popular *Heavenly Creations*, but the illustrations were carefully drawn again, the eighteen chapters' full texts of *Tian Gong Kai Wu, and* were sporadically seen in some relevant records of 《古今图书集成》.

But in the period of *Qing* emperor, *Qian Long,* thirty-eight years to forty-seven years (1773 - 1782), was refused by the government to file in 《四库全书》 *Si Ku Quan Shu* (but it has great repercussions in Japan academic world in this period). The original

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[260] Song Yingxing, *Tian gong kai wu* (Beijing: Zhongguo Jingji chubanshe, 2002), 5.

block-printed edition had gradually disappeared[261]. Not until the 1920S, when several reprinted editions were finally returned back to China under the efforts of some natural science scholars. After that the National Library of China got the original block-printed edition from the donation of Li family's Mo Hai Lou in Ningbo (in 1959, Zhong Hua Shu Jue Published the Photostat copy). The first block-printed edition of *Tian Gong Kai Wu* is the most complete ancient version, and it has also provided more accurate information than the reprinted edition.[262]

Song Yingxing, from Fengxin, Jiangxi province, had earned the title *Ju ren* in 1615.[263] From 1634 to 1644, he had held different posts, from the *Jiao yu* (military instructor) to state *Tui guan*,[264] but he never tried to be promoted to a *Jin shi*.[265] Instead, he devoted himself to the industrial technology research, and completed the masterpiece *Tian gong kai wu* in 1637. The book is divided into 18 volumes, each volume has special topic and contents, ranging from the planting grain to the papermaking, and, in fact, they are all about industrial and agricultural production. This is the most comprehensive technology and technological analysis about industrial and agricultural techniques of his time, and there is no work that can be compared with it, no matter whether its scale or scope, or its accuracy of details, quantitative precision and other aspects. In terms of the scientific analysis, we know that, in the early seventeenth Century, China's physics, chemistry and mineralogy had developed into a very high

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[261] For details see Pan Jixing, *Song Yingxing pingzhuan* (A critical biography of Song Yingxing (Nanjing: Nanjing Daxue chubanshe, 1990), chapter 11.

[262] See Preface in Song Yingxing, *Tian gong kai wu*, annoted by Zhong Guangyan (Hongkong: Zhonghua Shuju Press, 1978), 9-10.

[263] Ju ren, is a successful candidate in the imperial examinations at the provincial level.

[264] *Tui guan*, an official title in fedual Chinese government

[265] *Jin shi*, is a successful candidate in the highest imperial examinations.

level.[266]

Tian Gong Kai Wu is divided into 18 chapters, actually involving at least 30 techniques, but only in some chapters we can find several techniques. Such as 《乃服》 *Nai-fu* involves silkworm breeding, Sangma-planting and textile technology, 《甘嗜》 *Gan-shi* involves sugarcane-planting, Sugar manufacturing, bee-keeping, while 《彰施》 *Zhang-shi* includes cultivation of dye plants and staining techniques. If we decompose contents of each chapter, then we can see the technologies this book explores. These are technique of: grain cultivation, sugarcane planting, dye plant cultivation, sericulture, beekeeping, grain processing, sugar-making, oil manufacturing, salt manufacturing, textile, mining and metallurgy, casting, staining; hammer manufacturing, coal mining, firing and non-metallic minerals, ceramic, brick-making, papermaking, ink-making, shipbuilding, vehicle manufacturing, cold weapons, firearms manufacturing, jewelry collection and processing etc.,[267]

These techniques include all the major technologies in the field of agricultural production in 1730s China. Song Yingxing also discussed the manufacture of brick, tiles and metal tools like axe, saw, chisel, etc. He also looked at the field of architectural technology, and various waterwheels in the field of irrigation and paper and ink making in printing industry. So numerous techniques were discussed in a

[266] Zhang Chunshu and Luo Xuelun, *Ming Qing Shidai zhi shehui jingji jubian yu xinwenhua: Liyu shidai de shehui yu wenhua jiqi "xiandaixing* (The huge economic and social changes and the new culture in Ming Qing era- the society and culture of Li Yu era and its modernity)(Shanghai: Shanghai Guji chubanshe, 2008), 232-233.

[267] Detail refers to Chapter 10, in Pan Jixing, *Song Yingxing pingzhuan* (A critical biography of Song Yingxing) (Nanjing University Press, 1990).

book, there are few works like *Tian gong kai wu*. This book, therefore, is called Technology Encyclopaedia in foreign countries.

For the study of design science, the literaterary significance of *Tian gong kai wu* lies in Song Yingxing's attention to the production of daily life utensils, and provide a complete record of the handicraft industry at that time when the main stream study of utensils focused more on the aspects of epigraphy and utensils of literati. Song Yingxing vividly recorded the technological process, working scenes of many industries focusing on shapes and structures of utensils used at that time with a collection of illustrative plates, presented to the farmers' operating three hundred years ago in the field and workshops. Secondly, he made a portrayal on the technology of the handicraft industry based on his personal observation and record. It can be seensaid that he took the method of today's so-called *Field Investigation* to describe the technology in his works, instead of compilation of traditional relevant literatures.

Thirdly, whether in the title of the book or the contents, Song reflected his consistent view on *Qi-ju* design, manufacture and technology in different volumes, for example, tracing back to the tradition of objects creation, the detailed record of making various handicrafts, the objective evaluation of craftsmen's experience and technology. All of these provided a comprehensive and reliable historical context of people's daily life and manufacture of everyday-tools in *Ming* dynasty.

4.3.4.2 Text Analysis: Song Yingxing's Thought of *Qi-wu* and Design

Song Yingxing's attention on people's everyday-tools is embodied in the name of his work. *Tian gong kai wu* is not only a book title, but it also summarizes the thought of the whole book. Scholars de-construct the title and trace the word *Tian gong* and *Kai wu* into original sources of literatures.[268] Through the analysis of the texts, this section interprets Song Yingxing's thought on design from three aspects. Firstly, word *Tian-gong* comes from

《书经·皋陶膜》：“无旷庶官，天工人其代之。”

"These unoccupied officials (*Tian gong ren*) replaces the nature's responsibilities".

According to the explanation of scholars', *Tian gong* here refers to the unity of heaven and man, and let people conform to the god. In contrasting with *Ren gong* (artificial), *Tian gong* refers to natural formation of skills. As Ding Wenjiang explained,

"物生自天，工开于人，曰天工者，兼人与天言耳"[269]

Things were born from nature, and the work is derived from human, called God's work, both referring to human and nature.

Secondly, word *Kai-wu* (Creations) was quoted from the commentary of *Yi Ching: Xi Ci,*

《易经·系辞》：“夫易，开物成务，冒天下之道，如斯而已者也。”

Yi, studies the rules of everything in the world, and the created object (*wu*) of the world is *wu*; it contains the way of heaven and earth. *Kai-wu* here means created

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[268] The explanation of *Tian gong* and *Kai wu* make a reference from: Pan Jixing, *Tian gong kai wu yizhu* (The translation of *Tian gong kai wu*) (Shanghai: Shanghai Guji chubanshe, 1992), 12; Hang Jian, *Zhongguo gongyi meishu shi (History of Chinese craft art)* (Beijing: Renmin yishu chubanshe, 2007), 120.

[269] Detail refers toDing Wenjiang, *Tian gong kai wu juan ba, Taotaomu kanbe*, 1929.

object (*wu*).

Song Yingxing borrowed these two words from *the Book of History* and *Yi Ching: Xici,* connected them and endowed them new meanings. In other words, *Tian* of *Tian-gong* refers to the nature; *Gong* refers to human skills or techniques. *Kai* refers to create or develop and *Wu* refers to useful objects.[270] Based on this analysis, the name of *Tian gong kai wu* is designed meaningfully by Song Yingxing and accords with the theme of the text.

Thirdly, the first sentence of open chapter's volume order of *Tian gong kai wu* is:

"天覆地載，物数号万，而事也因之曲成而不遗，岂人力也哉？"

All things are contained in the universe, and the complexities of things are derived from this. Things or matters, they all follow the same rules, they influence each other and then derive every phenomenon on earth, is it possible to compare manpower with this?

Zhong Guangyan translated this as: "There are many things between heaven and earth, and these things constituted a rich and colorful world; the whole nature is formed by its own motion and change, not created by human being".[271] Zhong explanes that, 曲成而不遗 *Qu cheng er buyi* is from *I Ching: Xi Ci*《易・ 系辞上》, which means the heaven and the earth created all things in various ways, and the creation of things are so complete nothing is left to chance. The *Wu* (object) here means all things between

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[270] Quoted from Hang Jian, *Zhongguo gongyi meishu shi (History of Chinese craft art)* (Beijing: Renmin yishu chubanshe, 2007), 120; Ding Wenjiang, *Tian gong kai wu juan ba*, in *Tao tao mu kan ben*, 1929.

[271] Song Yingxing, *Tian Gong Kai Wu*, Translated by Zhong Guangyan (Hong Kong: Zhonghua Shuju, 1978), 32.

heaven and earth. While the *Wu* (object) in *Tian gong kai wu* refers to man-made objects or things, Pan Jixing called this kind of relationship as the *Tian gong hubu shuo* (Complementarity principle of nature and human).

Pan Jixing further indicates that, *Tian gong kai wu* contained the following four significances: (1) The nature contains all things on earth, and they are well-born and wait to be recreated by human. (2) Artificial and natural should supplement each other to meet the needs of people; (3) Humans should coordinate with nature, and only by adapting to the natural law, can we conquer the nature; (4) Humans should not be passively face the power of nature.

So, how did Song Yingxing reflect his ideas of artificial creation in his text? First of all, on the aspect of everyday use tool, he advocated the traditional core design: 制器尚用 the objects making must first be useful, 物尽其用 and must make the best use of everything. As Song Yingxing wrote in Volume 4 《粹精》(*refers to grain processing*) :

"宋子曰：天生五谷以育民，美在其中，有"黄裳"之意焉⋯⋯ 饮食而知味者，"食不厌精"。杵臼之利，万民以济，盖取诸"小过"。为此者，岂非人貌而天者哉！"[272]

The nature gave birth to all sorts of grain to feed the human being. Take the allusion 黄裳 *Huang-shang* of *Book of changes* to compare the grain as clothes worn on the body, so beautiful, both inside to out. 食不厌精 *Shi-bu-yan-jing* comes from 《论语•乡党》 *the Analects of Confucius*, it refers to people who pay

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[272] Song Yingxing, *Tian Gong Kai Wu*, Translated by Zhong Guangyan, 126.

attention to flavor of food and think that the more exquisite the food is, the better flavour of the food . Therefore, the invention and creation of pestle and mortar benefited a lot of people. Isn't it true that people who invented this kind of objects and technology are extraordinary?

Secondly, he thought that the process requires a sharp weapon to realize the purpose of exploitation of the works of nature, without this tool, the meaning of *Heavenly Creations* cannot be presented well. Therefore, in all kinds of skills, Song Yingxing regarded the skills of tool making as the most important one. In volume ten 《锤锻》 *Hammer Forging*, he said:

"宋子曰：金木受攻而物象曲成。世无利器，即般、倕安所施其巧哉？五兵之内，六乐之中，微钳锤之奏功也，生杀之机泯然矣！同出洪炉烈火，大小殊形……"

After processing, metal and wood would become several of artifacts. But without good tools, even like the famous masters 般 Ban (公输般 Gong Shuban, also called 鲁班 Luban, a craftsman in Spring and Autumn period), 倕 Zhui (Zhui was a craftsman of the period of Yellow Emperor, it is said that he created the woodworking tools such as compasses, angle square and criterion) could not carry out their skills. All kinds of weapons and metal instruments cannot be made without forceps and hammers. Thus, it can be seen, man-made objects are closely related to people's daily lives from all aspects, especially in tool-making, man's shortage of natural forces is made up by exquisite craftsmanship.

Thirdly, Song Yingxing's work dated back to the developmental history of ceramics,

and noticed that each dynasty has its own era of artifacts, techniques and styles. In volume 7《陶埏》*Tao Shan*, he said:

"宋子曰：水火既济而土合。万室之国，日勤千人而不足，民用亦繁矣哉。上栋下室以避风雨，而甋建焉。王公设险以守其国，而城垣雉堞，寇来不可上矣。泥瓮坚而醴酒欲清，瓦登洁......商周之际，俎豆以木为之，毋亦质重之思耶！后世方土效灵，人工表异，陶成雅器，有素肌玉骨之象焉。掩映几筵，文明可掬。岂终固哉！"[273]

Shang and Zhou Dynasties admired simple and unadorned objects, sacrificial vessels were made from wood; later pottery became the elegant object, that is, ceramics became the gentle and elegant objects, but no matter how big the changes are, it still cannot be separated from the people's daily life. 造物 *Objects creation* changes with time and also combines with the *Tao* of nature.

In the volume 8　《冶铸》(Smelting and casting), Song said,

"宋子曰：...... 夫金之生也，以土为母；及其成形而效用于世也，母模子肖，亦犹是焉。精、粗、巨、细之间，但见钝者司舂，利者司垦；薄其身以媒合水火而百姓繁，虚其腹以振荡空灵而八音起；愿者肖仙梵音之身，而尘凡有至象；巧者夺上清之魄，而海寓遍流泉。"[274]

Metal is produced from the earth; when the metal was made into various objects and used in society, its shape is similar with earthen model. The obtuse *Zhui* was used as rammer, and the sharp plough was used for hoeing, the thin iron pan was used for holding water and cooking, while the empty clock was used as musical Instruments.　In short, the creation was made regardless of different sizes and

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[273]　Ibid, 179-180.

[274]　Ibid, 208.

all could be used, namely the traditional aying of *Wu-jin-qi-yong* (make the best use of everything).

In addition, Song Yingxing proposed that the inspiration of *Zao wu* (Objects creation) was from observation and simulation of nature. That is, *Qiao zhe* (skillful and fine craftsmen) made things from the images of nature, such as made the current coins according to the shape of the moon in the sky. That is, the world itself is full of infinite mysteries, so, when creating objects, people should not be so subjective, instead, they should understand the natural changes and conform to the laws of nature. It is the harmony of creation of artificial objects and its connection with nature. This can be traced to the same region as the *Guan xiang zhi qi* (to observe the sky for understanding astrology and then make objects) which is part of the *Book of Changes-Copulative* (see chapter 6).

4.3.4.3 Evaluation

Tian gong kai wu shows Song Yingxing's unique philosophy, equipment and technology-related view. He applied the philosophy and natural science in the study of technology development, for example, Song Yingxing used the *Fa (methods) +*, *Qiao* (skill) and *Qi* (tools). These three concepts explain the essence of technology and structural characteristics of things. In his view, technology = *Fa (methods) + Qiao* (skill) + *Qi* (tools) *where* 法 *Method* refers to various processing methods, such as

method of planting rice, method of smelting, textile process, if one does not know these methods of operation, then he can't proceed to create industrial and agricultural production. *Qiao* (skill) refers to the operation skills of the labors; he often used *Ren*

qiao (skilled worker) and *Gong qiao* (skilled work) to express techniques. And *Qi* refers to all kinds of tools or devices used in the process of production.

He believed in the three elements of technology *Ren qiao* (skilled worker) is the most active factor, which lead to his respect and praise for the productive labor of the masses - the workers and peasants who were skilled. And his point is consistent with the scientist Shen Kuo of the Song Dynasty (1031 - 1095) who believed that craftsmen and the labor are the main force of creation techniques, and he also fought against the Confucians and the good-for-nothing young man from a wealthy family for their disdains towards the ordinary people. Shen Kuo said: "As for the techniques, equipments, big or small, black, yellow, pale and red, cannot be all made by the saint? *Baigong* (Hundreds of Craftsmen), Officials, Street people, Field people all can make it too."[275]   Like Shen Kuo, he also recorded many techniques created by the labour force in the *Heavenly Creations*, especially the new technology and the secrets of technical links.

About the author's epistemology and method, Song Yingxing thought that science and technology can strongly improve the material life, thus, he wrote his works under this dominant ideology, and those who were very interested in science and technology of the same time, were also of the same opinion. And through research and resulting statements, Song did show that his scientific research processes were based on the solid evidences and examples. He not only paid attention to the fact itself; in his view, but also took into consideration all the materials as a kind of special phenomenon or natural processes, which are collected and classified, and then summarized to draw

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[275] Shen Kuo, *Chang xing ji,*Volume 19 (Xianggang: Xianggang Dizhi wenhua gongsi, 2002).

conclusions. As for the collection work, he did follow through with careful observation, as well as reliable information, and he also depended on the knowledgeable and experienced craftsmen.

After *Tian Gong Kai Wu* was translated into other languages, it received much praise. French Sinologist Stanislas Julien of nineteenth Century called *Heavenly Creations* a Technology Encyclopedia; while British biologist Darwin called it as "*An Authoritative Book*". Since the twentieth Century, the Japanese scholar Saegusa Hirone said *Heavenly Creations* is a representative technical book of the whole oriental region, while Yabuchi Shinori praised it as an *excellent work.*[276]

4.3.5 Summary

A different or contrary approach to objects used in daily life emerged in Chinese society during the sixteenth and seventeenth centuries, as shown by Gao Lian in *Eight Discourses* (17th century) and Wen Zhengheng (1585-1645) in *Treatise On Superfluous Things.* In his book, Wen Zhengheng used the concepts of 'elegance', 'luxury good', and 'superfluous things', specifying the materials, forms, decoration, and precise dimensions of desirable goods that were popular among elites. Gao's work is a virtual treasure of early 17th century aesthetics and material culture in fields such as garden design, tea culture, and trees that were aimed at the enjoyment of a healthy life.

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[276] *Song Yingxing pingzhuan* (A critical biography of Song Yingxing (Nanjing: Nanjing University press, 1990).

In comparison with this approach focusing on things of the past and the connoisseurship for antiques, Song Ying-xing's work focused on things of the present. Those who adopted the former approach were interested in "luxury production" based on the superfluous features of things, while adherents of the latter focused on the technology of tools used in daily life. It should be noted that Song Ying-xing, Xu Guang-qi, Wang Zheng, and Wen Zheng-heng were from the same elite group and had similar educational backgrounds as well as the same cultural origins. All of them lived in a similar intellectual climate and were active in 士 *Shi* (affairs)[277] of the Ming Dynasty.

From another perspective, the two approaches to everyday tools adopted during the Ming Dynasty, together, painted a complete picture of material culture and daily life. As Clunas (2007) has indicated, "in the Ming period, the use of objectified methodology of cultivation among the literati could be seen as a part of a larger picture, assembled by the technological treatise, the guidebook to interior decoration, the statistical compilation, the merchant route book, the householder's manual and the didactic on norms of behavior, under the very broad rubric of 'commoditization of knowledge.'"[278]

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[277] The social order in the Ming Dynasty was divided into four classes of people; *shi (those responsible for affairs), nong (peasants), gong (artisans), and shang (merchants).* Shi were at the head of this fourfold society. *Shi* was also the insignia of state officials, the ruling stratum that labored with the mind and not with the hand.

[278] Craig Clunas, *Empire of Great Brightness: Visual and Material Cultures of MingChina, 1368-1644* (London: Reaktion Books, 2007), 39.

V. RESEARCH FINDINGS AND DISCUSSION

Chapter 5 of this thesis presents and discusses research findings. This chapter is divided into three sections. Section 5.1 firstly addresses a theoretical proposition of this research that Chinese *Qi-ju* (Utensils and Tools) as a design knowledge system can be studied. And this thesis tries to show this system emerged from several findings; Section 5.2 traces the genealogy of Chinese terms *Qi* (utensils or vessels)*, Ju* (tools)*, Wu* (objects) and Chinese concept of *Qi* (utensils or vessels)*, Xiang* (image or signs)*,* and *Fa* (method, or principle); Section 5.3 discusses Chinese *Qi-ju* traditions: its original sate and features; Section 5.4 presents Chinese ancient philosophical approach to original Chinese *Qi-ju* design system; Section 5.5 illustrates the features of knowledge of Chinese *Qi-ju* design.

5.1 Design Knowledge of Chinese *Qi-ju* (Utensils and Tools)

In this chapter, the thesis presents a theoretical assumption: Chinese *Qi-ju* (utensils and tools) design is considered a knowledge system. This assumption can be based on three kinds of evidence: first, tangible *Qi-ju* (or everyday tools, artifacts, products, or inventions) that have appeared over the course of Chinese history; second, historical and classical ancient literatures of Chinese everyday tools design (Chinese term *Qi-ju*); and third, the status of contemporary research on Chinese traditional *Qi-ju* (see chapter two). Due to the lack of first-hand records of the design experience of ancient makers or inventors, in fact, as a consequence of the failure to preserve descriptive history, this theoretical assumption is proposed that in this thesis is mainly based on

historical study on classical ancient texts which is presented in chapter four. In the process of analysis and discussion of selected historical periods pre-Qin dynasty, Song dynasty and Ming dynasty, the design knowledge has been represented throughout by way of diverse historical texts. Therefore, the thesis proposes that Chinese *Qi-ju,* as a design knowledge system, can be studied from such a source.

To demonstrate that the assumption proposed is valid and can be logically justified, this chapter illustrates Chinese design knowledge of *Qi-ju* from four aspects.

(1) The analysis of key terms and concepts of original descriptions of *Qi-ju* - the key names *Qi* (utensils), *Ju* (Tools) and *Wu* (objects) have been specifically investigated and explained, which will be summarized in this Chapter. Comparison of these names reveals that *Qi-ju* (tools) and *Qi-wu* (objects) have been categorized as two separate knowledge systems since the characters were created in the early stages of Chinese history. Secondly, this section introduces basic concepts of original design: *Xiang* (images)*, Qi* (utensils), and *Fa* (principles) recorded by ancient people in *I Ching* also have been illustrated.

(2) The generational features of original Chinese *Qi-ju* tradition is represented. To present *Qi-ju* design features, researcher explains different expressions of "terms", "concepts" and "category" in Chinese tradition and Western academic context. Chinese characters has particular pictographic features on the form called as *Xiang-xing* (pictography) that can be traced back to Neolithic age and the earliest creation of characters by Cang Jie (ancient sage in *I Ching*). This pictographic feature of characters and artifacts therefore share the same origin which was recorded in *I Ching- Xi Ci II* and *Kao gong ji* (Book of diverse crafts). These discovery lead to the findings of the origin of *Qi-ju* is the root of civilization in Chinese history.

(3) The early Chinese philosophical approach to ontology, epistemology, and methodology is explained as an inevitable influence on the shaping of knowledge on daily tools and their design. The philosophy provides a research context for the basic Chinese understanding of *reality, knowledge*, and *methods*. This chapter especially illustrates Chinese ontological approach of *Tao* and *Qi*, and Mo Zi's epistemological and methodological approach on *Qi ju* design.

(4) The features of the knowledge system of Chinese *Qi-ju* (utensil and tool) design is illustrated in this chapter as: (a) Chinese ancient tradition was greatly respected in the design and manufacture of *Qi-ju*; (b) The ancient tradition of design laid emphasis on the function, which usually was simple and clear-cut; (c) Ancient *Qi-ju* design was particularly rely on craftsmen's experiential knowledge and outside environment: nature, geography, season and materials; *Ji-yi* (technique) and *Jing-yan* (experience) was intertwined as important elements for *Qi-ju* design; (d) the tacit knowledge of *Qi-ju* design is considered as unique nature of Chinese design

In summary, the thesis attempts to discuss the origin of Chinese design knowledge of *Qi-ju* form four aspects, terms (names), thoughts, philosophy and experiences, which, together, brought a coherent form to the theoretical assumptions underlying this thesis. As Love stated, "all terminology, concepts and theories are human cognitive constructs, the particular aspects of reality abstracted and symbolically represented in the realm of theory, on the basis of particular sets of assumptions and human values."[279]

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[279] Terence Love, *A Meta-theoretical Basis for Design Theory* in Proceedings of the conference *Doctoral Education in Design: Foundations for the Future*, edited by David Durling and Ken Friedman (Staffordshire University Press 2000), 47. The conference was held from 8-12 July 2000 in La Clusaz, France.

5.2 The Tracing of the Genealogy of Chinese Terms *Qi, Ju, Wu*

In China, names (*Ming*) have been treated as an important knowledge resource with a long tradition. Chinese people particularly employ characters to represent their understanding of nature; each character expresses one or more concepts. Chinese characters are distinct in their ideographic features; pictographic characters heighten people's understanding of the things of nature. This is because names can reveal the ordinal meaning of things and the value people bestow on them. Scholars analyze pictographic characters to present a complete interpretation of different subjects.

In the Chinese research tradition, the name of a particular thing or concept is a key to investigating it, especially in exploring its origins. Chinese names are expressed in characters, the structure and form of which carry information and meaning. In addition, the term "name" also implies Chinese philosophical thoughts, for example, Lao Zi's concept of *Tao* (way) embodied in *Qi* (utensils) (as described in brief in the previous chapter).

The most important reference on Chinese characters is *Shuo Wen Jie Zi* (Describing the pictograms and explaining the compound characters),[280] a work compiled by Xu Shen (58-147 AD) that is regarded as the earliest and most authoritative dictionary in history. *Shuo* means speak, talk, comment and explain; *Wen* means character; *Jie*

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[280] *Shuo Wen Jie Zi* was compiled by Xu Shen (58-147 AD), a scholar of five classics in 121 BC (the Eastern Han Dynasty). Commentaries written by other scholars expanded on his original version significantly in subsequent periods. One of these scholars was Duan Yucai, whose *Commentary on the Shuo Wen Jie Zi* appeared in 1815 after he had worked on it from 1776 to 1807 and is regarded as a classic edition of *Shuo Wen*. Xu Shen analyzed the structure of characters and defined the words represented by their images; Duan Yucai's commentary explained and extended Xu Shen's original analysis. Both authors' explanations of names are regarded as important references in this chapter. See See Xu Shen, *Suowen jiez* (Describing the pictograms and explaining the compound characters) (Beijing: Zhonghua shuju, 1981).

means untie, separate and analyze; *Zi* means words. *Shuo-wen*[281] mainly provides the origins of characters, the reasons for their form, and an explanation of their meaning. *Shuo-wen* not only traces the original image of each character, but also finds a way to clarify its meaning. Boltz has described Xu Shen's system of characters as "a major conceptual innovation in the understanding of the Chinese writing system".[282] It is a major aid to understanding the origins, order, and meaning of key terms used in this thesis. Thus, the examination of names of *Qi* (utensils), *Ju* (tools), and *Wu* (objects) is based on this resource.

5.2.1 器 *Qi* (utensils)

器*Qi* (utensils) is an important concept in the Chinese design context that can be examined in dictionaries and philosophy books. The *Suowen jiezi* states: "*Qi* means 'utensil' or 'vessel' (min)."[283] In *Shuowen*, Qing scholar Duan Yucai (1735-1815) defined *Qi* (utensils) according to three features. First, *Qi* (utensils) are *Min* (vessels), or utensils used for food, indicating that *Qi* (utensils) are containers. Second, *Qi* (utensils) is a general term indicating all man-made objects. Third, while objects can contain things named *Qi* (utensils), they cannot contain things named 械 *Xie* (tools or machine). Duan emphasized that *Qi* (utensils) have the function of containing other

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[281] *Shuo-wen* is a simplified expression for *Shuo Wen Jie Zi.*

[282] William G. Boltz, "Shuo Wen Jie Zi"in *Early Chinese Texts: A Bibliographical Guide*, edited by Michael Loewe, (Early China Special Monograph Series No. 2), (Berkeley, Calif. : Society for the Study of Early China and Institute of East Asian Studies, University of California, Berkeley, 1993), 429-442.

[283] See Xu Shen, *Suowen jiezi* (Describing the pictograms and explaining the compound characters) (Beijing: Zhonghua shuju, 1981), 49.

things.[284]

Qi (utensils) have symbolic features. Art historian Wu Hong defined *Qi* as things that are used and understood by ancient Chinese both literally and metaphysically. The former meaning describes *Qi* (utensils) as physical objects that have a distinctive function; the latter meaning is close to "embodiment" or "prosopopeia" – a physical entity "containing" and "typifying an abstraction".[285] When China became a civilization during the Xia Dynasty (2070-1600 BC), *Qi* (utensils) diverged into two classes: utensils for using and ritual utensils for political events.

Various philosophers have proposed different perspectives on the concept of *Qi* (utensils). The most notable thinkers in this field are Confucius, Mo Zi, and Lao Zi. Confucian thought is based on the concept of *Li* (rites) embodied in *Qi* (utensils). Confucius suggested that the value of manufacturing *Qi* (utensils) should accord with social order, morality, and ethics. Mo Zi proposed an alternative opinion in emphasizing that *Qi* (utensils) were for *Li* (usage or benefit). He thought the utensils used in rites and etiquette were useless[286] and criticized the use of over-decorated *Qi* (utensils) and utensils requiring skills for their lack of functional improvement. He also refused to use over-imaginative tools and called this kind of tool *Qi qi* (odd *Qi*), the making of which should not be encouraged (this point has been criticized by modern scholars, who consider that imagination is important for tool innovations). Mo Zi's realistic conception of *Qi* is mainly attributable to his background as a

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[284] Duan Yucai, *Shuowen jiezi zhu* (Commentary to the *Shuo wen jiezi*) (Shanghai: Shanghai guji chubanshe, 1981), 86.

[285] Wu Hung, *Monumentality in Early Chinese Art and Architecture* (Stanford, Calif.: Stanford University Press, 1995).

[286] Xu Biao, *The Way (Tao) of Making Utensils (Qi): Research on the Thought of Zao Wu in the Pre-Qin* (Jiangsu Meishu Publications, 1999), 188.

carpenter. Lao Zi's conception of *Qi* centers on his proposed relationship between *Tao* and *Qi* (utensils). His *Book of Changes* includes the following phrase: *Xing-ershagn- zhe-wei-zhi-dao, xing-er-xia-zhe-wei-zhi-qi,* "What is above the form is called *Tao*; and what is below the form is named *Qi*." Zhuang Zi considered that *Tao* and art formed a whole in the invention of *Qi* (utensils).[287]

The foregoing discussion on the names and philosophies of *Qi* (utensils) shows that *Qi* (utensils) embody many meanings, indeed, the term *Qi* is not confined to the level of usage, but also has a symbolic meaning. All of the various schools of thought on *Qi* (utensils) contribute to an effective approach to tool-making, not only in terms of design concepts (Zhuang Zi's thought), but also the abstract, spiritual meaning of tools (Lao Zi's thought), as well as the function of tools (Mo Zi's theory on tools), including also their social influence. These aspects potentially shape design philosophy, which influences the perception of tools and the design of daily tools in subsequent generations, even up to the present.

Let us leave to one side the theoretical approach and focus instead on the practical manufacturing of *Qi* (utensils). The *Book of Craft Diversity* proposed four key principles of good tool-making: "*seasons, geography, material and craft skill*" (these are discussed in detail in Chapter Three). The key to tool-making is their form, their materials, and how their materials are arranged.

5.2. 2 具 *Ju* (tools)

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[287] A more detailed description of these three philosophies on *Qi* (utensils) can be found in Chapter Three, a review of literature in the Zhou Dynasty.

Observation of the hieroglyphic forms of the Chinese character for *Ju* (tools) reveals that their original shape is based on inscriptions on bones or tortoise shells. Furthermore, there are two parts to the image: the top half is an image of a "*Ding*" (bronze tripod) and the bottom half is an image of "hands". Commentators therefore explain the whole character as signifying "holding a *Qi* (utensil) with both hands", meaning "preparing food". In *Shuo Wen*, *Ju* (tools) were defined as "placed" in terms of "owning and possessing". In the *Modern Xinhua Dictionary*, *Ju* (tools) is a noun with the literal meaning of *Ding* (bronze tripod).[288]

The compound term *Qi-ju* (utensils and tools) is a commonly used term in contemporary descriptions in preference to the term *Qi* (utensils) on its own, which is most often found in historical or philosophical descriptions. Similarly, the term *Ju* (tools) is seldom used alone in the extant literature; it nearly always appears alongside the character *Qi* (utensils). The compound term *Qi-ju* (utensils and tools) has therefore become a specialized term used in formal design-related literature. Today, the term *Qi-ju* (utensils and tools) usually conveys one of two meanings: one is as a general expression for tools, instruments, and implements, and the other is as a specific indicator symbolizing all kinds of utensils and tools. It is plausible to suggest that the term *Qi-ju* (utensils and tools) has now replaced the singular term *Qi* (utensils), with the latter being used to signify every kind of designed object in the past.

Apart from the term *Qi-ju* (utensils and tools), another commonly used term *Gong-ju* (tools) has been widely used to indicate general tools or instruments. However, there is a difference between the meanings of these two terms. In the *Far East*

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[288] *Xinhua Da Cidian* (Xinhua Dictionary) (HK: Shangwu Yinshuguan, 1989).

Chinese-English Dictionary, [289] *Qi-ju* (utensils and tools) is defined as tools, instruments; apparatus; implements; utensils. While *Gong-ju* (tools) means implements used during work, such as production tools and weapons. Its extended meaning is an instrument used to reach, achieve or expedite something.

5.2. 3 物*Wu* (things or objects)

Comparing the terms *Qi* (utensils) and *Ju* (tools) from a practical perspective, one term indicates that objects can contain things, while the other indicates things can be held; *Wu* (things) symbolizes a more general, broader concept of objects. *Wu* (things) and *Qi* (utensils) can be divided into two different categories.

In *Shuo Wen*, *Wu* (things) means *Wan Wu* ("ten thousands" of things), or literally a myriad of things. The character for of *Wu* (things) seems to convey an image of a person ploughing a field with an ox. The *Book of Changes* includes the following passage: "In Heaven and on Earth, all things existed. All things having come into existence, only later there came male and female". The term *Wu* (things) is generally defined as meaning things of nature, including people, animals, and plants.

5.2. 4 Categorization of the terms *Wu* (things) and *Qi* (utensils)

American sinologist Homer Dubs has pointed out that in Chinese, the word "logic" literally means "the study of terms". When logic was developed as a discipline in China, the first issue addressed was names, rather than rhetoric and judgment (1927). [290]   Xun Zi (340-245 BC), a philosopher in the Warring States period,

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[289]   Liang Shiqiu and Zhang Fangjie et al. *Far East Chinese-English Dictionary* (Taibei: Yuandong Tushu Gongsi, 1992), 224.

[290]   Homer H. Dubs, *Logical Theory* in *Hsüntze: The Moulder of Ancient Confucianism* (London: Arthur Probsthain, 1927), 198-241.

presented a theory of 名 (names*)* and a system of logic for categorizing things. His

Zheng Ming Pian (*The Rectification of Names*)[291] is regarded as the origin of Chinese

logic. He indicated that every action and thought is derived from a concept and that

Ming (names) represents the concepts of things. Thus, *Ming* (names) directs people's

actions and can help with social organization.

In *The Rectification of Names*, the terms *Wu* (things) and *Qi* (utensils) were

categorized according to Xun Zi's logic of *Ming* (names). In his writings, he stated

that the names of things have a low- to high-level arrangement based on a layered

structure from the specific to the general. The highest layer is called *Da-gong-ming*

(big common name), or names of *Wu* (things). *Wu* (things) include human beings,

animals, and plants. Below the *Wu* (things) layer are general names such as "birds",

"beasts", etc. Xun Zi indicated that "the reason we name things is according our needs,

and we set them on different levels. Sometimes we need to name things on a general

level, sometimes we need to discuss things on a particular level. This is why we

categorize things into specific levels."[292]

Examination of the terms *Wu* (things), *Qi* (utensils), and *Ju* (tools) reveals the

boundaries of each term. First, the term *Wu* (things) has a broad scope that includes

natural things and *artificial things*. When the term *Wu* (things) is used to indicate

artificial things, it is used in the names of designed objects such as *Wu Jian, Wu Pin,*

and *Dong Xi.* Second, the term *Wu* (things) covers *Qi* (utensils) and *Ju* (tools). *Wu*

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[291] See Xun Zi (340-245BC)'s Zheng Ming Lun (*The Rectification of Names*). The English version can be referenced: Y.P.Mei, *Hsüntze (Xun Zi) on Terminology* (Philosophy East & West, 1952); Wing-Tsit Cha, trans. and eds., "Naturalistic Confucianism: Hsüntze"in *A Source Book in Chinese Philosophy* (Princeton: Princeton University Press, 1963), 115-135.

[292] Homer H. Dubs, *Logical Theory* in *Hsüntze: The Moulder of Ancient Confucianism,*198-241.

(things) can be any object in the universe, from stars or an airplane to small objects like flowers and tools. However, the term *Qi* (utensils) conveys the idea of a concrete container-like shape used for a particular purpose. In addition, the abstract nature of the term *Wu* (things) means the term appears most often in philosophy to express abstract concepts. In comparison, the term *Qi* (utensils) always expresses a specific function, even in its philosophical meaning.

Moreover, the terms *Wu* (things) and *Qi* (utensils) can be used independently of each other. However, these two singular terms also can be used in a compound pattern as *Qi Wu* to express a general concept of *designed objects*.

5.2.5 象 *Xiang* (images), 器 *Qi* (utensils), and 法 *Fa* (principles)

When tracing Chinese original design, one issue that should be examined is how Chinese people perceive "reality" or "being". *I Ching* (The Book of Change), a work regarded as one of China's key historical resources, described how Chinese people observed the universe and nature.

> "Anciently, when Pao-xi (or Pao-Hes) had come to the rule all under Heaven, looking up, he contemplated the brilliant *Xiang* (images) exhibited in the sky, and looking down he surveyed the *Fa* (principles) shown on the Earth. He contemplated the ornamental appearance of birds and beasts and the (different) suitability of the soil. Near at hand, in his own person, he found things for consideration and the same at a distance, in things in general ... etc."[293]

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[293] Chinese edition used in this chapter is: Kong, Yingda (574-648), *Zhou yi zheng yi,* edited byLi Xueqin and interpretd by Wang Bi, Vol.8 (Beijing: Beijing daxue chubanshe, 1999), 298. See *Xi Ci xia* (Great Commentary II). English version refers to *The Classic of Changes: A New*

Though some scholars have commented that Pao-xi is a mythical figure and there is no archaeological evidence supporting the foregoing description, it is indicative of the approach Chinese people take to the origin of design. The description reveals how people observe the universe, imitate nature, and invent things. Two of the terms used in the foregoing passage -*Xiang* (images) and *Fa* (principles) - are supplemented by another term *Qi* (utensils) in another section of *The Book of Change*. It states that what is above the form is called *Tao*, whereas what is below the form is named *Qi*.

In the text of *The Book of Change*, *Xiang* (images) are visual things that can be observed from nature, the term *Qi* (utensils) means things that can be shaped, and *Fa* (principles) indicates that methods or principles are employed to make and use utensils. As the description of *Great Commentary*, it is stated: "Since they are visible they are called 'images'; since they are forms they are called 'vessels'.[294] Both images and vessels can be perceived, but images are the objects of seeing, whereas vessels can be both seen and felt."

> Of the things that model themselves on images, nothing is greater than heaven and earth. Of the things that change and course along, nothing is greater than the four seasons; of the things that display images and be bright, nothing is greater than the sun and moon …[295] "Of old Bao Xi reigned over all under heaven; raising his head he contemplated the images in heaven, bending down he looked

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Translation of the I Ching as Interpreted by Wang Bi, trans. by Richard John Lyn (New York: Columbia University Press, 1994).

[294] Ibid, 298.

[295] Ibid, 300. English translation author quoted Edmund Ryden's translation in Zhang Dainian, *Key Concpets in Chinese Philosophy*, 211.

at the models on earth."[296]

Ryden explains the images and forms as,

> Here images and forms are contrasted; images belong to heaven and forms
> pertain to earth. Images are also contrasted with vessels. Vessels have a
> determined shape, whereas images do not. Furthermore, images pertain to
> heaven and models to earth. Compared with forms, models have an even more
> definite shape.[297]

These three terms and concepts can also be found in other historical resources from
earlier times. It is possible that the origins of Chinese design were influenced by this
understanding of the universe and nature. Images and utensils are seen as the "reality"
and "being" that can be seen and touched, and there are methods of imitating visual
images and making utensils.

In relation to design, *Xiang* (images) can be understood as two-dimensional things
such as patterns, pictures, and symbols; the term *Qi* (utensils) represents all
three-dimensional things such as tools used in daily life, framing tools, and cooking
utensils. Images and utensils are visual and tangible expressions of nature. *Fa*
(principles) represent a means of creating images and making utensils, which are
respectively the natural and material "reality" that can be imitated and created by the
adoption of definite methods.

On the other hand, in this context, *Xiang* (images), *Qi* (utensils), and *Fa* (principles)
are closely interrelated and can seldom be separated from each other. In the modern

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[296] Ibid, 309.

[297] Zhang Dainian, *Key Concpets in Chinese Philosophy*, translated and edited by Edmund Ryden
(New Haven and London; Yale University Press, Beijing; Foreign Languages Press, 2002), 211.

design context, *Xiang* (images) are equivalent to visual communication linked to decoration and form, whereas *Qi* (utensils) are equivalent to product design.

5.3 Chinese *Qi-ju* traditions: Original State and Features

Based on the study of the meaning of the word *Qi-ju* (utensil and tool) in the above section, this section discusses the generation and features of original Chinese *Qi-ju* tradition from the following aspects. Section 5.3.1, firstly, presents the findings that there were different expressions of "term", "concept" and "category", which is unlike the Western ones, and traditional Chinese word is provided with an explanation; Section 5.3.2, shows the discovery that Chinese characters places great importance on the form and are pictographic in nature that has close relations with *Qi-ju* design. Then, section 5.3.4, discusses this special feature that is the characters and artifacts share the same origin; Section 5.3.5, explains the theory of Name (*Ming*) with rational thought that influences the categorization of *Qi-ju* and *Qi-wu*; and the last Section, presents the finding that the origin of *Qi-ju* was the Root of Civilization.

5.3.1 The Different Expressions of "Term", "Concept" and "Category" with Western Ones

Terms have different meaning to the Chinese people. As Dagmar Schäfer has said, "the terms used in the Chinese texts reflect the concepts and modalities of dealing with technology and practice in the Chinese history. The potential of these sources lies in reading them on their own terms,[298] namely as indicators of the concepts and modalities by which Chinese actors historically dealt with technology and practical

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[298] Benjamin Elman, *On Their Own Terms: Science in China, 1550-1900* (Cambridge, Mass.: Harvard University Press 2005).

endeavor".[299] The understanding of the knowledge of Chinese utensil and tool design shall begin from its "term", "concept" and "category". However, the Chinese philosophy has its own way of expressing of "concept" and "category", which is quite different the western language, both for category and expression.

Specifically speaking, the category system of the Chinese philosophy is notably different from that of the western philosophy. Just as Edmund Ryden pointed out, when he was translating and editing the book *Key Concepts in Chinese Philosophy* written by Zhang Dainian, a Chinese philosophy historian, he felt that the Chinese philosophy historians have recently turned their attention to the category system of ancient Chinese philosophy, as this issue has become one of the important ones of the history of Chinese philosophy. The author recognizes that Chinese philosophy has its own system of categories, which is very complex. As Zhang indicates,

> "We often say that Chinese philosophy has its own set of categories, in which case there must be a specific system of these categories. The systematization is a very complex problem. In the history of Chinese philosophy each category has its own path of emergence, development, and change such that even philosophical categories of the same period will be different according to different schools of thought."[300]

Moreover, the word "*Zhe-xue* (philosophy)" is not a word of the language of the Chinese but a western word (*philosophy* was adopted by China as a special term in the

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[299] Dagmar Schäfer eds, *Cultures of Knowledge: Technology in Chinese History* (Leidon; Boston: Brill 2012).

[300] Zhang Dainian, *Key Concpets in Chinese Philosophy*, translated and edited by Edmund Ryden (New Haven and London; Yale University Press, Beijing; Foreign Languages Press, 2002), xxii-xxiii-xxiv.

modern period). China has a different way of approaching the universe and has its own way of depicting things.[301]

Besides, 'Concept' and 'Category' are also western terms, whose equivalents in ancient Chinese philosophy are "name (*Ming)*" and "appellation (*Zi)*". 'Concept' and 'Category' are foreign terms that have been imported into Chinese. Although the "Great Plan" chapter of the *Book of History* uses the terms *Fan* and *Chou* ("Great Plan [*fan*] and Nine Fields [*chou*]"), in ancient Chinese the two terms were never linked as one word. In ancient Chinese philosophy the terms that came closest to the modern words for 'concept,' *gainian* and *fanchou*, are 'name' (*Ming*) and 'appellation', or 'term' (*Zi*)."[302] The system of expressing concepts with 'name' (*Ming*) and 'appellation,' or 'term' (*Zi*) embodies the way and the mode in which the Chinese regard things and the social structure.

Accordingly, in the concept of the ancient Chinese design, *Qi-ju* (utensil and tool) belongs to this system of categories and language expression. The design concept of ancient China is expressed by *Qi-ju*, the "name" or "appellation" or "term". So to say, different from the development direction of modern western word structure, ancient China's design concept starts from and are based on the conception of 'name' (*Ming*) and 'appellation,' or 'term' (*Zi*). Therefore, China's *Qi-ju* is different from the "term"

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[301] However, these essences of the ancient times have disappeared from today's Chinese philosophy. That's also the reason why these ancient thoughts can no longer be explained by modern thoughts and terms. Therefore, this thesis attempts to enter the historical context of that time and help understand the ancient "words" and "concepts" of ancient with the language that can be understood by modern people.

[302] Detail refers to *Introduction: on the system of categories*, in Zhang Dainian, *Key Concpets in Chinese Philosophy*, Edmund Ryden trans & eds., xxiii.

of the western world, and the categories and connotation of the Chinese utensils and tools are also dissimilar from the development path of the western terms. Through investigating, exploring and comparing the historical literature, this research finds that the structure mode of Chinese *Qi-ju* (*Zi* character) has the following features.

5.3.2 Pictographic Chinese Characters

Chinese characters place great importance on the form and are pictographic. Chinese characters have extremely rich meaning, which differ from the way of source tracing, definition and interpretation of words by the Western world. When tracing the sources of words, the Western world usually will resort to the original meanings in the Latin or Greek language so they can interpret the constantly developing modern language, whereas, the Chinese care more about the forms. As Chad Hansen comments on this special way of combining linguistic units and things as: "To grasp Chinese philosophic thoughts, we have to understand that its linguistic philosophy differs from ours as characters or names, instead of the sentences, are more important in the former. In Chinese, characters are used as the names, which indicate the mass nouns or thing-kind, not the individuals."[303]

According to the earliest archaeological cultural relics, Chinese characters emerged in the Neolithic age. Inferred from the inscriptions on the terra cottas of the early *Dawenkou* culture and the oracle bones of the Yinshang dynasty, Chinese characters emerged 5000 years ago. Chinese characters derive from the primitive pictures with

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[303] Quoted from Li Chenyang, *Duoyuan zhong de rujia shijie* (Confucianism in a pluralistic world) (Taipei: Wu-Nan Book Company Ltd, 2006), 33; Chad Hansen, "Chinese language, Chinese Philosophy, and Truth,"Journal of Asian Studies,Vol.XLIV, no.3 (1985): 492.

pictographic characters being their backbone. The ancient people represented the physical objects in the nature with graphs. The ancient Chinese characters were created by representing the forms of the objects. As symbols, modern Chinese characters have developed and evolved step by step from the pictographs with the expansion of range and rate of the usage.

Xu Shen (c.58-147 A.D.) has a description of the pictograph of Chinese characters in *Shuo-wen Jie-tzu as,*

"倉頡之初作書也，蓋依類象形，故謂之文。其後形聲相益，即謂之字。文者，物象之本；字者，言孳乳而寖多也。著於竹帛謂之書。書者，如也。以迄五帝三王之世，改易殊體，封於泰山者七十有二代，靡有同焉"。

When Cang Jie first created characters, he made them according to forms and structures of natural things. That is why, the original characters were called '*wen* (pictographic characters)'. Afterwards he created the phonogram to enlarge the amount of characters, which were then called "*zi* (characters)". So, "*wen*" refers to the original pictography whereas "*zi*" is the derivative of "*wen*". The characters written on the bamboo slips and silk was called "shu (book)", which means recording events. Shifting through the long time of the Three Kings and Five Emperors, the characters had been changed, either in the strokes or the forms. Therefore, each of the inscriptions on the stone tablets on the Mount Tai, which are in memory of the ceremonies for offering sacrifices to heaven by the kings of 72 dynasties, is different from one another.[304]

First of all, pictography is a feature of Chinese characters. "*Xiangxing* (Pictography)

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[304] Xu shen, Shuowen jiezi (Beijing: Zhonghua shuju, 1981).

means drawing the object by bending the strokes (*Jiechu*) according to its shape." The *Xiangxing* (pictography) stated by Xu Shen means drawing a pictographic symbol representing the object by changing the strokes according to the shape of it. "*Jiechu*" means crooking and bending, which indicates that there was great importance put on the shape of objects and one would not dare spare any efforts in getting the word right. Duan Yucai said, "There are both the pictography with a single structure and the one with a dual structure.[305]" The ancient people got the images of the objects by observing the objects in the universe from different perspectives, either with a bird's view, a horizontal view or a side view, according to the fundamental features of the objects. Based on the observation, they drew the graphs. The pictographic character represents a complete body of an object. For example, the character *Che* is the pictography of the wheel of a cart and *Zhou* is the pictography of a boat. Directly connected with the thinking, the way of expressing one's thoughts with pictography of the Chinese characters constitutes an independent system of expression, which renders certain meanings to the objects according to the subjects' judgment and choice.

In the preface of *the Study on the Oracle Bone Inscriptions,* Guo Moruo stated that to explore the origin of the Chinese society…to learn the characters is the first step towards the exploration… The first batch of researchers of the oracle bone inscriptions divided these ancient characters into such categories as the chronology,

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[305] Duan Yucai, whose *Commentary on the Shuo Wen Jie Zi* appeared in 1815 after he had worked on it from 1776 to 1807 and is regarded as a classic edition of *Shuo Wen*. Xu Shen analyzed the structure of characters and defined the words represented by their images; Duan Yucai's commentary explained and extended Xu Shen's original analysis. Both authors' explanations of names are regarded as important references in this chapter. Commented by Duan Yucai（1735-1815,*Commentary on the Shuo-wen Jie-tzu* (Shanghai: Shanghai Commercial Press, 1939).

number, astronomy, geography, personnel, utensil, animal and plant. All characters are clearly classified and each category has its own rule of creation. They also realized that this set of categories could be illustrated by the source of the character creation depicted in the *I Ching: Xici xia* (*Book of Changes:* Great Commentary II).[306]

5.3.3 Theory of "Name (*Ming*)" with Rational Thinking

American sinologist Homer Dubs has pointed out that in Chinese, the word "logic" literally means "the study of terms". When logic was developed as a discipline in China, the first issue addressed was names, rather than rhetoric and judgment.[307] In the early Chinese culture, "*Ming*" was originally used to mean the name of objects, but it was hard to distinguish between the objects. Therefore, a variety of names were set to mark the distinction between the objects. The proposal and debate on *Ming* reached a peak in the contention of different schools of thoughts in the period of the Spring and Autumn and the period of Warring States. Each school proposed its own theory of *Ming* through rational thinking, and made it rational and logical.

Confucius (552 BC- 479BC) put "*Zheng-ming* (rectification of name)" in priority while Lao-tzu had said, "without *Ming*, it was the beginning of heaven and earth; with *Ming*, the mother of all things became clear." Xuncius (340 BC -245BC) wrote *Zheng Ming*. Mo-tse (about 480BC-393BC) wrote "*Jing*" and "*Jing shuo*", which reviewed on the difference between the name and the substance. Han Feizi believed that "name and behavior will be consistent". All scholars of the Pre-Qin period elaborate their

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[306] Wu Haokun and Pan You, *Zhonguo jiaguxue shi* (The history of Chinese studies on the oracle bone inscriptions*)*, (Shanghai: Shanghai renmin chubanshe, 1985), 102.

[307] Homer Dubs, *Hsüntze: the Moulder of Ancient Confucianism* (London: Arthur Probsthain, 1927).

own theories based on "*Ming* (name)" and "*Shi* (substance)". However, it was Deng Xi in the Spring and Autumn period that first focused explicitly on the relationship between name and substance. Then, Yin Wenzi, in the period of Warring States, significantly developed its theory on *Ming,* which became prosperous at the time of Shi Hui and Gongsun Long, hence a school of thoughts was started.[308]

Confucius' concept of *Zheng Ming* (the Rectification of Names), he indicated that every action and thought is derived from a concept; the name represents a concept; thus, name pointed to the direction of action and, indeed, the names become a focus of life and social organization.　The famous description is:

> "子路曰：衛君待子而為政，子將奚先？子曰：必也，正名乎。子路曰：有是哉！子之迂也。奚其正？子曰：野哉，由也。君子於其所不知，蓋闕如也。名不正則言不順，言不正則事不成，事不成則禮樂不興，禮樂不興，則刑罰不中，刑罰不中，則民無所措手足。"

> Zi lu said, "The ruler of Wei has been waiting for you, in order to administer the government with you. What will you consider the first thing to be done?" The Master replied, "What is necessary is to rectify names." "So! indeed!" said Zi lu. "You are wide off the mark! Why must there be such rectification?" The Master said, "How uncultivated you are, Yu! A superior man, in regard to what he does not know, shows a cautious reserve. If names be not correct, language is not in accordance with the truth of things. If language be not in accordance with the truth of things, affairs cannot be

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[308] Lai Tianyuan, "General Theory on Chinese Studies" in *Guo Xue Dao Du* (Introdution to Chinese Studies, compiled by Qiu Xieyou, Zhou He, and Tian Boyuan (Taipei: Sanmin Press, 1993), 1-49.

carried on to success. When affairs cannot be carried on to successful conclusions, proprieties and music do not flourish. When proprieties and music do not flourish, punishments will not be properly awarded. When punishments are not properly awarded, the people do not know how to move their hands or feet.[309]

One of the sentences *Ming-bu-zheng ze-yan-bu-shun* (If names be not correct, language is not in accordance with the truth of things) became a famous and classic moral concept for Chinese people. According to the thoughts of Confucianism, the uses of name, object and language are correlated. In effect, the Confucianism deals with the relationship between names and the objects, referred to by the names through the use of language. Modern philosopher Feng Youlan had given interpretation to the *Zheng Ming* (the Rectification of Names) theory of Confucius as the following: "A name must have its own definition, which defines why the object is given this name, i.e. the feature or the concept of the object." That is to say that every name has its own definition, which is the meaning of the name, or an array of features that comprises the meaning of the name.[310]

Ming (names) is what things are called. The *Mohist Canons* distinguish three kinds of names: '*Ming*' (name), unrestricted, classifying and private. These terms are explained in the *Explanations*: 'Things' is 'unrestricted'; any real object necessarily requires this name. Naming something 'horse' is 'classifying'; for 'like the real object' we

[309] Confucius,*The Analects of Confucius: Lun Yu*,translated with an introduction and notes by Chichung Huang (New York : Oxford University Press,1997), 263.

[310] Feng Youlan's theory of *Zheng ming* is quoted from Li, Chenyang, *Duoyuan wenhua zhong de rujia* (Confucianism in a pluralistic world) (Taipei: Wu-Nan Book Company Ltd., 2006), 66.

necessarily use this name. Naming someone 'Jack' is 'private'; this name stays confined in this real object.[311] In the *Technique of the Mind A* of the *Guan zi* names and forms are spoken of as follows: Things have definite forms. Forms have definite names. One who makes names conform [to real objects] is called a sage.[312] Zhuangzi reads, Names are what correspond to realities.[313] Gongsun Long says, Names are the appellations of things (*Gongsun Long* 6, Discussion of Names and Real Objects, p. 40). In the sections about logics of the Mo Zi, it is said, one uses names to refer to real objects.

Xun Zi (340-245 BC) presented a theory of *Ming* (names) and a system of logic for categorizing things. His *Zheng Ming Pian* (The Rectification of Names), [314] Xunzi distinguishes between 大共名 common names and generic names:

> For although the myriad things are innumerable, sometimes we want to speak of them as a whole and so we call them 'things'. 'Things' is a great common name … Sometimes we want to speak of one section of things, and so we call them 'birds' and 'beasts.' 'Birds' and 'beasts' are great particular names.

The great common names are what the Mohists called 'unrestricted names,' whereas the great particular names are what the Mohists called 'classifying names.' Hence, unrestricted names and generic names refer to what we now call 'concepts.' The term 'concept' is said from the point of view of thought, whereas 'name' is a linguistic term.

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[311] *Later Mohist Logic*, 325.

[312] See *Guan zi* 48, *Technique of the Mind A,* 2:9.

[313] See *Zhuang Zi* I, *Gong Rambling Without a Destination*, line 25.

[314] Xun Zi (340-245BC) *Zheng Ming Pian (The Rectification of Names).* The English version can be referenced: Y.P.Mei, *Hsüntze (Xun Zi) on Terminology* (Philosophy East & West, 1952); Wing-tsit Chan, *Naturalistic Confucianism: Hsüntze* (Xun Zi), In *A source book in Chinese philosophy* (Princeton: Princeton University Press, 1963), 115-135.

Thought and language may be compared as contents to form. Thought is always expressed in language. There can be no thought that is completely removed from language. Hence 'names' and 'concepts' are essentially the same.[315]

By concluding the above mentioned "character creation" method and the theories on "names" of the well-renowned scholars, we have clarified the Chinese way of defining the terms of everyday tools. The definitions of the related terms *Qi* (utensil), *Ju* (tool), *Wu* (object), inclusive of the source, naming, concept and category, help us learn about the concepts and knowledge of Chinese artifacts. The chapter will offer detailed discussion of the definition and categories of utensils, tools and objects.

5.3.4 Characters and Artifacts Share the Same Origin

Characters and artifacts share the same origin. Both the origin of the characters and of the artifacts comes from the sages. The *Xi Ci, in the Book of Changes,* recorded the origin in that the sages observed the images of objects and created artifacts. In *the Book of Changes, Xi Ci II states*:

古者庖牺氏之王天下也，仰则观象于天，俯则观法于地。视鸟兽之文，与地之宜，近取诸身，远取诸物。于是始作八卦，以通神明之德，以类万物之情。"

"In the ancient times when Pao Xi ruled the country, he observed both the astronomical phenomena and the topography. He observed the images of birds and animals, the texture of the ground, the parts of his own body and the objects other than that. Based on these observations, he created pa-kua, so as to understand the morality of gods and to explain the truths of thousands things."

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[315] Zhang Dainian, translated and edited by Edmund Ryden, 2002.

In the preface (*xù*) to the *Shuowen Jiezi,* it explains that the origin of characters and artifacts - both coming from the sages and kings.

> Shen Nung record objects and events by making rope knots. However, when the events and objects became more complicated later on, mistakes and confusion occurred constantly…Cang Jie, scribe for the Yellow Emperor, on looking at the tracks of the feet of birds and animals, realized that the patterns and forms were distinguishable, and they started to create graphs, so that all kinds of professions could be regulated, and all people could be kept under scrutiny.[316]

The real intention for Cang Jie to create characters came from *Guai* diagram. "*Guai*, means to make public announcement in the royal court. It means that characters were to be used to deliver orders and to promote civilization. "The noble men offer benefits to the common people and won't take that as their kindness."

The popular handbook *Kao gong ji* (*Book of Diverse Crafts*), which was later included into the Confucianism Classic (*The Book of Rites*), published by the government, also attribute the artifacts creation and invention to the sages. "All crafts are created by the sages", but there was further interpretation. That is "the wise" created the artifacts while "the skillful" followed the methods of manufacture and carried it. They are quite similar to today's "designer" and "manufacturer".

> "The wise men created crafts and the skillful men recorded the methods and kept them for generations. That is called craft. All crafts were created by the sages. Smelting metals to make knives, sticking soils to make utensils, making carts to

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[316] Xu Shen. *Shuowen jiezi*, "Preface," K. L. trans. Thern, *Postface of the Shuo-wen Chieh-tzu: The First Comprehensive Chinese Dictionary,* Wisconsin China Series, no. 1, (Madison: University of Wisconsin, 1966), 8-9.

travel on roads and making boats to travel on water are all the creations of the sages."[317]

The concept, of attributing the creation of characters, artifacts, invention and design to the sages, has been adopted by recording of the ancient Chinese literary tradition (the "general cyclopedia" about the origins of objects) to all the later generations. In the later series of general cyclopedias about "origin of objects", Chinese scholars had also tried to construct a complete and reasonable assumption on the emergence of objects and the world by tracing the origins of objects. These opinions of the scholars are in conformity with the early concept of *Yi jing (the Book of Changes)* about the origin of utensils, both attributing the inventor and the technology of the inventor to the ancient kings.

In *Notes on the Origins of Things and Affairs*, Gao Cheng stated that Fuxi established the advantage of using pestle and mortar while others say it was only later and the Yellow Emperor, who first split wood to make a pestle and dug the earth to make the mortar. Later generations 'added inventiveness' (*Jia-qiao* 加巧) to this and used (the power of) the whole body in a 'foot-operated tilt hammer' (*Ta-du*i 踏碓)。 The advantageous use is thus multiplied by ten. It is the 'inherited method' (*Yi-fa* 遗法) of 'pestle and mortar' (*Chu -jiu* 杵臼) from which the tilt arose.[318]

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[317] Translated and commented by Wen Renjun, *Kao Gong Ji (The Book of Diverse Crafts)* (Shanghai: Shanghai Publishing House for Ancient Books, 1993).

[318] Gao Cheng, *Notes on the Origins of Things and Affairs*,460 "*Nongye, tao, yu* ([Agriculture, fishery, pottery, smelting], sub Dui 碓 [Tilt hammer]". The quote inserted in square brackets derives from the *Xici* commentary to the Book of changes, where the idea for this device is said to

5.3.5 Origin of *Qi-ju* is the Root of Civilization

Since the very early times, the ancient scholars had been strongly interested in the knowledge of "objects". They had been trying to trace the origins, invention, inventors and technology of the "objects" and to give reasonable explanation, so as to find the route of the development of civilization and culture. They thought that Chinese scholar proposed the concept of "all things have an origin" in *Wu-yuan* encyclopedia and as Martina Siebert's says, "'origins' as means to establish knowledge and as cultural history" and it equipped Chinese cultural memory with the notion of advancement within civilization. The exploration of "objects" led to a series of *Wu-yuan* encyclopedias. In these primitive explorations, the scholars attempted to to construct a complete and reasonable assumption on the emergence of objects and the world.' According to Siebert, he indicated that "… having escaped the state of primitivism with the help of the sage kings, men continuously elevated his state of being, developing social organization, humanity and technology by relying on his own inventiveness and passion.[319]

> In high antiquity (*tai-gu* 太古) 'men' ate 'animals' in fur and drank their blood. Youchao (有巢) began to teach the people to eat fruits; Suiren (燧人) began to make fire so meat could be roasted; Shenong (神农) began to plow and roast grain; the Yellow Emperor created gruel …"[320]

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derive fromthe hexagram no. 62*Xiao-guo* 小过. It is quoted Gao Cheng, *Notes on the Origins of Things and Affairs,* 461 sub "*Chu-jiu* 杵臼[pestle and mortar]"; and Siebert 2012, 271.

[319] Siebert 2012, 264

[320] Luo qi, *Origin of things*, 37b.

Luo Qi added another dimension to this. He explicitly praised the enormous deeds of the sage kings in the "inception of things and construction of tools" (*kaiwu zhi qi* 开物 制器) that played a key role in making the currently profitable use of the world possible. He thus demanded his contemporaries to acknowledge that most of their happiness relied on things originally made by the sage's hands (Luo Qi). To Luo Qi, Wuyuan built up heroic histories of China's culture that gratefully reconsidered the gigantic first steps made by the sage kings.

The opinion of the author of *Wu yuan* is consistent with the early *Yi jing* (*the Book of Changes)'*s concept on the origin and invention of artifacts. They believed that it is the sages that created the utensils and tools, houses and boats for the people. For example, in Xici II, the statement of Mo-tze on the inventor, and the Wuyuan encyclopedia as well, also repeatedly attributed the inventors and the invented technology to ancient sages. This also can be found in Gao Cheng's *Notes on the Origins of Things and Affairs.*[321]

The above mentioned authors of *Wu yuan* encyclopedia thought that exploring the origins of "objects" (utensil and tool) meant to establish knowledge system and cultural history. The late Qing scholar, Wang Rongbao 汪荣宝（1878-1933）claimed that, 故器械、舟车、宫室者，礼之始也。 "Rites and morals actually relied on the invention of the basic technologies of tool making, housing, and transportation. Therefore, machinery, boats and carts, and palaces are the beginning of rites." They all thought that the invention of artifacts was the foundation of civilization. As's

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[321] See footnote 31; and Siebert, 271.

evaluation of these texts, it is said: "Wuyuan encyclopedias tried to specify *when* certain 'things' originated, employing ancient sages or historical personnel as markers of time and as labels for the value of the invention. They, moreover, also allowed insight into *how* and *why* new things and institutions were thought to come into being or develop and – even more fundamentally – *what* actually counts as an origin or beginning."[322]

Therefore, they proposed a system of knowledge theories of "objects", stating that the exploration of the origin of "things" would make the scholars master the mode of real knowledge, i.e. *Li* or *Ze* (principle). This was regarded the ancient people's knowledge theory on *Qi ju* (utensils and tools). Yang jing declares in the 1447 preface to the *Notes on the Origins of Things and Affairs* that knowledge of the origin and beginning of all things, past and present, leads the scholar to the roots and basic patterns of knowledge itself:

> Things between heaven and earth are myriad and the changes in affairs from antiquity to the present are abundant, but still, there is no thing or affair that does not have a principle (*li* 理) and noting that does not have an origin (*yuan* 原). If one does not exhaust the principles (of things and affairs); then there is nothing with which to consummate the knowledge of one's mind; but if one does not research their origins, what else is there to follow in exhausting their principles?[323]

5.3.6 Conclusion

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[322] Ibid.

[323] *Notes on the Origins of Things and Affairs*, details refer to Siebert 2012.

This chapter research discusses the basic research findings. Back to the beginning of the creation of characters, naming, images of objects and pictographic characters were closely connected. Specifically speaking, the image of the character is the same of that of the utensil and the definition of the name of the character is its meaning. This thesis won't argue about the ideology and traditional conception that attribute the creation of characters and objects to the sages, whether this construction of civilizational origin is mythological construction or the reason of ideology is beyond the scope of this research. However, we see rationality and logic in the theories of diverse schools about the definition, categorizing and development of "*Zi* (character)" and "*Ming* (name)".

Therefore, the Chinese perception of things and the later developed knowledge system is based on the constitution of "character". This constitution of "character" includes; (a) the creation of the earliest pictographic characters, (b) the "meaning" (meaning rendered) of the characters, (c) the categories of "things" developed from the "characters", (d) the concept of "*Ming* (name)" and the "referring" to "things" resulted from the "characters", and finally (e) the gradually developed philosophical constitution, -- are all based on the ancient "creation of characters". Therefore, the Chinese people's observation and perception of the universe, the nature and the things are all implied in "characters". The Chinese characters, language, images, entities and meanings are integrated together. When people see or hear any one of the five, they will understand the meaning indicated in the things. This is different from the developmental route of the definition of terms in western philosophy.

That is why the modern Chinese craft history and design history lay great emphasis on tracing the origins of the meanings of characters, concepts and philosophical thoughts from the early traditional ancient historical classics, so as to prove the reasonability of the Chinese design knowledge system. In the ancient classic literature, from the early creation and definition of characters, it is traceable in the following: (1) *Book of Changes,* the first ancient dictionary *Shuo-wen Jie-tzu* written by Xu Shen in the Han Dynasty;

(2) The Wuyuan Encyclopedia traced and restructured of the origin of objects and characters;

(3) The guidebook for craft production *Kao-gong-ji (the Book of Diverse Crafts)* (was included into the classic of Confucianism *Rites of the Zhou*).

These provided by the government in the second century was a real recording and representation of the artifacts production practice of the society of that time, which is useful for today. The theories of the hundred schools of philosophers in the Pre-qin period gave deliberate rational thinking of the universe, the nature, things and artifacts (these concepts have been given detailed introduction in the retrospect on Pre-Qin period texts, the first part of the chapter on the analysis of historical texts). These terms found in the early historical literature constituted the definition of the initial "*Qi-ju* (utensil and tool)" and the constitution of the culture and knowledge about "Q*i-ju* (utensil and tool)". The Chinese scholars of generations have been engaged in the construction of China's knowledge system in laying foundation for the classics - the principles for truth, morality, and practice, as well as maintain the sustainability of the system in the history.

5.4 Chinese Philosophical Approach to Original Chinese *Qi-ju* Design System

The theoretical assumption that "Chinese *Qi-ju* (utensils and tools) design is considered as a knowledge system" can be supported by referring to Chinese philosophy. This section discusses the philosophical context in which the Chinese design knowledge system evolved and relates the viewpoints, approaches, and methods underlying the Chinese perception of daily tools. In other words, it examines how Chinese design knowledge is acquired, transformed, and generated through the critical bases of ontology, epistemology, and methodology. Specifically, the philosophical context in which design knowledge has been formed indicates how Chinese people understand nature and the universe, how design knowledge has been developed, and what methods have been used to construct this kind of knowledge.

In this thesis, the Western concepts of ontology, epistemology, and methodology are expressed as the Chinese perception of "reality, knowledge, and method". Chinese scholars have traditionally concerned themselves with three kinds of philosophical issues: *Tian dao lun* (metaphysics), *Ren dao lun* (life philosophy), and *Zhi zhi lun* (epistemology).[324] Because daily tools are things that exist in the material and natural world, any investigation of their design must be based on how the world is seen (ontology) from the Chinese philosophical perspective. Epistemology is concerned with knowing about "reality". The epistemological viewpoint suggests that knowledge of the world can be generated by observing, participating, or interpreting certain sources. This section therefore discusses the Chinese philosophical approach to design knowledge and epistemological discussion of Chinese *Qi-ju.*

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[324] This is Wu kang's categorization, details refer to Wu Kang, Zhexue dagang (The outline of philosophy) (Taibei: Shangwu yinshuguan, 1972).

5.4.1 Chinese Philosophical Approach to Original Chinese *Qi-ju* Design

Western philosophy usually deals with the problems of the following three aspects: *Metaphysics*, *Ethics* and *Epistemology*. Metaphysics is about the intrinsical problems of all things on earth. Aristotle himself claims it as the first philosophy or theology, but *Metaphysics* comes from the Greek word *Meta physika*, whose literal translation is "after physics", used to refer to some works of Aristotle about natural things, and it started the discussion of the western metaphysical problems. Modern Chinese philosophers put forward, as mentioned earlier, that there are three main research contents of the Chinese ancient philosophy: *Tian dao lun* (metaphysics), *Ren dao lun* (life philosophy), and *Zhi zhi lun* (epistemology). The following is a brief introduction to the mode of discussion, contents and key points of Chinese ancient philosophy.

The pioneer scholars in this endeavor include Wu Kang, Tang Junyi, Zhang Dainian, and Zhang Liwen. Wu Kang (1895-1976）proposed a model of Chinese philosophy[325] whereby philosophical questions are categorized into three issues. The first is the issue of the universe - cosmology and ontology. He explained that cosmology addresses the origins of the universe and includes philosophy of nature and evolution, whereas ontology revolves around the issue of reality and being. The second is the issue of life –philosophy, or the philosophy of human life, which includes philosophy of the mind as well as values and addresses topics such as human behavior, values, and society. The third is the issue of knowledge, which includes logic, or the method

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[325] Wu Kang's (1895-1976) *Zhe xue da gang* (The Outline of Philosophy) (Taibei: Shangwu yinshuguan, 1972).

of acquiring knowledge, and epistemology, the content of knowledge[326]. Wu Kang regarded metaphysics and epistemology as forms of "theoretical philosophy" and philosophy of human life as "practical philosophy".[327]

Zhang Dainian (1977) pointed out that philosophical problems should be approached by understanding the developmental process and inspecting their origins and evolution. Another scholar, Wang Kaifu (1993), indicated that there were three research areas in Chinese philosophy: *metaphysics*, *life philosophy*, and *epistemology*. *Metaphysics* refers to the discussion of cosmology and the natural world; *life philosophy* refers to the issue of people's daily lives and value systems, including practice and experience; *epistemology* (*Zhi zhi lun*) includes "names", "inspecting", and "knowing and acting".

To summarize, the basic issues addressed in Chinese philosophy are *metaphysics, life philosophy*, and *epistemology. Metaphysics* is related to knowledge of the universe as well as nature and has its origins in Taoist thought; *life philosophy* is concerned with how people practice ethical values in life; *epistemology* centers on the methods (*Fa*) used to "inspect" knowledge and experience knowledge to achieve a certain target.

5.4. 2 Ontology, epistemology and methodology in Chinese Philosophy

The proportion of the discussion of ontology, epistemology and methodology (according to the discourse mode of western philosophy) has different focus when we

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[326] A detailed description of Chinese philosophy can be found in Wu Kang's (1895-1976) *The Outline of Philosophy* (1972) or Qiu Xianyou, Zhou He, Tian Boyuan eds., *Guo xue dao lun* (The guidance of Chinese study) (Taibei: Sanmin shuju, 1993), 6-7.

[327] Wang Kaifu, *The Introduction of Chinese Philosophy*, In Qiu Xianyou, Zhou He, Tian Boyuan eds., *Guo xue dao lun* (The guidance of Chinese study) (Taibei: Sanmin shuju, 1993), 8 (1-39).

discuss the study of Chinese philosophy. Chinese philosophy attaches importance to the value of philosophy, especially the moral practice, and people all think that the achievement of personality is more important than the knowledge achievement; therefore, the life philosophy about individual life and the political philosophy of group life received considerable attention, while the discussion about cosmology, ontology of the universe itself received less attention. Thus, the discussion of the methodological epistemology and the logic that explained the rules of reasoning took up less proportion in the introduction of Chinese philosophy.[328]

In Chinese philosophical ideas, the humanity that probe into the moral life of individual, and the philosophical discussion of Mencius, Confucius, Xuncius took up the dominant place. Taoism has developed cosmology and ontology, but its main concept is still the philosophy of life. The position of epistemology and methodology in the Chinese philosophy cannot be compared with their position in the Western philosophy. Although we have the logic and the thought of epistemology of Mohism, and Gong Sunlong's "the School of Logicians", their lengths of articles are rather short and fragmented, thus, they have been somewhat ignored in history.[329]

Few records or less attention does not mean it is not important. During the process of discussing the "ancient daily utensils" in this thesis, we found that these records (or theories) about epistemology and methodology played a direct or indirect guiding function in the design and production of traditional Chinese daily utensils. It also plays an important role in the research of Chinese traditional daily utensils of Chinese

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[328] Wang Kaifu, *The Introduction of Chinese Philosophy*, In Qiu Xianyou, Zhou He, Tian Boyuan eds., *Guo xue dao lun* (The guidance of Chinese study) (Taibei: Sanmin shuju, 1993), 24.

[329] Ibid, 24-25.

design history and the study of design. Therefore, this thesis has attempted to find all kinds of discussions about the "Traditional daily utensils" in these few historical records of data.

We can say that Confucius, Lao zi, Zhuang zi, Xun zi, etc have various theories which they hold as their own theories and ideas towards the formation of all universal things. And this thesis has mainly selected the discussions in: (i) the early *Book of Changes,* (ii) the ontology of Laozi, Zhuangzi, and (iii) the discussion about epistemology and methodology in Mo Zi s (480-420BC) Mohist Canon. The choice of these discussions basically have several reasons: First, we can find a lot of discussions of *Tao* in many records, for example, the *Dao Qi Lun* (*the discussion of Taos and utensils*) in *Book of Changes* and Lao Zi's *Tao and Skill* all have profound and lasting influence on the ancient Chinese utensil designing and thought. *Tao* as the universal ontology, have been involved and interpreted by the philosophers of the later *Song, Ming* and *Qing* dynasties, and formed their own epistemology and methodology. This chapter has no intention of deviating from the research subject too far, so we only delineated the original and simple *Tao* as the universe itself in ancient Chinese philosophy.

Second, about the epistemology and methodology, scholars generally accepted that the epistemology of Mo Zi was the most systematic and logical in the Chinese philosophy (compared with other schools). His attention to the logic and verification was embodied in his name, classification of things, and the detailed explanation of the way's (method) towards acquisition. The three tests 本 *Ben*, 原 *Yuan*, 用 *Yong* of Mo Zi even intergraded the historical authority, empirical, and pragmatic forms of truth into a complete theory of knowledge.

Third, the methodology that Mo Zi put forward has never been involved or related by other schools (such as, *Confucius, Laozi and Zhuangzi* etc). His early work as a craftsman and his experience has made his theory possess the point of view that other schools do not have, which makes his theory more practical. He took the object design and production as examples in his many metaphors to show the importance of practice and method.

Mo Zi's epistemology and methodology played an important role in understanding the object knowledge of *pre-Qin* period. For instance, in the Chapter 3, arising from the hundred schools of thought and the text analysis of *Book of Diverse Crafts, it was stated* that Mo Zi's *Mohist Canon* and *Book of Diverse Crafts* were considered to be the two possible directions of *pre-Qin* technology.[330] In terms of the discussion of utensil designing and making rules in *Book of Diverse Crafts* (which was known as the instruction of handcraft technology at that time), what was more involved in his theory was his epistemology and methodology on the design and technology of object design. In addition, his theory emphasizes 利于民 *Li-yu-min* (good for people and benefits people), and his attention to the common people made his ideas different from Confucius, who paid much attention to the class order and level of ideas. His emphasis on practical and the idea that government should pay much attention to peoples interests still have realistic significance for today's design.

5.4.3 Ontology Approach of *Tao* and *Qi*

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[330] Wen, Renjun, *Annotation to Kao Gong Ji* (Shanghai: Shanghai guji chubanshe, 2012), 1.

In Chinese philosophy, the ancient Chinese have put forward the theory of *Above the Shape*[331] and *Within the Shape*, which comes from the *Book of Changes-Copulative Preach*: 形而上者谓之道，形而下者谓之器 which means *What is above shapes is called the Tao, what is within shapes is called the implements*.[332] The author takes the 道 *Tao* and 器 *Qi* to set the view of 形而上 *Above the Shape* and 形而下 *Within the Shape*. 形而上 *Above the Shape* refers to the rules without image, which is *Lao tze's* 道可道，非常道 (*The Tao that can be told is not the eternal Tao*). 形而下 *Within the Shape* refers to the tangible things, namely the *Qi* that are relative to *Tao*. Cui Jing of Tang dynasty took the 形而上 *Above the Shape* as 用 *Usage* and 形而下 *Within the Shape* as 体 *Body*. He said that:

凡天地万物皆有形质，就形质之中有体有用。体者即形质也，用者即形质上妙用也。言有妙理之用以扶其体，则是道也。其体比用，若器之于物，则是体为形之下，谓之为器也。

All things between the heaven and earth -- all has its own visible shape, of which there are 体 *Ti* (Body) and 用 *Yong* (Usage). *Ti* (Body) means shape; *Yong* (Usage) means the best use of the shape. To describe and explain the best use of shape to support the *Ti* (Body) is called *Tao*. Comparing the *Ti* (Body) with *Yong* (Usage), if the *Qi* is a 物 *thing*, then *Ti* (Body) is within the shape, so it is

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[331] The use of the word Xing-er-shang-xue "metaphysics", in Chinese is coming from Japan. After the Meiji Restoration, people started to translate the Western classics in large scale, and the world *Metaphysics* was translated as "metaphysics" in Chinese.

[332] But *Zhou Yi (The Changes)* did not make any further explanation for it, instead, the later philosophers have made further development for it.

called as *Qi*.[333]

In addition to the theory of the Above the Shape and Within the Shape, the Chinese thinking public also pays much attention to the relationship between the two. Here *Tao* and *Qi* have no absolute distinction; in fact, they are closely connected with each other. It not only pays attention to the unknown *Tao*, but also the tangible *Qi* (Utensils and tools).

5.4.4 Epistemology and Methodology of Mo Zi

The thesis has selected the epistemology and methodology of Mo-tse to be discussed for various reasons. The book Mo-tse of is written and recorded by his disciples and later his students. Mozi's epistemology brings us inspiration to understand the knowledge of Chinese ancient Objects. Mozi's epistemology mainly reflects his understanding of three things: (i) the origin, (ii) the process and (iii) the standards. This thesis takes his three aspects of theory to construct his premise of of knowledge, namely the concept of 名*Name*, 类*classification* and 法*Testimonies*, also known as the three tests, 取实予名 (*to name things according to the physical truth*), 查类明

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[333] Cui Jing (Tang dynasty), the expert of *Yi Ching* (Changes), was not recorded in history, so there are no detailed life, it is said that he lived after the age of Kong Yingda (574-648, the famous classics expert in Tang dynasty). Cui Jing has unique explanation towards *Zhou Yi*. He has put forward the theory of *Ti* (Body) and 用 *Yong* (Usage) on the relationship of *Tao and Qi,* namely took the Qi as main body, and was regarded has the property of Materialism, and has a great influence on the Gong Li Pai in later Song and Ming dynasty. He put the form of *Qi* at the first place, and classified the way of doing nothing into the function of the form of *Qi*, and abandoned *Xuan Xue's* form and view, finally made great contribution to the development of Yi Ching. It is Quoted from Huang Shi's (19th century), *Cui Jing Yi Tan Xuan Xue* (Yangzhou: Jiangsu Guangling Gu Ji Ke Yin She, 1984).

故 (*when understanding things or debating, it shall carry on the reasonable classification and find the difference, causal connection and basis of all kinds of things to explore its development before and after*), and 法仪 (*Testimonies and etiquette*).

Firstly, on the understanding of their books,, Confucius and Mo zi's point of views are different from each other. Confucius advocated 以"名"正"实", namely, using the name and concept to specify the objective reality and its existence, and, in fact, using the rank and status specified by rites of Zhou to limit and correct the disorder phenomenon in society. Mozi did not agree with Confucius' discussion of the relationship between 名实 (*name and reality*), instead, he thought that we should give things corresponding names based on the actual things of the objective things, that is to say, the 实 *Reality* of a thing decides its 名 *Name,* rather than the 名 *Name* decide its 实 *Reality*. This is the epistemology he called as 取实予名.

Secondly, on the origin of epistemology, Confucius had the view that 生而知之 (*human is born wise*), while *Mo-tse* thought that the human knowledge can only come from the objective reality that people's sense organs can feel. He once said that the method people used to test whether the ghosts exist or not must take what they have seen or heard as guiding standard. If someone, indeed, have seen or heard something about ghosts, then the ghost must really exists. That is to say, the standard to judge whether something is there or not is guided by seeing, smelling and feeling of man.
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[334] Detal refers to Mozi's philosophy in *Chinese philosophy history*, 2012, 82.

Thirdly, Mozi had put forward the standard to verify the knowledge and speech. The three tests of Mozi, on one hand showed the Chinese traditional respect for the ancient, on the other hand showed his thought of paying attention to the experience and utility. when demonstrated his thought of 非命 (*Rejection of Destiny*), he put forward the 三表法 (*three tests*) of 言必立仪(*the speech must establish the standards and laws*). He said: The Mohists wrote about speech having three tests:

> 言必立仪。言而毋仪，譬犹运钧之上而立朝夕者也，是非利害之辨，不可得而明知也。故言必有三表。何谓三表？子墨子言曰：有本之者，有原之者，有用之者。于何本之？上本之于古者圣王之事。于何原之？下原察百姓耳目之实。于何用之？废（发）以为刑政，观其中国家百姓人民之利。此所谓言有三表也。（非命上）

Speech must have three tests. What are the three tests? Master Mozi said, "There is the root of it 'speech', its origin 'evidence in favor of,' and its use. Where is its root? Its root lies far back in the activities of the sage kings of old. Where is its origin? Its origin lies below in investigating the realities perceived by the ears and eyes of the hundred clans. Where is its use? One applies it in punishments and administration and observes whether it matches what is of benefit to the State, hundred clans and people. This is what is meant by saying that speech has three tests." (*Mozi* 35, *Rejection of Destiny A*, lines 7-10)[335]

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[335] The translation of this text is from: Zhang Dainian, *Key Concepts in Chinese Philosophy* translated and edited by Edmund Ryden (New haven and London,Yale University and Beijing, Foreign Languages Press), 481, 512. Original quotation is from A.C.Graham*, Latter Mohist Logic, Ethics, and Science* (Hong Kong：Chinese University of Hong Kong, 1978). Other sources are: *Mozi yinde*; also Chan Wing-Tsit, *A Source Book in Chinese Philosophy* (Princeton, N.J: Princeton University Press, 1963).

The tests are three ways of judging the truth of what is said. The first is to appeal to ancient authority. The second is to look at the experience of ordinary people. The second test is pragmatic: Is what is said of benefit to the people? The first test appeals to historical authority, the second to empirical observation, and the third to practical implementation. In combining authoritative, empirical, and pragmatic forms of truth the Mohist theory becomes rich and profound. It is the finest example of a theory of truth in ancient Chinese philosophy.[336]

Fourthly, Mozi pays much attention to the experience and he knows the function that the rational knowledge played when knowing and grasping the nature of things. He put forward that to know things we need 以往知来，以见知 (*Knowing the future development through the past experience, and knowing the hidden principle through the obvious things or reasons*) （《非攻中》）. He is a pioneer in philosophical history and firstly puts forward the three logical categories: 类 *Lei* (Classification), 故 *Gu* (Past) and 理 *Li* (Reason). Mozi thought that when knowing things or in the process of debating, one must first know 知类 *Zhi-lei* (knowing what kind of category the thing belongs to) and 查类 *Cha-lei* (clarify and specify the concept). 类之名(*Classify the things and then name them*) refers to the concepts that can reflect the essence of the same kind of thing.

From the point of epistemology, 察类 *Cha-lei* is to clear the certainty of connotation and extension of the concept, and to discern the difference between different concepts. To know things, we should not only *Cha-lei* but also need to 明故 *Ming-gu*, which

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[336] Zhang Dainian, *Key Concepts in Chinese Philosophy* translated and edited by Edmund Ryden (New haven and London,Yale University and Beijing, Foreign Languages Press),481.

means we need to clear the reason of *Zhi-qi-suo-yi-ran* (knows the reason why the thing is like this), understanding the nature and laws of things, grasping the purpose and pointing of people's action. After *Cha-lei* (to clear and specify the classification of things) and *Ming-gu* (to know the past of things), can we know the *Li* (Reason) of giving and receiving. *Li* (Reason) is the basis of knowing and grasping things and it consists of *Cha-lei* and *Ming-gu*.

Therefore, as long as people familiar with *Lei* (classification) and *Gu* (the Past), the correct use of reasoning, to grasp the essence and law of things, thereby to make the judgment and prediction of development trend. In the book 《非儒下》, Mozi said: If both sides are people of great virtue, then they will never be enemy, people of great virtue persuade and tell others, with the reason of giving and receiving, those who do not have reason should follow those who have reason, those who do not know shall follow those who know things. Those who cannot speak reason shall submit to others, and yield to kindness when meeting them. From this we can know that *Cha-lei* and *Ming-gu* can help us to judge whether a thing is right and wrong.[337]

Fifthly, what's more, on the basis of epistemology, Mozi (480-420BC) also puts forward the specific "methodology". Mo Zi thinks that the tool making of hundreds of craftsmen must follow a certain 法仪 *Fa-Yi*. And *Yi* means standard. Mo Zi said "the workmen use the square to draw the tetragon, the compasses to draw circles, with the carpenter's line marker to draw a straight line, with the netsuke to judge whether the

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[337] For the detailed philosopher speeches of Mo-Zi, please refer to: Edited group of Chinese philosophy history, *Chinese philosophy history,* Vol. 1(Beijing: Renmin chubanshe, Gaodeng Jiaoyu Chubanshe, 2012), 82-85.

direction is slanting or not and with water to make a good plane. No matter whether it is a fine craftsman or the general craftsman, all must accept these five tools as rules or models. The fine craftsmen can reach the standard of this five tools, while the general craftsman cannot reach this level, but they can imitate how to make things according to this five tools and even get better at their original ability. So, all the craftsmen follow certain rules to make tools."[338]

The so-called 仪 *Yi*, namely 法 *Fa (model or standard). 法仪 Fa-Yi*, namely 法规 *Fa-Gui* (*laws and regulations)* and 法度 *Fa-Du* (testimonies), *Mo Zi* has mentioned five 法规 *Fa-Gui*: (i) square to the tetragon, (ii) the compasses to circles, (iii) the carpenter's line marker to the straight line, (vi) the netsuke to judge the whether the direction is slanting or not and (v) with the water to make a good plane. And the square, gauge, carpenter's line marker, netsuke, plane maker, these five tools were widely used during the spring and autumn and the warring states period. Mo Zi thought that the reason why people consciously invented these tools during the process of tool-making was because they had the rational understanding of these rules. Therefore, he said: "all men who work for something, all have their own 法仪 *Fa-Yi* (models or standards). No one can succeed without *Fa-Yi*."[339]

As far as *Fa is concerned,* Mozi (480-420BC), specifically develop a complete theory of *Fa*, especially elaborate the concept of *Fa* in *Qi-ju* design. In his book "*Fa-Yi*", he pointed out that "people who are involved in doing things cannot do that without *Fa* (principle and methods); there is no success without *Fa*". In the book of Tian Zhi

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[338] Sun Zhirang, *Mo Zi Jiang Gu* (Beijing: Zhong Hua shuju, 1996), 18-19.

[339] Ibid.,18.

Zhong, Mo Zi takes an example to describe *Fa*, "carpenter uses ruler to measure the square of things and if it is centred, it is called square, if it is not at the centere, it is not called a square. Therefore, a square or not a square is known, why? Because *Fang-Fa* (method) is clear", in *Kao Gong Jin (The Book of Diverse Crafts) it is said that*, "all of the work of *Bai-gong* (Hundred craftsman) has *Fa* (method) to measure."

As an objective ethical standard, a concept referred by Mo zi as *Fa* (model, standard), plays not only a central part in their ethics, but also their views on language, knowledge, and argumentation or reasoning. In such a sense, *Fa* has a dual role, providing both practical guidelines and justificatory criteria for judgment and action. Accordingly this concept was largely applied in tools making and design.

This core concept gradually was formulated into a sophisticated semantic theory, epistemology, and theory of analogical reasoning. In which the epistemology Mozi referred to is characterized by a concern with finding objective standards that will guide judgment and action reliably and impartially, so as to produce beneficial, morally right consequences. *Fa* is a key concept which reveals the orientation of Mohist views about language, knowledge, cognition, and reasoning.

5.5 Features of Knowledge of Chinese *Qi-ju* Design

The knowledge of Chinese *Qi-ju* (utensil and tool) design has the following features: focuses on the function design of the utensils; recognizes that the utensil's nature conforms to nature, season and geography; converges on the individual skills and experiences; and depends on the inheritance of mentorship. Western researches on consumers and users, and methods of interpreting and designing products are also important supplements to the understanding of Chinese design.

5.5.1 Ancient Tradition is Respected in Manufacture of *Qi-ju*

Confucius thought that the manufacturing of utensils should "follow the ancient tradition" and comply with the tradition of "rites". Mo Zi also raised that (manufacturing utensils) should follow the ancient tradition, focusing on experiences and functions. He proposed the "three standards" on examining knowledge and speech. "Mo Zi said: *Ben* (basis), *Yuan* (research) and *Yong* (practice). How to pursue the basis? We should seek for the deeds of the ancient sages. How to pursue the researches? We should investigate into the common people's daily routines. How to carry out practice? We should make the laws and orders to bring benefits to the common people of the country." They are the three standards namely: (1). "*Ben*" here means the historical experiences of the ancient kings; (2). "*Yuan*" means to take the practice of the mass as the standard; (3). "*Yong*" means to apply it to laws and orders so as to bring benefits to the country and people and achieve practical effects.

5.5.2 Functionality of *Qi-ju* Design

The ancient tradition laid emphasis on the function, which was simple and clear-cut. "Nobody can do better than the ancient sages in preparing objects for using, accomplishing great deeds and creating utensils" (the Book of Changes: *Xi Ci*). In the mind of the ancient people, the functions of things were as follows: "to make ploughs and plowshares to cultivate for the people"; "to make boats and carts to transport people to a longer distance and to benefit the people"; "to tame cattle and ride hoses to carry heavy things to more distant places so as to bring convenience to people"; "to make tilt hammers to help the masses", "to make bows and arrows to deter all other

countries from attacking". The Book of Changes made it even clearer: *Tao* (knowledge) "is shown in the function and implied in the use". *Tao* is implied in the daily commodities of the common people.

5.5.3 Design Experience and Nature, Season, Geography and Material

Then, where lies the Chinese craftsmen's experiential knowledge on "objects"? The thesis has summarized the following points: The method of combining the design of utensil creation with the nature, geography, season and utensils in use, which is reflected in the principle on design and manufacturing raised by *Kao gong ji* (The book of diverse crafts), states: "choose a good time, have nice natural conditions, use good materials and adopt exquisite skills." Those utensils that satisfy the four conditions can be regarded as fine. The Taoism advocated complying with the nature, so "the nature of objects" should be taken into consideration in designing. Each material has its own usage and each object has its own nature. In the beginning of *Kao gong ji*, it pointed out that the function of the craftsmen is to "observe the shape and nature of the materials and make utensils with these materials on that basis." Zheng Sinong gave further explanation of that, "to carefully examine the natures and forms of the five materials so as to make utensils with them, including examining the south-facing side and the north-facing side.[340] The "five materials" refer to gold, wood, water, fire and earth. "The nature produces five materials, which were used in combination by the people";[341] "All the five materials shall be used and contribution

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[340] Zheng Xuan, *Commentary and Interpretation of the Rites of Zhou*, volume thirteen, Wen Yuan Ge (the Imperial Library) Si Ku Quan Shu (classic volume 90). Taipei: Taiwan Commercial Press.
[341] Zuozhuan, the 27th Year of Xiang.

of none is negligible."[342] Due to the differences in the intensity and time of exposure to sunlight of the south-facing side and north-facing side of the five materials, it will result in the differences in the nature of being dry or wet, soft or hard. The design of utensil creation should take into full consideration of the nature of the materials because to some extent, the nature of things determines the function, security and life span of utensils.

Huai Nan Hong Lie said: "Therefore, the sages always followed the rules and wouldn't change the suitable and normal laws and regulations. Instead, they tried all their best to follow the nature of the objects."[343] Against the background of farming as the main production method, people's understanding of the nature of objects is based on the long-time practice and experiences of labor. Therefore once the recognition was formed, it was very hard to change, this doesnot refer to "not to change the suitable laws" but rather it means not to change the suitable law artificially, in particular the laws that comply with the nature. *Huai Nan Hong Lie* also stated: "When transplanting trees, if we don't take care of the nature of *yin* and *yang*, the transplanted trees will all wither. Therefore, the orange tree will become mandarin orange tree when transplanted from the south of the Yangtz River to the north of it. Starling can never fly over the Jishui River, and raccoon dog will die when crossing the Wenshui River. The nature cannot be changed and the habitat is not easy to move."[344] The ancient design of utensil creation emphasized on the natural characters

[342] Fan Ye, *Book of the Later Han*-the Story of Marong, Beijing: Zhonghua Book Company 1982.

[343] Yuan Daoxun, *Interpretation of Huai Nan Hong Lie*, volume 1 (Shanghai: Shanghai Ancient Books Publishing House, 1989).

[344] Qiu Chun-lin 2009, 27; Yuan Dao Xun, *Interpretation of Huai Nan Hong Lie*, vol.1 (Shanghai: Shanghai Ancient Books Publishing House, 1989).

and conditions which shall not be altered. When creating utensils, man should follow the characters of the materials and make things accordingly.

When researching on ancient China's craft practice, Joseph Needham noticed the consideration of "nature of objects" in artifacts manufacturing and the craftsmen's experiences. He said, "Only those craftsmen who have many years of experience can make the utensils with the materials that are easy to change forms such as the wood, the pottery clay and unrefined metal, because they fully understand the characteristics, "smell" and "anthroposcopy" (相术 *Xiang shu*) of the materials, and make them applicable."[345] The so-called *Wu xing* (nature of objects) are mastered by the skillful craftsmen and become the perceptive knowledge that is hardly needs to be uttered. Relying on such knowledge, the ancient craftsmen couldf use the materials in a reasonable way and created utensils that are in conformity with the nature.

Only by participating, practicing and feeling this kind of interaction with objects, men and environment, can man acquire this kind of knowledge. The accumulation of experiences is, therefore, very important. The recognition of objects, weather and geography put the designers at a humble place. They should understand the nature, know the characteristics of the heaven and earth and make their survival and creation adaptable to the external objects, human beings and environment.

5.5.4 *Ji-yi* (Technique) and *Jing-yan* (Expereince)

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[345] Joseph Needham, *Mechanical Engineering, Science and Civilization,* translated by Chen Lifu, Taipei: Taiwan Commercial Press, 1980, 75.

As for the knowledge of experiences, Mozi thought that Epistemology comes from recognition of experiences. He held that mankind's cognition could only come from the objective reality that could be perceived by the human sense organs.[346] He stated:

"天下之所以察知有与无之道者，必以众之耳目之实知有与无为仪者也。请惑闻之见之，则必以为有；莫闻莫见，则必以为无。"（《明鬼下》）

"To judge whether there is something existing or not, people will depend on the perception of their ears and eyes. If they smell it, they will believe that it does exist; otherwise, they will think is doesn't exist" (Ming Gui B). That is to say, the standard to judge whether an object exists or not is man's perception and feeling instead of the subjective human consciousness.

Similar to this, one school of the west about the origin of knowledge is the so-called "empiricism", the theory that believes knowledge originates from experience. What is experience? It is the recognition of things that we acquire through our sense organs e.g. eyes, ears, nose, tongue, and skin. For example, we see the shapes and colours of objects, while we can feel the texture of the materials by touching. These are experiences. The empiricists believe such experience is the real origin of knowledge. The most famous empiricists are Bacon and Rock. Bacon found a crooked path to the origin of knowledge or found the process for man to reach knowledge. The process is basically divided into the following: nature+sense organs-experience; experience+processing-law; law-knowledge. This is Bacon's "trilogy of knowledge". Rock was a more radical empiricist than Bacon. He had said, "All our knowledge is based on experience, and results from experience." The empiricism influenced the

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[346] The Editing Group of Chinese Philosophy History, *Chinese Philosophy History*, Vol. 1 (Beijing: Renmin chubanshe, Gaodeng Jiaoyu Chubanshe, 2012), 82.

natural sciences in the west in 15th century, and also influenced the theoretical basis for exploring the psychology of consumers in today's design.

In my view, the process elicited by Rock is also reflected in China's traditional utensils and tools, "nature+sense organ-experience; experience-processing-law; law-knowledge". However, the Taoism exalted the knowledge generated from experience to a more abstract level. This is the "*Ji*（craft）can be *Tao* (knowledge)", developed by Zhuangzi. In other words, to transcend the crafts for utensil and enter a level of unutterable status, which was the "*Tao*" called by Laozi, which also the highest status of a craftsman. The "*Ji*" here means "knowledge". In the conception of Confucianism and Taoism, "*Ji*" is inseparable with *Yi (art)*, i.e. "craft+art". Craft doesn't exist alone, but is connected with "*Tao*"; craft is not only a cold technology but also embodies art. Therefore, craft will be unutterable when entering a certain stage, i.e. because it has become "*Tao*". Without "Tao", craft will become useless. "*Qi* (utensil)" is the basis and means, "Tao" is the ultimate goal. This kind of indescribable knowledge about utensil design and crafts is understood as a kind of individual and experiential knowledge. The Chinese language put that as "*Tao*" of Lao-tzu, so as to express this kind of abstractness and subtleness. "*Tao*" is therefore mystified.

In Western theories that are good at conceptualization, we see clear cut categorization and definition of this kind of absolute knowledge. A knowledge that is described as 'tacit knowledge' was first defined by Michael Planyi towards the end of the 1930s. He developed a theory of knowing where the concept of knowledge is the cornerstone. Tacit knowledge is based on the observation that people often know more than they

can tell – their knowledge cannot be put into words. Tacit knowledge differs from explicit knowledge by the degree to which it can exist independently of a specific context or "knower". Tacit knowledge only arises when knower and knowing become one - a phenomenon called "indwelling" - as its acquisition tends to be staggered over time and rooted in experience. In design domains, one would argue, design is learned, primarily, by experience.

5.5.5 Epistemological Approach to Tacit Knowledge in *Qi-ju* Design

From the modern scientific point of view, the knowledge-imparting may include two aspects, that is, the imparting of coded knowledge and tacit knowledge. The former is inherited in the form of recorded writings, of which the explanation and narration of the principles of technology are simple, brief but vivid; thus, it is easy for the craftsmen to study. Chapter 4 of this thesis have discussed the scattered texts of relevant daily utensil design ideas that passed down from the ancient times --- the text analysis of *Confucius*, *Mo Zi*, *Lao Zi* and *Zhunag Zi* etc. of pre-Qin period, and the relevant records of utensil design and technical knowledge in some technical books (please refer to the text analysis of *Book of Diverse Crafts, Dream Pool Essays*, *Superfluous Things*, and *Heavenly Creations*). These texts formed the record of coded knowledge of the Chinese traditional utensil design. However, in the text, there are also many indirect introductions to the "tacit knowledge". The text discussions of relevant utensil design in Shen Kuo's *Dream Pool Essays*, and other books like *Superfluous Things*, *Heavenly Creations,* all indirectly expressed the designers' (craftsmen) "tacit technical knowledge".

The designer's (craftsman) "tacit technical knowledge", namely personal craftsmanship, skills, experience not only have high and low level, but also of different degree of consciousness. The "Tacit knowledge" not only involved the personal craftsmanship of the designer (craftsman), but also involved the grasp of the tools and the "properties" of objects, the requirements (psychological, physiological requirements) of items for the user group, and these all need support from the designer's "Tacit knowledge", which comes from the long-term experience, and practice activities, it does not just depend on the technology and ability, and this process of 体悟 *Ti-Wu* (*to appreciate and understand something*) is the result of the later long-tern development. Therefore, the tacit knowledge possesses the knowledge characters that can't be separated from the main body, this kind of knowledge is difficult to be out bounded, expressed and documented no matter for the ancient artisans or modern designers. And this kind of knowledge is the core part of the Chinese traditional design knowledge.

So what are the characteristics of the designer's (craftsman) tacit knowledge? For instance, workmen must have techniques, or have the ability to experience them by themselves. There was a sentence recorded in *Zhuang –zi* about the secrets of how did the craftsmen solve the problem of 轮扁 (the flat wheel), and the sentence is 徐则甘而不固，疾者苦而不入。不徐不疾，得之于手而应于心，口不能言，有数存焉于其间，which means that "when making the wheel, the installation of the rabbet in the digging holes of the wire spokes need to be carefully dealt with, if the hole were big and loose, then the rabbet would be easy to be inlayed in the hole, but not secure; if the hole were small and tight, then the rabbet would be difficult to be inlayed in. Instead, the hole should not be too lose or too tight, then it will be easy to be fixed

with high proficiency, this secret of success cannot be expressed by words, but it is really exists." This kind of technical specification that cannot be expressed is different from other usual technical standards, so it is difficult to be provided by the quantitative method. Its development trend is gradually close to the reasonable and optimal requirements of the technical activities, which meet the demand of "Tao", and this itself is a process which needs to be gradually understood.

5.5.6 Features of Tacit Knowledge of *Qi-ju* Design

According to above discussion, viewing from the external form, the Chinese traditional tacit knowledge is similar to the generalized technology (the technology of skills and experience) of the ancient Greek, Socrates, to a certain degree. Polanni called it as tacit knowledge or personal knowledge, he also pointed out that the "tacit knowledge" usually cannot be completely expressed with language, and it exists in the organization's of individual members of different levels and kinds, usually showed in the form of ideas and skills etc., which is gradually produced in the process of individual research and production practice. So, what is the "tacit knowledge" of Chinese utensil design, and what features does it possess? How did the traditional Chinese culture express and show the "tacit knowledge"?

Chinese design activities, emphasizes (i) 体悟 *Ti-wu* (*understanding*), also called 直觉 *Zhi-jue* (*intuition*), and (ii) 直观体验 *Zhi-guan-ti-yan* (*visual experience*), which refers to the thinking activity without the process of logical thinking and without directly penetrating into the essence and regulation of things. At present, the academia usually translates the English word "*intuition*" as *Zhi-jue*。 The Chinese traditional

philosophy called the same thinking activity as 意会 *Yi-hui* (*sense*), *Ti-yan* (*experience*) and *Ti-wu* (*understanding*), it was expressed by different words but with the same essence. From the knowledge system of Chinese traditional utensil in Chapter 6, we can know that the Chinese traditional culture and ancient philosophy has their own complete cognitive system to read this kind of thinking. Such as the concepts being discussed above, "*Qi* (utensils)*, Ju* (tools)*, Wu* (things)", *"Qi* (utensils)*, Xiang* (images)*, Fa* (principles)*, Gong-yi* (craft), *Ji-yi* (skills), and *Qi and Tao, Ji* (skill) *and Tao* etc., which the cultural system of other countries or regions does not have. It is also the key cultural factor elucidating the full development of Chinese ancient objects.[347]

Chapter 6 has explained the concepts of *Qi* (utensils)*, Xiang* (signs or images), *Fa* (method or principle) in the book Yi jing (*Changes*). *Xiang* (image) is a important design concept in the ancient China, such as the ancient people *Guan-xiang zhi-qi (to observe the signs or phenomenon and then make objects*), here *Xiang* (image) refers to the specific *Ziran-zhi-xiang* (*natural signs or phenomenon*). But besides this, *Xiang* (image) also has wider meaning. *Xiang* (image) not only includes the direct perceptive and specific *Xiang* (signs), such as *Tian-xiang* (*the astronomical phenomena), Qi-xiang* (*the meteorological phenomena,*) *Jing-xiang* (scene) -- these are natural phenomena, but also includes the abstract *Xiang* (signs), like *Yi-xiang* (image), *Dao-xiang* (the sign of *Tao*) etc. The Chinese people paid much attention to understand *Xiang* (images) by heart, this is the integrity master of all kinds of things, and the final purpose of understanding (or experience) is to 会意 *Hui-yi* (Knowing).

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[347] Wang Qian, *Lun "Xiang" Si wei* (The discussion of the thinking of "*Xiang*"), quoted from *Graduate school of Chinese academy of social science journal* 2001, the second period.

Yi is the thought product that cannot be expressed by language. Lao Zi said, 大音希声，大象无形 (*the universe has a loud voice and the voice is too loud to be heard by people, and the shape of the universe is too big to be described by any specific shapes of existing things*).[348] This 大音 *Da-yin*,大象 *Da-xiang* refers to the acme state of tacit knowledge, seeming invisible but of infinite function.

Yi's commentary said, 书不尽言，言不尽意，圣人立象以尽意 (the words and language cannot fully express the meaning, so the wise people take 象 *Xiang* (signs), to fully expressed the meaning. So what is 立象 and 尽意 Namely how to get this kind of "tacit knowledge"? And this is related to the "tacit knowledge" grasp and understanding of Chinese utensil design. This is 取类比象 *Qu-xiang-bi-lei* in the Chinese traditional culture, which means through the parable, and examples, leading to use 象 *Xiang* (signs) and then to explain 象 *Xiang* (image). [349] Therefore, teaching by precept and example, 取象比类 *Qu-xiang-bi-lei* (*a way that ancient people used to understand the nature or things*) are the best way for teachers and pupils to inherit the knowledge and the understanding of the "Tao of objects" during the gradual spreading of Chinese traditional utensil design. The ancient China used 取象比类 *Qu-xiang-bi-lei* (*a way that ancient people used to understand the nature or things*) to teach the "tacit knowledge", and this not only used in the field of utensil design and technology, but also used in medical field, for example, many Chinese medical books used this way to express ideas, lets take a sentence in Huang Di Nei Jing as an

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[348] *Lao Zi,* the Chapter 41, page 229.

[349] Wang Qian, *Between Tao and Skills—the skill philosophy of Chinese cultural background* (Beijing: Ren Ming Chu Ban She, 2009), 23-24.

example, 春脉如弦，夏脉如钩，秋脉如浮，冬脉如营 (*the different phenomena or states of the human pulse in the four seasons of a year, through which the Chinese doctor can know your state of health*). Doctor of traditional Chinese medicine also widely adopted this method to express their ideas.

The way 取象比类 *Qu-xiang-bi-lei* was used to express and teach the "tacit knowledge" of daily utensil design, and this obviously expressed the different approaches and ways between the Chinese and western people's understanding to knowledge. Wang Kaifu, has put forward the way of obtaining 智 *Zhi* (wisdom and knowledge), that shows the different philosophical approaches between the east and west.

> The way that the west used was first to abstract, classify, analyze the concrete or specific world, and then find the clear definition and consistent rule for the purpose of understanding and controlling things. The Chinese way was to concretely and truly respond to the specific world; Not to proceed the process of abstract, only (to compare) or make an analogy; not take the way of analysis and classification, but prefer to contact and fuse; not to make definition, not unalterable, but always effective rules; not to control the nature but to feel the nature and co-exist, and prosper with nature.

Wang Kaifu continually points out that,

> The west adopt an abstract conceptualization as the analytic way, so it is easy to express with language and good for the development of logic of the knowledge system; while the Chinese people used the way of 体悟 *Ti-wu* (understanding), so it is difficult to express it neither by words nor to set the

logic knowledge system, instead, it is attached to the literature or history to present the truth itself. The western method is through inducting and deducting, and then gradually establishing the network of knowledge; while the Chinese way was formed by intuition and 体证 *Ti-Zheng,* and then the light of wisdom gradually emerges and flows. The western way must first pre-gained 智 *Zhi* (Wisdom) as the preparation and plan for the action; while the Chinese way gained the 智 *Zhi* (Wisdom) during the process of action, and continually make it light the road of action.[350]

From this we can know that the Chinese people tend to take the method of 观照 *Guan-zhao* or 类比 *Lei-bi*, contacting and fusing to analyze things, rather than analyse, classify and define. By knowing these fundamental principles, it will help you to have a further understanding towards the above discussions about utensils in Lao Zi's, Zhuang Zi's and Mo Zi's works. Obviously, the Chinese scholars also advocated that the design should pay much more attention to function, craftsmen's skills and experiences, as well as the intuitive experience and analogy on method, preferring to contact and fuse rather than the method of analysing and defining.

Summary

Among Chinese explorations of the three issues of *metaphysics, life philosophy*, and *epistemology*, it is Taoism that established the ontological foundation of Chinese philosophy (for which the book *Tao Te Jing* is the key reference). In *Tao Te Jing,* Lao

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[350] Wang Kaifu, *The Introduction of Chinese Philosophy*, In Qiu Xianyou, Zhou He, Tian Boyuan eds., *Guo xue dao lun* (The guidance of Chinese study) (Taibei: Sanmin shuju, 1993), 19.

zi proposed his theory of *Tian* (*metaphysics*). However, he did not propose a logical system for studying *reality*. This gap was filled by Monism, which proposed a method and principles (*Fang-Fa*) based on scientific logic to study the nature, grounds, limits, and validity criteria of human knowledge. If Taoism contributed to the issue of *Tian* (*metaphysics*), it is Confucianism that gave birth to the theory of *Ren* (human beings), life philosophy, and ethics.

In conjunction with other historical descriptions and doctrines (not described in this thesis), the Taoist, Confucian, and Monist thought proposed in early Chinese philosophy gave rise to various approaches to *Qi* (utensils). These thoughts, became they are intertwined with tool manufacture and design practices; they do indeed represent a valuable research topic. In the period of history in which Taoism , Confucianism, and Monism flourished, design activity was well-recorded by the government (in *The Book of Diverse Crafts*), the production of daily tools was regarded as an important industry for the country, many significant inventions appeared, and a variety of new materials were used and distributed between villages. More importantly, the significance and benefits of design activity for society, politics, and the economy were discussed. These debates gave rise to various schools of thought that were summarized in scholar's doctrines and potentially helped in the formation of early Chinese design philosophy.

5.6 Conclusion

Chinese philosophical perceptions of ontology, epistemology, and methodology provide the basis for an understanding of the philosophical context in which the knowledge system of daily tools developed. Chinese philosophers' discussions on these kinds of issues reveal that the universe, nature, and reality are the basic objects

of research and that Chinese people have their own unique perceptions of the universe. Daily tools, as artifacts made by human beings, should accord with things created by nature. This is why "nature" is a key issue in Chinese design. Chinese philosophy is concerned with *human life* and places; it emphases on people's practices and experiences. Moreover, the degree to which a person lives their life according to social values and ethics is essential to that person's individual development. The third level of philosophical discussion - *Zhi-zhi-lun* (epistemology) - reflects the way in which Chinese people acquire knowledge. There are Chinese ways of investigating things that also govern the actions taken to acquire knowledge.

In addition, thought and philosophy in the pre-Qin period is significant for contemporary research on the topic of daily tools. As Friedman indicated, "Design is an interdisciplinary and integrative process constituting a professional field and an intellectual discipline. The complex requirements of material and immaterial production in a knowledge economy call for philosophical inquiry and renewed their in understanding design."[351] Ancient philosophy and knowledge systems provide an historical and cultural context for understanding the design and manufacture of daily tools in early history and their social significance.   It is therefore necessary to reflect in this thesis the original design philosophy generated in the earlier period of Chinese civilization. The foregoing investigation of names, thoughts, and philosophy in the pre-Qin period justifies the assumption that "Chinese *Qi-ju* (utensils and tools) design is an independent knowledge system".

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[351] Ken Friedman, *Design Knowledge: Context, Content and Continuity*, In David Durling and Ken Friedman eds., Proceedings of the conference *Doctoral Education in Design: Foundations for the Future* (Staffordshire University Press, 2000), 5. The conference was held from 8-12 July, 2000 in La Clusaz, France.

Overall, the Chinese design knowledge system has been established against the background of China's unique philosophical context. Design knowledge on daily tools has been constructed in a framework of *reality, knowledge, and methods*. This approach is treated as an important philosophical reference in designing the framework of this thesis.

VI. RESEARCH APPLICATION

Chapter 6 of this thesis presents research application of the research. Section 6.1 presents a comparative discussion of Western design approach to daily products. Section 6.2 illustrates a proposed methodological framework to approach Chinese traditional everyday tools.

6.1 Western Design Approach to Daily Products

This section firstly presents a re-examination of key terms that popularly appeared and used in the "object study" in Western and Chinese design research. The investigation of the terms on the one hand clarifies the vagueness of the understanding of various terms in design research and other disciplines; on the other hand shows the tradition of term using in different contexts. The clarifications and the setting of the boundaries of terms set the following discussions of the topic in a focused content and a narrower research scope.

This section secondly reviews the discussion of "design knowledge in daily products" in twentieth century Western design research. The methodological approach adopted identifies two Western product design research perspectives or philosophical contexts: "object-making" and "object interpretation". As the main theme of investigation in earlier modern design history, the study of "object-making" was dominated by positive science between the 1930s and the 1960s.[352] "Object interpretation" is the phrase used to describe the study of objects since the 1980s, a research period that has

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[352] Positivism was the dominant epistemological paradigm in social science from the 1930s until the 1960s, its core argument being that the social world exists externally to the researcher and that its properties can be measured directly through observation.

been influenced mainly by structuralism[353] and semiotics.[354]

This section introduces and evaluates both of these perspectives and the paradigm shift that took place in the 1980s. Moreover, original thought on "making things" is traced, and Aristotle's ancient theory of "the knowledge of making things", which is regarded as an important theory influencing the earlier pattern of research on product design, is described. These three aspects of Western product design are evaluated in the final section of this chapter.

This section is divided into six sections according to the topics outlined above. The first section re-examines the key terms that used in "object study" in Western design research; The second section outlines the reasons for researching the Western approach to daily tools; the third examines the "design knowledge" discussed in the design discipline; the fourth discusses the main theme of "object-making" from the 1920s to the 1970s; the fifth gives an account of the paradigm shift that occurred in the 1980s and introduces the "object interpretation" approach; the sixth section discusses the phenomenon-based approach to daily tools in the 1990s.

6.1.1 Research Reasons of the Chapter

The review of Western design presented in this chapter provides a research

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[353] Structuralism is a very influential approach and a body of cultural theory derived ultimately from work in linguistics, and is particularly associated with Saussure. Structuralism focuses on language as the underlying system of signs and makes a further distinction within each sign between the signifier (for example, a word) and what is signified (that which the sign refers to). This definition is quoted from Ian Hodder ed., glossary to *Interpreting Archaeology: Finding Meaning in the Past* (London and New York: Routledge, 1995), 245.

[354] In the *Design Dictionary*, *Semiotics* is defined as "the science of signs, and a methodology which explores the structures that help to reveal layers of meaning either in a cultural activity or in a design object". Erlhoff and Marahally eds., *Design Dictionary* (Basel; Boston: Birkhauser Verlag, 2008).

perspective that differs from that taken in Chinese study on everyday tools (as described in the previous chapter). In the previous chapter, the results of historical literature on *tool-making* and *tool study* demonstrate the existence of an independent design system with a complete philosophical grounding in ancient China that has influenced daily product design practice throughout China's history. However, although this ancient design system has influenced the manufacture and production of daily products over many generations, the knowledge system that has emerged against this philosophical context does not fit perfectly with the rapid industrialization and development seen in contemporary China, and must adapt to meet new social and economic requirements.

On the other hand, the approaches taken by the Chinese literati to daily tools over the course of history have resulted in the development of a *culturally centered* research pattern as opposed to a *design–centered* one. The first-hand design experiences of tool makers, inventors or craftsmen have not been well-preserved to provide examples for the designers and researchers of today.   In China, most inventors and craftsmen have been anonymous throughout history and their design experience was usually passed on by oral means through the apprenticeship system. In addition to these historical factors affecting the study of daily tools, there are also contemporary factors to consider. After 1949, research on daily tools mostly focused on craft history and led to craft narratives as a historical methodology that became a dominant research pattern in 20th century China (as described in Chapter Two). From the 1980s, China's open door policy brought the country into a period of rapid economic development in which Western design concepts were imported into China and the Western design education system (mainly based on Bauhaus concepts) was borrowed by Chinese schools of design that had previously adopted a craft-based education system.

However, the research situation and design epistemology in this historical and social context were such that modern design, with its manufacturing base, was seldom addressed in the Chinese design discipline. This finally led to the phenomenon whereby Western design concepts were applied and practiced in mass production in the Chinese context, with a lack of product research capacity and the difficulty of producing innovative Chinese-style products in the face of globalization acting as barriers for Chinese designers over the course of several decades.[355] A possible reason for this is that research methodology for traditional and modern products was not built up to a sufficient extent. Design research plays an important role in design studies that is not only parallel to that played by design practice, but is also a source of theoretical and methodological support for design activities. Similarly, when today's researchers turn to ancient design knowledge systems to find original ways to approach everyday tools, research methodology is also an important issue to be addressed.

The limitations of traditional Chinese studies of daily tools require that a new research approach be adopted. Based on the research problems identified in the literature review, a theoretical framework is presented in Chapter Six. In this chapter, the Western perspective on design knowledge provides an alternative reference to Chinese studies of ancient tools in the new age. The methodological experience of Western product design research has made a valuable contribution and has inspired the study of modern Chinese design. Furthermore, the review and evaluation presented in this chapter also function to clarify Western interpretations of daily products through the adoption of a methodological approach rather than a design

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[355] This situation has improved during the last decade due to the emergence and manufacture of many innovative products.

history approach.

However, it should be noted that Western design methodology on daily products and research methods cannot be directly grafted onto Chinese research. The review presented in this chapter reveals the fact that aspects of research and paradigms influenced by Western perspectives are subject to limitations and inadequacies. This requires a framework that is not only rooted in Chinese tradition, but also reflects modern society.

6.1.2 Terminology and Clarification

It is necessary to state at the beginning that terms should be chosen carefully at the initial stage of research. This also suggests that terms should be defined implicitly in their given context, which means that the boundary of a term should be set clearly so the term's special connotation(s) can be expressed and featured implicitly, an approach that also avoids unnecessary confusion. Furthermore, the terms chosen, their definitions, and the boundaries set can to some degree provide for focused content and a narrower research scope.

Second, this thesis reflects the belief that every term has its independent attributions, boundaries, and meanings that shape the connotations of that term. Based on this belief, every term then has its own pattern of use that is shaped in the research process and is tested through a series of discussions, debates, and justifications. The pattern of use is influenced by cultural conditions, the research context, and the tradition of the discipline in question. All of these factors are important to remember.

Third, an important issue in design study today concerns how the way in which terms are used in different cultural systems determines their special connotations and significance. In the case examined in this thesis, this means that the different perspectives on terminology used in Western and Chinese cultural systems when discussing this topic should be introduced and compared. For instance, when talking about the topic "Chinese everyday tools", it can be seen that several terms used by Western scholars in design research are different from the terms traditionally used by Chinese people. Take as an example the Chinese singular term *Qi*, which means "everyday tools". In the Western design context, various terms can be used to express the same concept. For example, similar terms used in Western publications include *things*, *objects*, *artefacts,* and *products.* However, when these terms are translated into the Chinese context, their similarity and changeability may cause confusion because the connotations and application of each term might not be explained specifically in the text.

This chapter therefore identifies and explains the different sets of terminology used in the Western and Chinese design contexts, clarifies how each set of terminology is used in its given context, and examines the boundaries of the terms employed. In addition, when considering what term can be used to express the Chinese concept of everyday tools, it is necessary to explain why the term "tools" is used rather than another term such as "objects".

6.1.3 Western Terminology of *Qi* (Utensils) and *Wu* (objects)

6.1.3.1 Changeability and Independence[356]

A cursory examination of recent design research on "everyday tools" in the West would show that various terms are frequently used in the study of everyday tools. The terms *things, objects, artefacts, tools*, and *products* can be readily found in discussions of this topic. These terms not only appear in design discourse, but are also widely used in other disciplines such as archaeology, anthropology, material culture, and engineering. On the one hand, these terms look so similar that in some instances they can be used interchangeably. On the other hand, comparison of these terms according to the frequency with which they are used in different disciplines shows that different disciplines have their own specific preferences manifested in a pattern of use. For example, the term *artefacts* is usually used in archaeology and art history, the terms *objects* and *things* commonly appear in material culture and anthropology studies, and the term *products* is a design term that also appears in other disciplines such as social studies.

On the one hand, different perceptions of "objects", the patterns with which terms are used, and research experience in other disciplines have added new dimensions to design studies by, for example, expanding their scope and fostering more in-depth thinking. This has resulted in a cross-disciplinary trend in design research. On the other hand, different disciplinarians' perspectives have resulted in a diverse range of views on "object study" such as those reflected in technological, cultural,

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[356] *Changeability* means that in the design context, there are similarities between various terms such as things, objects, artefacts, tools, and products, which can also be understood as the commonality of these terms. However, these terms also have their own features and special meanings, which is referred to as their *independence* in this thesis.

psychological, social, political, and economic approaches, all of which can be expressed according to the terms used. These multiple interpretations have in some sense brought complexity to the understanding of "object study" in the design context. It remains difficult to find a complete definition of object study that bridges different disciplinary contexts in a standard and coherent fashion.

In practice, every term can be defined and interpreted from different perspectives in a given context to suit the situation. However, if terms are not clearly defined, the similarities and exchangeability of terms are likely to cause confusion and result in the special features of terms being overlooked. As stated previously, every term has its independent meaning, content and boundary. This is why the terms *things, objects, artefacts, tools*, and *products* are defined and clarified individually in this chapter. These terms are evaluated by tracing their origins of use and the definitions proposed by different scholars' in a range of research contexts. It is necessary to understand the basic position each term occupies and how it is used in the Chinese design discipline, along with the implicit definition assigned in the West.

Furthermore, to ensure the chosen term is used correctly and in a reasonable manner in the design context, it is important to undertake a complete analysis of similar terms that are widely used and have recently emerged in design research and relevant publications. Clarifying the similarities and differences between each term and their boundaries will also help to define the research context. The re-examination and identification of similar terms can also help to clarify the research topic of "everyday tools" and narrow down the research scope. A comparative analysis of terms employed in different cultures will help to construct a reasonable design-oriented

approach to Chinese everyday tools.

6.1.3.2 Objects

The term *object* is derived from the Latin word *objectum* (the noun form of objectus), which means to throw or put something before someone. In the Oxford English Dictionary, the meaning of *object* is given as "relating to the presentation of something to the sight senses, understanding, etc", suggesting a general term that is extensive in scope. Because the term *object* covers a myriad of things, objects are generally classified into natural objects and artificial objects. Recent design studies cite dictionary definitions indicating that *objects* may be designed by humans, manufactured by machines, or found in nature. Heskett extended the scope of the term to the context in which objects are used: "Objects is used to describe a huge spectrum of three dimensional artefacts encountered in everydayactivitiesin such contexts as the home, public spaces, work, schools, places of entertainment, and transport systems."[357]

Based on this understanding, *object* has multiple meanings. "It may be functional, decorative, ritual, aesthetic, customizable, recyclable, or any combination thereof; it may be inanimate and consist of a single indivisible member or possess multiple moving or mechanized components (a compound or composite object)[358]. This is why the term "object" has often been used in the disciplines of philosophy, sociology, and material culture. Scholars interpret the meaning of 'everyday objects' from different

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[357] John Heskett, *Design: A Very Short Introduction* (Oxford, 2005), 37.

[358] Michael Erlhoff and Tim Marshall ed., *Design Dictionary: Perspectives on Design Terminology* (Basel; Boston: Birkhäuser Verlag, 2008), 275.

perspectives ranging from the technological or cultural to the psychological. Examples of the range of perspectives adopted include Baudrillard's *The System of Objects* (1996); Adrian Forty's *Objects of Desire, Design and Society since 1750* (1986)**;***Doing Things with Things: the Design and Use of Everyday Objects*edited by Alan Costall and Ole Dreier (2006); and Paul Betts's *The Authority of Everyday Objects: a Cultural History of West German Industrial Design* (2004).

By the beginning of the1990s, design research had become a more established field and developed into a rich interdisciplinary culture, borrowing sources from sociology, psychology, anthropology, and art history[359]. The term *object* has largely been used in design to define and interpret design activity.[360] In 2008, it was finally given a formal definition in *Design Dictionary, Perspective Design Terminology*, although the term was not included in previous editions. This dictionary defines *object* as "a myriad of possible meanings according to the philosophical, scientific, or semiotic context in which it is being discussed."[361] This explanation accepts the fact that the term *object* can be interpreted differently in different disciplinary contexts according to the perspective adopted in that context (including the design context).

In this sense, the term "everyday object" not only has general significance, but also has extended and multiple meanings. If the terms "object" and "everyday object" are strictly defined, there is considerable diversity in the definitions used in the various fields that address this topic. They not only indicate similar concepts, but also have

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[359] Catherine McDermott, *Design: The Key Concepts* (Abingdon, Oxon; New York: Routledge, 2007), 88.

[360] Donald A. Norman, *The Design of Everyday Things* (New York: Doubleday, 1990).

[361] Michael Erlhoff and Tim Marshall, 275.

particular connotations in various disciplines that have led to different traditions of use. In this thesis, the meaning ascribed to the term "object" is limited in scope to man-made objects – "artefacts" – and is understood and interpreted according to three special features of design activity.

6.1.3.3 Artefacts

In contrast to natural objects, the term *artefact* is first and foremost a general concept indicating all objects made by human beings. In archaeology, the term*artefact* is applied to the rude products of aboriginal workmanship as distinguished from natural remains (Oxford English Dictionary). According to the examination of this period of history and the definitions given in different disciplines, this general meaning has been extended by three features.

The first feature is that *artefacts*are "expressions of human skill and ingenuity". Tracing its literary meaning shows that *artefact* is derived from the Latin roots *arte* (art or skill) and *factum* (made or done), is described as a result of artistic human labour, and is defined as anything made by human art and workmanship or an artificial product; in design, an 'artificial product' is defined as any designed entity[362]. According to the *Design Dictionary*, "an artefact is an object that is the product of human skill and ingenuity".This definition introduces an abstract feature whereby an artefact is a product worked on as an art activity by human beings. This is why this term is largely used in descriptions of art and craft history based on attributes of the relationship between humans and artefacts.

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[362] Michael Erlhoff and Tim Marshall ed., *Design Dictionary*, 2008.

The second feature is that artefacts are of "past, historical interest", The *Oxford Advanced Learner's Dictionary* (2000) defines *artefact* as "an object that is made by a person, such as a tool or a decoration, especially one that is of historical interest". Art historian Jules Prown claimed that an artefact is something that happened in the past. Only artefacts remaining from ancient societies can help in understanding people and artefacts in the life of the past.   This feature of the term *artefact* frequently arises mot only in archaeology, but also in art history and material culture.

The third feature is the "interactive" function of artefacts.   "All products of design are artefacts of one kind or another, and a common definition of design is the organization of the interface between humans and the "made world," that is, the interaction between people and our artefacts."[363] With the same aim, archaeologists are preoccupied with discerning how people and artefacts interact.

To summarize, *artefact* has three main meanings: a man-made object; prehistoric antiques (archaeology); and products made by humans to facilitate interaction. However, what kinds of objects belong to the category of *artefacts*?   From the perspective of an archaeologist, Timothy Darvill defined *artefacts* according to their designed nature: "any object which has been modified, fashioned, or manufactured according to a set of humanly imposed attributes, including tools, weapons, ornaments, utensils, houses, buildings, etc.,"[364] How is this word defined in the design context?

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[363] Michael B Schiffer and Andrea R. Miller, *The Material Life of Human Beings: Artefacts, Behaviour, and Communication* (London; New York: Routledge, 1999), 7, 27.

[364] Timothy Darvill, *The Concise Oxford Dictionary of Archaeology* (New York: Oxford University Press, 2002).

The 2008 edition of the *Design Dictionary* states that "artefact" refers not only to material objects, but also to defined spaces, images, software, systems, or environments in which these objects act as coherent units. The artefacts of a scholar's research can include books, lectures, internet postings, and e-mails. Cultural and religious values, beliefs, and systems of thought are expressed through the artefacts they produce.[365]

In material culture and anthropology*,* physical objects such as tools, domestic articles, or religious objects give evidence of the type of culture developed by a particular society or group.[366] As Darvill indicated, *artefacts* are the basic components of material culture.[367] Therefore, in addition to being used in archaeology, the term *artefacts* is also broadly used in material culture and art history.

6.1.3.4 Products

In comparison with the broad definitions assigned to the terms *object* and *artefact*, *product* is a unique and specific term in the design discipline. However, it is usually treated as a modern term (after 1840) denoting machinery, technical characteristics, or mass production, and is associated with design, manufacturing and consumption activity in society. Its meaning, however, is not limited to that. It is also defined as "the type of object that human beings produce at any given moment in their

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[365] Michael Erlhoff and Tim Marshall ed., *Design Dictionary,* 2008.

[366] See Oxford English Dictionary.

[367] Timothy Darvill, *The Concise Oxford Dictionary of Archaeology* (New York: Oxford University Press, 2002).

history,"[368] which means that a *product* can also be regarded as the result of an historical process, an economic and technological artefact, and an ongoing challenge for design professionals. Given its nature of "creating objects", product design becomes a process of developing new products for volume production, which affects every aspect of manufacturing business ranging from production and marketing to customer service and strategy advice.[369]

However, whatever position one takes, one thing is clear: in early human history, products fashioned by human beings were one-of-a-kind, handmade objects intended for personal use. They were later produced for exchange, and in some cases demand was stimulated by the production of large numbers of identified items produced in craft industries, often on a substantial scale. In some historical periods, proto-industries emerged and became systems of manufacturing that made large-scale production possible, facilitating the production of large amounts of products at low cost using standard techniques. This model extended the manufacturing pattern of individual activity and family work on handmade objects. The products of ritual bronzers during the Shang Dynasty (1600-1050BC) and objects such as weapons and stones moulded from cast iron during the Han Dynasty are examples of this expansion in manufacturing capacity. In Western history, moreover, products came to be sold on a global scale. With the advent of the Industrial Revolution, products were abruptly transformed into machine-made objects produced en masse and mechanical industry emerged (steam). Electricity made mass production possible after World War II and in today's internet age, the digital industry continues to make new types of products

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[368] Michael Erlhoff and Tim Marshall ed., *Design Dictionary*, 308.

[369] Catherine McDermott, *Design: The Key Concepts* (Abingdon, Oxon; New York: Routledge, 2007), 185.

available.

From this historical perspective, *products* came to be defined as the types of objects human beings produced at any given moment in their history. Two basic forms of products can therefore be identified: "handmade" singular objects and "machine-made" objects produced en masse. The transformational process has been gradual and the Industrial Revolution is usually regarded as an important period. Nikolaus Pevsner (1968) once said that industry for him meant the production of identical objects in large numbers, and that a designer is a man who invents and draws objects for use. Apparently, industry still solves the basic issues of object making and utilitarian function. For some scholars, industrial design is a modern alternative to the term product design[370]; for others, there are some distinctions between the two. Erlhoff (2008) indicated that "comparing with industrial design, product designers are often seen to embody a more customized, craft-based approach to the design process". It cannot be denied that the term *product* has a historical dimension and that *product design* refers to craft-based object making, which implies that modern product design, in which most objects are machine-made, evolved from craft design (in which objects were handmade).

In earlier times, handmade object making (understood as craft-based object making here) was considered to have just two main functions – a utilitarian function and an aesthetic function – which were identified and discussed as "function and aesthetics" in early nineteenth to twentieth century Western design. However, the function of a

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[370] Catherine McDermott, *Design: The Key Concepts* (Abingdon, Oxon; New York: Routledge, 2007).

product later developed into multiple layers such as economic, communicational, political and social consumption dimensions. In the 21st century, *product design* has become a more integral, professional, and complex activity of practice, culture, and business, and is related to various techniques such as "ergonomics, manufacturing techniques, engineering methods, marketing strategies, cultural awareness, environmental issues, and aesthetic judgement" in which product designers should have expertise.[371] Moreover, in the process of developing new products for volume production, product design techniques and innovations are required in other aspects of professional knowledge on manufacturing business, ranging from production and marketing to customer service and strategy advice.

From this perspective, the term "*product*" denotes something that is an outcome of modern design practice and has the characteristics of large-scale application of modern materials and advanced techniques. *Product design* is therefore an integral activity in which economics, culture, the environment, and business all play a role.

6.1.3.5 Tools

In comparison with the terms discussed above, word *Tools* has a simple and focused meaning. *Tool* usually is defined as aninstrument used for making material changes to other objects such as by cutting, shearing, striking, rubbing, grinding, squeezing, measuring, or another process.[372] In Cambridge Paperback Encyclopaedia,[373] a *tool* is defined as anyimplement used to carry out a task, **e**specially aninstrument(such as a

[371] Michael Erlhoff and Tim Marshall ed., *Design Dictionary*, 308.
[372] *Encyclopædia Britannica Article,* 2008.
[373] David Crystal ed., *The Cambridge Paperback Encyclopaedia* (Cambridge University Press, 1999), 869.

hammer or a saw) used or worked by hand, or an instrument used by a handicraftsman or labourer in his work.

In other words, a shared characteristic of *things, objects, artefacts*, and *products* is that they are all outcomes of processes of shaping and making. *Tools*, in contrast, refer to instrumental processes. Specifically, they could be a particular kind of hand tool, or the cutting or shaping part of a machine, or a machine tool used for shaping metal. Second, tools are implements or objects used in performing an operation or carrying on work of any kind, or are things that serve as a means to an end.[374]

From the cognitive aspect of tool use, Christopher Baber provided a simplified and applied definition. He summarized the word "tool" in two basic definitions. The first refers to any handheld implement that can be used to perform a task such as a hammer, a knife or a fork. The second refers to any form of support that can be drawn on to help perform a task.[375] Extending the second definition, he suggested thinking of a tool as a piece of what McCullough called "applied intelligence", i.e., technology that allows us to expand upon the limited repertoire of manual and cognitive skills we possess. To better understand tools as "applied intelligence, technology" (Baber and McCullough), it is necessary to know about two types of tools – *hand tools* and *machine tools* – that have historically expanded the ability of human beings to perform a task at different levels.

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[374] *Webster's Third New International Dictionary of the English Language, Unabridged: a Merriam Webster*, editor in chief, Philip Babcock Gove and the Merriam-Webster editorial staff (Springfield, Mass.: Merriam-Webster, 1993).

[375] Christopher Baber, *Cognition and Tool Use: Forms of Engagement in Human and Animal Use of Tools* (Taylor & Francis: London and New York, 2003), 4.

A *hand tool* is a small manual instrument traditionally operated by the muscular strength of the user; a *machine tool* is a power-driven mechanism used to cut, shape, or form materials such as wood and metal. Early man made the first axes by sharpening flint. In around 4000 BC, stone tools were replaced by metal tools, which were used to build instruments and simple machines. The Industrial Revolution saw the introduction of machine tools, and mass production of goods became a possibility. [376] A machine is an assembly of connected parts arranged to transmit or modify force and perform useful work. All machines are based on one of six types: (1) lever; (2) wheel and axle; (3) pulley; (4) inclined plane; (5) wedge; and 6) screw.[377] A variety of powered machines are used in industry to work and shape components made of metal or other material. These include lathes, planes, saws, and milling machines. Machine tools allow for finer tolerances and greater repeatability of product than hand tools. [378]

Applying Levi-Strauss' theory of tools as "objects to think with", Baber pointed out that a tool has an additional function of reflecting the knowledge necessary to perform a task. He proposed that everyday tools can be read and interpreted in terms of different meanings and that the meaning of a tool relates to its interaction with the specific person using it. This implies that 'meaning' becomes intertwined with a broad range of contextual features that shape our interpretation both of the tool itself and of

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[376] David Crystal ed., *The Cambridge Paperback Encyclopaedia* (Cambridge University Press, 1999), 896.

[377] Clifton Fadiman, ed., *The Treasury of the Encyclopaedia Britannica*(USA: Viking Penguin, 1992), 175.

[378] Ibid, 523.

the manner in which it is to be used.[379] According to Baber's opinion, through reading and interpreting everyday tools, it is possible that the knowledge needed to perform tasks can be constructed and could include tools' meanings in different contexts, the interaction of tools with users, and the manner in which tool are used.

6.1.4 "Design Knowledge" Discussed in the Design Discipline

Human beings shift knowledge from one frame to another. They embrace knowledge, enlarging it, internalizing it, transmitting it, shifting it, giving it new context and transforming it[380]. Similarly, the knowledge generated in design activity also experiences such transformation, renewal, or enlargement according to the social, economic, and cultural requirements of the historic period. Because products and daily tools are the primary research objects in the design discipline, design activity — whether expressed through handicrafts or modern mass-produced products — is always an important activity to be processed, examined, and researched. The cognition of design knowledge reflected in man-made objects shapes a systematic enquiry in the design discipline that potentially determines the direction of design research. Archer pointed out that "the goal of design research is knowledge of, or in, the embodiment of configuration, composition, structure, purpose, value and meaning in man-made

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[379] Christopher Baber, *Cognition and Tool use: Forms of Engagement in Human and Animal use of Tools* (London and New York: Taylor & Francis., 2003), 83.

[380] Ken Friedman, *Design Knowledge: Context, Content and Continuity*. In David Durling and Ken Friedman eds., Proceedings of the conference *Doctoral Education in Design: Foundations for the Future* (Staffordshire University Press, 2000). The conference was held from 8-12 July, 2000 in La Clusaz, France.

things and system."[381]

Knowledge, then, is the core issue of design research, and understanding how design knowledge is acquired, transformed, generated, and communicated is critical for the development of design methodologies aimed at enabling designers to work more effectively armed with design knowledge. However, the direction and content of design knowledge seeking has always been influenced by the mainstream philosophy or thought of the historical or social context. In the history of Western design, design knowledge seeking has apparently been influenced by the dominant paradigms in different historical periods.

This chapter discusses product design knowledge against the background of the main paradigms that have influenced the direction of product research and product design in the West. "Paradigm" is a term from sociology that is used "to describe how scientists work within accepted ways of defining, assigning categories, theorizing and procedures within disciplines and during particular historical periods. Different eras of science are characterized by particular world views (paradigms) that are taken as knowledge, and are used as standard forms of solutions to problems, of explaining events and of undertaking research."[382] Changes in the content of design knowledge are influenced by paradigm shifts that "occur when the dominant paradigm is successfully challenged by another paradigm able to incorporate the existing

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[381] Bruce Archer, "A View of the Nature of Design Research" in *Design: Science: Method*, edited by Jacques R., Powell J(Guildford: Westbury House, 1981).

[382] Chris Hart, *Doing Literature Review* (Thousand Oaks, New Delhi: SAGE Publications London, 1998), 126.

paradigm and also offer wider explanatory power and understanding."[383]

Two main areas of Western product research can be identified according to the emphasis of knowledge sought in contemporary Western design history: "object-making" and "object interpretation". These two approaches are assumed to cover the range of knowledge in the contemporary design context. The traditional perception of making things in the Western knowledge system can be traced to Greek philosophy, in which Aristotle's theory plays a central role.

	Object (Product)	
Name	Object making	Object interpreting
Functions	Utilitarian	Sign
Features	The science of design Scientific, technical, systematic	The culture of design Communicational function, symbolic meaning
Design theory	The innovation of new products	The cultural significance of objects
Emphasis	Design as creative process	The meaning of objects
Methods	Marketing and business methods Planning, Heuristic methods Brainstorming	Phenomenological methods Language analysis (semiotics) Hermeneutics
Discipline and methodological underpinning	Science (Neopositivist and Empiricist) Anthropology (user-centered research-UCD)	Psychology (reception theory) Sociology (consumption) Material Culture

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[383] Ibid.

Philosophy	Positivism	Structuralism
	Modernism	Postmodernism
Research strategy	Quantitative	Qualitative
		Case study
		Ethnography
Representative Figures	Simon Herbert 1960s	Rolan Barthes 1970s
	Brue Archer	Maurizio Vitta 1980s
	Christopher Jones	Csikszentmihalyi 1980s
	Nigle Cross 1980s	

Table 6.1 Two approaches: "object making" and "object interpretation".

6.1.5 Aristotle's Theory of *Making Things*

As a traditional knowledge pattern, makings things involved a focus on technique and practice. This tradition can be traced to Plato (427-347BC)'s philosophy and Aristotle (384-322BC)'s theory. In Plato's metaphysics, he evoked two distinct worlds: *the world of becoming* and *the world of being*. The former is the world as we experience it; a collection of individual objects fabricated by craftsmen and made of physical materials with its attendant transitory nature and association with the "unreliable" nature of sense impression.[384] In contrast, *the world of being* is accessed through reason; it alone contains the laws of mathematics, the five Euclidean solids, and the universal abstract constructs – of the so-called Platonic form – that underlie the actual

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[384] Aristotle, *Nicomachean Ethic*, translated with an introduction byDavid Ross, revised by J.L. Ackrill and J.O. Urmson (Oxford University Press, 1980), 169;First published by Oxford University Press1925.

things that comprise the inferior material world.[385]

Aristotle expressed Plato's concept of the *world of becoming* and *the world of being* as *eternal knowledge* and *changing knowledge*: science and art. He assumed that in five kinds of knowledge, people approach truth and their own capacity: *art, scientific knowledge, practical wisdom, philosophic wisdom,* and *intuitive reason*.[386] He defined *science* as demonstrative knowledge of the necessary and eternal; *art* as the knowledge of how to make things; *practical wisdom* as the knowledge of how to secure the ends of human life; *intuitive reason* as the knowledge of principles from which science proceeds. With these five elements, Aristotle propounded a complete concept whereby people attain truth through three kinds of knowing: *epistémé* (a Greek word), or certain knowledge based on reasoning from sound principles; *techné*, or knowledge shown in the construction of things; and *phronesis*, or knowledge shown in the choice of right actions.[387]

In sum, there are six characteristics of the knowledge of making things. Firstly, according to Aristotle's statement that "the knowledge of making things is embedded in our active shaping and making of the material world", making things, then, is creative human behavior because "art is things that can be changed and produced". Second, the activity of making is related to planning. "All *techné* is concerned with contriving and considering how something may come into being, which is capable of

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[385] Aristotle, *Nicomachean Ethic*, 170.

[386] Aristotle, *Nicomachean Ethic*, 140.

[387] Donald G. Marshall,"Truth, Universality, and Interpretation" in*Disciplining Hermeneutics: Interpretation in Christian Perspectiv*e, edited by Roger Lundin (Grand Rapids, Michigan: William B. Eerdmans Publishing Company, 1997), 71, 72.

either being or not being." Third, Aristotle claimed that making things is an art, or a state of the capacity to make, involving a true course of reasoning. He described it as an intellectual virtue: a reasoned state of the capacity to make. This means that making things is a rational action, an intelligent capability of human beings to manufacture products.

The fourth point Aristotle emphasized was the subject of the activity, "… whose origin is in the maker (designer) and not in the things made (designed things). Design is therefore a reasoning activity between the maker and the thing designed. Fifth, *techné*, or applied science (craft and art), is about making and producing things that can be changed to serve the purpose of the maker. It is also associated with chance (occasion or luck) and is a kind of knowledge people can learn. Sixth, Aristotle pointed out that making things requires practical wisdom – *phronesis* – or knowledge shown in the choice of right actions. He assumed that practical wisdom ends with what ought or ought not to be done. He specifically used the concept of understanding: "understanding only judges. Understanding is neither the having nor the acquiring of practical wisdom; but as learning is called understanding when it means the exercise of the faculty of knowledge …"[388]

Aristotle developed the science of production, which is directly associated with materials, techniques of production, forms, and purposes[389]. Makers of things also need practical wisdom to choose right actions, a requirement of understanding. These

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[388] Aristotle, *Nicomachean Ethic*, 151.

[389] Richard Buchanan, "Rhetoric, Humanism, and Design" in *Discovering Design: Explorations in Design Studies*, edited by Richard Buchanan and Victor Margolin (Chicago: University of Chicago Press, 1995), 30.

concepts potentially laid a foundation for the knowledge system of making things and exerted a strong influence on all subsequent discussions of making things in Western culture.

6.1.6 The Discussion of *Object Making* in the Western Design Context

Tracing Greek thought, Aristotle's theory influenced subsequent perceptions of making things.Before the Industrial Revolution, object making was the preserve of craftsmen and artisans, and objects for living were mainly made for the home. However, the Industrial Revolution changed this traditional pattern of production, leading human beings into a new type of object manufacture we refer to as "industrial mass production" and framing the discourse of twentieth century design. The Industrial Revolution overturned the practice of individual workers controlling the entire production process in favour of the division of labour. "Mass production and mass consumption were made possible by the development of new technologies, the introduction of large factories and new patterns of urban living."[390] It was in this historical context that knowledge of making things shifted from a craft-based to a methodical and scientific approach.

Starting in 1920, discussion of design science and design methods became increasingly developed and resulted in the gradual establishment of a well-organized system. Debates on design method were based on rationalist and empiricist philosophies of science that held sway at that time. "'Scientific' ways of seeing the world became prevalent at the beginning of this century, which was based on the

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[390] Catherine McDermott, *Design: The Key Concepts* (Abingdon, Oxon; New York: Routledge, 2007), 135.

notion of objectivity, rationality and universalism that were believed."[391]

Between the 1920s and the 1970s, discussion of design issues mainly focused on the process of design, which was broadly debated and researched not only from the artistic perspective, but also from the socio-economic, technological, and cultural perspectives. There was also a broad emphasis on basic needs and the utility of various needs such as ergonomic and ecological demands and economic and political interests. The main influence on this research perspective was the positivist paradigm. Positivism was the dominant epistemological paradigm in social science from the 1930s until the 1960s, its core argument being that the social world exists externally to the researcher and that its properties can be measured directly through observation. In essence, positivism makes the following arguments: first, reality consists of what is available to the senses - that is, what can be seen, smelt, touched, etc. Second, inquiry should be based upon scientific observation (as opposed to philosophical speculation) and therefore on empirical inquiry. Third, the natural and human sciences share common logical and methodological principles dealing with facts and not with values.

During the 1960s, *the design methods movement* hoped to create design methods that were based on science, technology, and rationalism. The design methods movement received much attention from the design research community. It was part of a more general quest to develop a *design science*. In the 1960s, Herbert Simon, the leading figure in computer science, distinguished 'artificial' science from natural science. His rigorous *science of design* distinguished the artificial from the natural and set

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[391] This description of "scientific method" is from the article *DesignMethod and Scientific Method* written by Nigel Cross, John Naughton, and David Walker. The article appeared in Robin Jacques, *Design: Science: Method: Proceedings of the 1980 Design Research Society Conference*, edited by Robin Jacques and James A. Powell (Guildford: Westbury House, 1981), 19.

boundaries for the sciences of the artificial.[392] He traced Aristotle's theory of how human beings reason, research decisions about matters which may be other than they appear, and how the artificial or human-made is different from, but related to, nature.

Simon's proposed solution was a *science of design*, with features focusing on both deliberation and decision making, in the sense that all products made by human beings are subject to analysis and understanding based on the nature of the activity of making. The basis for the integration Simon sought for design was the new discipline of decision making, and he explored this discipline in the context of neo-positivist and empiricist philosophy. His idea of a new science of design and his philosophical basis subsequently influenced many theorists and designers who believed in serving a particular social, political, and intellectual agenda.[393]

A statement by Bruce Archer (1965) encapsulated what was going on: "The most fundamental challenge to conventional ideas on design has been the growing advocacy of systematic methods of problem solving, borrowed from computer techniques and management theory, for the assessment of design problems and the development of design solutions". Herbert Simon (1969) established the foundations for "a science of design" which would be "a body of intellectually tough, analytic, partly formalizable, partly empirical, teachable doctrine about the design process." In some respects, there was a desire to "scientise" design in the 1960s.

On design, the concern to develop a design science thus led to attempts to formulate the design method – a coherent, rationalized method, as the "scientific method" was

[392] Herbert A. Simon,*The Sciences of the Artificial* (Cambridge, Mass: MIT Press, 1996).

[393] Richard Buchanan, "Rhetoric, Humanism, and Design"in *Discovering Design: Explorations in Design Studies*, edited byBuchanan & V. Margolin (Chicago: University of Chicago Press, 1995).

supposed to be … so we conclude that design science refers to an explicitly organized, rational, and wholly systematic approach to design; not just the utilization of scientific knowledge of artefacts, but design in some sense as a scientific activity in itself. The quest for a design science was a major motivation in defining design as a problem-solving endeavour. In this sense, the quest for a design science may be thought of as being the broad framework subsuming the design methods movement.

However, some scholars have criticized positivistic science for its lack of regard for the ethical, anthropological, and social consequences of its research and reproached it for giving up the claim to wholeness and leaving only a distorted picture of a dismembered world. Since 1970, the positive traditions of grappling with design theory have been set aside and a total separation of theory and practice has prevailed. Although scientific methodology has been the dominant product design research method for a number of years now, a new design knowledge requirement was raised in 1980 because of the inadequacy of the singular method of design research.

6.1.7 Paradigm Shift: Objects Interpreting

The perception of knowledge on making things potentially influenced the understanding of design activity; another factor influencing this understanding is the development of design theory in practice. In the history of human design, product design has been greatly reliant on scientific and technical knowledge. For a long time, designers focused on the practical functions of products (i.e., their functional and technical performance) as well as their social functions (i.e., questions of operability and meeting users' needs). However, the design discipline not only generates material

reality; it also fulfils communicative functions. In product design, some scholars have suggested that the function of design involves not only the technical and practical performance of a product, but also the aspects of aesthetics, communication, politics, and economy, amongst others.[394]

It is in this sense that a paradigm shiftoccurred in the field of design.[395] The dominant paradigm shifted from one of science to the semiotic perspective. By the 1960s, designers had begun to recognize the value of semiotics as a way of understanding the visual world, how language can be made meaningful, and how design might communicate that meaning to the consumer. In terms of design, semiotics could help in the understanding of cultural values, and therefore desires. Design semiotics therefore came to be regarded as a sub-discipline as it emerged in France, Germany, and the United States during the 1970s. The emergence of the term "product semantics" in design circles from the 1980s indicated an increasing preoccupation with gaining an understanding of the ways in which form, decoration, color, and other visible features of products could communicate additional meaning to consumers and users.[396]

In this period, the emphasis in discussing objects or products moved from how to make objects to how to interpret them. Semiotics focuses on the culture within which

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[394] Erlhoff and Marahally, eds., *Design Dictionary* (Basel; Boston: Birkhauser Verlag, 2008).

[395] Paradigm shift is a notion introduced by Thomas Kuhn. A paradigm shift involves the periodic reconstruction of accepted ideas, roles, and procedures in scientific inquiry. Details see Klaus, *The Semantic Turn: a New Foundation for Design* (Boca Raton, Fla.: CRC/Taylor & Francis, 2006); and Thomas Kuhn, *The Structure of Scientific Revolutions* (Chicago: Chicago University Press, 1962).

[396] Jonathan M. Woodham, *A Dictionary of Modern Design* (Oxford University Press, 2004), 352.

signs operate, and meaning is dependent upon shared structures of understanding. Recognizing that meaning was dependent on, for instance, shared cultural codes (which are also understood to be historically located and subject to change) meant that audiences could no longer simply be thought of as passive receivers. Semiotics gave them "something to do", made them active in the meaning-making process, and caused them to bring with them cultural experiences, discourse, and ideologies for the process of making sense.[397]

Given the influence of semiotics, some design scholars pursued representative studies of daily objects as a form of user research.In the 1970s, social psychologists Csikszentmihalyi and Rochber-Halton conducted studies of the psychosocial meanings of things. They performed empirical studies about the home; they interviewed 315 individuals from 82 families in the Chicago area,[398] examining how ordinary people assess the meaning of art or designed objects in their lives. They sought to establish how "normal" people respond to art objects and design qualities in their environment.

When interviewing users, Csikszentmihalyi discovered that people have different responses to art and objects. "Although most homes contained a few paintings or sculptures, usually reproductions, these works were marginal to the owner's sense of psychological or spiritual well-being". However, people had become involved with

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[397] Catherine McDermott, *Design: The Key Concepts* (Abingdon, Oxon; New York: Routledge, 2007), 207-298.

[398] Milhaly Csikszentmihalyi, "Design and Order in Everyday Life", in *The Idea of Design: A Design Issues Reader*, edited by Vitor Margolin and Richard Buchanan (Cambridge, Mass: MIT Press, 1995), 118.

the objects they owned and had entered into active symbolic relationships with them. Objects take on symbolic value with reference to one's personal history: "the meaning of our private lives is built with these household objects."[399]

Based on the sociological research perspective, their study *The Meaning of Things: Domestic Symbols and the Self* demonstrated how people construct personal patterns of meaning from the objects surrounding them. Their investigation was based on an understanding of the way in which consumers or users of design establish relationships with objects in manner that differs from those revealed by marketing studies. Their study is therefore regarded as a pioneering investigation. They stated that objects surrounding us are not merely tools, but in fact constitute the frame of reference for our experiences, thus making an essential contribution to the way we structure ourselves.

6.1.8 The Phenomenological Approach to Daily Products

As the 1990s unfolded, research on daily products was influenced by another philosophy: phenomenology. This was based on Edmund Hussel's (1859-1938) concept of the *life-world* emphasizing that the analysis of objects must always reflect a particular world (and time). A phenomenological method is a procedure used in an attempt to understand the *life-world* of man directly and as a whole, while taking everyday life and its environment into account. Only by delving into these *life-worlds* is it possible to grasp the meanings of everyday objects of the past. These meanings are then subjected to hermeneutic interpretation. Moreover, any phenomenological

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[399] Ibid.

statement can be claimed to be valid only within the context of a certain spatially and temporally restricted historical horizon. When applied to design, therefore, phenomenology aspires to a comprehensive investigation and characterization of the entire horizon of a product.[400]

At the end of the 1990s, phenomenon theory came to be applied to design history. Two thoroughly design-oriented publications set out to build on the tradition of philosophers such as Husserl and Heidegger and brought the tradition of phenomenology to bear in the present. Contemporary phenomenologist Jens Soentgen's *Materials, Things, and Fractal Creations* (1997) consciously established references to current design. Soentgen made clear that the staunchly semiotic orientation of product language can indeed be expanded by a phenomenological dimension.[401]

Jens Soentgen once proposed the critical difference between the two human-science methods of semiotics and phenomenology. He defined phenomenology as describing something as it appears without considering previous knowledge, without considering hypotheses, and without any consideration for anything that does not belong directly to the perceptible sensory existence of the thing itself. Signs, on the other hand, are always mediated, be it through experience or through convention. Semiotics thus concerns itself with the mediated or with which can be thought of as mediated, and phenomenology with the unmediated or direct. Scholars promoted the view that a

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[400] Bernhard E. Bürdek, *Design: History, Theory, and Practice of Product Design* (Basel: Birkhaüser-Publishers for Architecture, 2005), 240.

[401] Bürdek provided special evaluation of Soentgen 's work *Materials, Things, and Fractal Creations* (1997) in his book, page 243.

variety of phenomena determine our everyday life. In an essay subtitled "A Phenomenology of Electronic 'Devices", Volker Fischer (2001) designated all digital helpers as useful or useless. Fisher discussed these gadgets as individual examples of product design and put them forward as the basis for exemplifying all of the life-worlds that have an enduring influence.[402]

Furthermore, phenomenology has been applied to the practice of design. Uli Skrypalle, Vice President of the exhibition services firm Design Affairs in Munich, spoke of the need to move from phenomenology to empiricism in practice, saying that the product development process today was not determined merely by the subjective feelings of individuals (designers, market specialists or developers); instead, the process required that concepts be continuously revised by the relevant target groups. [403]To extend phenomenology as a methodological underpinning for understanding objects and their environment, and in the steps taken to read objects, the analytical process should be based on the case study method and should be aimed at achieving objectivity.

This phenomenological approach can also result in objects being interpreted objectively, but not subjectively. In other words, reading objects can be straightforward when existing knowledge and experience are ignored. Flusser's (1999) *The Shape of Things: A Philosophy of Design* applied a phenomenological approach in discussing culture and everyday things and their implications; the author offered new perspectives and readings of "objects" and their relations. He investigated and detected the structures of the human condition and the relationship between things and

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[402] Bernhard E. Bürdek, *Design: History, Theory, and Practice of Product Design* (Basel: Birkhaüser-Publishers for Architecture, 2005), 244.

[403] Bernhard E. Bürdek, *Design: History, Theory, and Practice of Product Design*, 250.

the physical dealing of things, which for him was a process of permanent change and restructure. He described his method of explaining phenomena, stating that he intended to see and observe things as though for the first time, which means ignoring all our experiences and existing knowledge of the object when reading it. This approach enables him to elucidate some new aspects of the objects read.[404]

6.1.9 Conclusion

This chapter demonstrates that various paradigms have emerged in different periods of design history and have led to the pursuit of design knowledge. According to Aristotle, making things is a reasoned state, an intellectual activity, and a creative activity involving ideas and imagination; on the other hand, making things reflects the human capacity to construct forms and meaning. In the history of Western design, object making as a mainstream philosophy influenced the design industry from the 1920s to the 1960s, with the combination of art and technique seen in the Bauhaus movement taking product design to a high peak. Accordingly, positivism emerged as the influential philosophy and held sway for over half a century, leading to more rational, scientific, and quantitative designs. As the 1980s began, a paradigm shift took place in which semiotics became the dominant ethos in object design, promoting the need to find meaning in objects and popularizing the discussion of design culture. Post-modernism and constructivism were underground philosophies that also began to have an impact on design philosophy. The 1990s saw the application of

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[404] Vilém Flusser, *The Shape of Things: A Philosophy of Design*, Anthony Mathews trans (London: Reaktion Books, 1999). In Andrea Wulf, "reviews," *Journal of Design History* 13, no.2 (2000):161-163.

phenomenological and hermeneutical constructs to design study. Objectivist and subjectivist epistemology, as two main research approaches to truth seeking in design, led to a theoretical perspective linked to positivism and interpretivism.

In sum, both the ancient Chinese design philosophies discussed in Chapter 5 and the Western research methodologies discussed in this chapter serve as positive references in forming the alternative methodological framework proposed in section 6.2 of this thesis.

6.2 Application: A Proposition of the Framework of Studying Chinese traditional Everyday Tools

The "reality, knowledge, and interpretation" framework discussed in this section is based on two theoretical perspectives with different philosophical statements and cultural systems.[405] The first is the ancient Chinese design system grounded in ancient philosophy; the second is the modern Western approach to product design knowledge as practiced during the twentieth century. The former perspective provides a historical and philosophical context for the generation of Chinese design knowledge; the latter serves as a methodological approach to conducting research on product design.

Chinese philosophy features three key characteristics: nature as being, life experience, and the spirit of inspecting things. Its underlying ontological and epistemological perception is one of metaphysics, life philosophy, and epistemology (*zhi zhi lun*) in inspecting things. Although Chinese people have a strong tradition of *Gewu zhizhi*

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[405] These two theoretical perspectives are specifically presented in Part 4Design Analysis of the thesis, chapter 7 and chapter 8.

(inspecting things and acquiring knowledge) and a methodological approach to nature, such as in Mo Zi's *Fa* (principles), ancient and general methodological propositions cannot be adapted to a modern age lacking in scientific methods to guide research. This lack of scientific methods is compounded by the Western positive science perspective expressed in twentieth century design. At the beginning of the 1980s, the positive approach to product knowledge was replaced by another perspective: object interpretation gave way to the acquisition of design experience, largely under the influence of constructivism and semiotics (as described in the previous chapter).

Based on the contributions and limitations of prior discussions, this thesis develops a theoretical framework of reality, knowledge, and interpretation grounded on an ontological, epistemological, and methodological approach to everyday tools. The framework proposed in this thesis is shaped by what reality is (ontology), different ways of establishing what can be accepted as real (epistemology), and different strategies for validating our claims about reality (methodology).

6.2.1 Framework: Reality, Knowledge and Interpretation of Studying Chinese traditional Everyday Tools

The framework proposed to approach Chinese traditional Everyday Tools in this thesis is shaped by what reality is (ontology), different ways of establishing what can be accepted as real (epistemology), and different strategies for validating our claims about reality (methodology). Because it believed that it is important to grasp the philosophical meaning of ontological, epistemological and the methodological meanings of validity, reliability and data. This approach for research can help researcher to know whether the knowledge is based on science or common sense. The researcher's position on the ontological status of reality, and the epistemological

status of knowledge determines the methodological approach and research strategy.

According to the theoretical framework of "reality, knowledge, and interpretation", which is logically based on the premise that "the design of everyday tools is a meaningful activity", "tools" are things that are really "there" and can be seen, touched, felt, and perceived. Reading tools and their *life-world* implies some belief about whether it is possible to understand something, and if so, how. However, whether there is something to be known about toolsis a question of "epistemology" of meaning. Finally, how readers interpret the right knowledge is a question of choice and ethics. Taken together, these issues give rise to the statement that "humans are agents who produce meaning through design activity". This also concerns the issues of the nature of material reality, the possibility of knowledge, and the criteria for interpretation.

6.2.2 Ontological Approach - Reality

It should be noted that all research originates from some view of reality, meaning there are different ways of gaining an understanding of some aspect of the world and different ways of confirming our understanding (i.e. knowledge).

Everyday tools as material entities

Because the term "objects" is a general concept and has an extremely wide scope (as described in Chapter One), objects are usually classified as either natural objects or artificial objects. Moreover, given that the term "objects" is used specifically to point to the design features of objects in this thesis, it is a term that can be narrowed down to "man-made tools". The term "tools" is used in this thesis and is understood and

defined according to three features.

First, "tools" are treated as physical and material reality; they are tangible, discreet, and three-dimensional artefacts. This feature implies that "objects" are to some degree independent. As Heskett has pointed out, "objects" can exist as visual forms in their own right and can be used without any other reference. [406] The particular independence objects have makes it possible for object study to be treated as an individual design phenomenon amenable to study and specialization.

Second, "tools" can be seen, touched, sensed, perceived, experienced, and used, meaning objects are perceptible to the human senses. Based on perception, "tools" embody their own language; in today's design context, design language is a specialized term. The visual language embodied by "objects" can be colour, line, gesture, form and three-dimensional construction, style, etc., features that not only provide directive information for users, but can also arouse emotional, psychological, and intellectual responses in them. The underlying spiritual meaning of objects can also be expressed in various philosophical concepts of different cultural, social, political, and economic meaning. In sum, as another pattern of "text", "tools" have much information to be read in different contexts.

Third, though "tools" represent a physical, discreet materiality, they exist as a separate form. However, tools have no meaning unless they are related to people such as their creator, maker, and user. This means that tools have not only a

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[406] John Heskett, *Design: A Very Short Introduction* (Oxford [England]: Oxford University Press, 2005), 55.

communication function, but also an interactive function with people and the environment. Making tools in relevant design activities is a way of expressing human creativity and intellectual gifts; functional tools and innovative technology are channels through which people avoid their physical limitations.

This thesis proposes that *everyday tools* are an element of physical reality and that their tangible form and materiality are amenable to study. Everyday tools are a class of product designed by human beings in particular historic periods for use in daily life, and play an important part in shaping people's living environment. The meaning ascribed to *Qi* shows that the Chinese perception of tools differs from that reflected in Western scholarship. However, there is a commonality in the two perspectives: *tools* are specific entities that exist in space or time.

This belief is supported by both Chinese and Western ontological perceptions of "reality" or "being". In ancient Chinese (pre-Qin) philosophy, *Shi* (existence) and *Xu* (non-existence) were important concepts. *Shi* is a concept usually used to refer to an entity already in existence that has a particular form and can be seen and touched. In contrast, *Xu,* the opposite of *Shi* (existence), is an abstract concept that cannot be seen and touched physically. *Shi* and *Xu* co-exist in the universe in balance with each other. This is a concept that is especially described by Lao Zi in the terms *Qi* (existing utensils) and *Tao* (things that do not exist). If *Qi* expresses a concept of physical being, *Tao* represents a way and embodies emptiness.[407]

6.2.3 Epistemological Approach - Knowledge

In order to acquire design knowledge about designed objects in human life in the

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[407] The theory of *Qi* and *Tao* is described in *Tao Te Ching* (772-476).

world around us, firstly it is necessary to state that researcher must understand the knowledge. It also needs to be stated that understanding an aspect of the world is a dimension of the intellectual tradition of Western knowledge. This tradition shapes the different ways in which various subject disciplines frame their views of the world, and how they go about investigating it. Therefore, the understanding of knowledge coincide Western philosophical tradition of "epistemology". As Crotty's (1998) wrote, an interrelationship exists between the theoretical stance adopted by the researcher, the methodology and methods used, and the view of epistemology. [408]

Epistemology is the branch of philosophy that deals with the characteristics of knowledge. It is the study of what constitutes knowledge, taking its construction, limits, and validation into account. Epistemology is a theory of knowledge.[409] This section therefore explains the "epistemological approach" that provides the researcher's theoretical understanding of the knowledge of designed objects and the issues of interpretation.

Traditionally humanities take on a special role in the development of the methodology and theory of design. Besides this, the constant crisis of meaning in the discipline leads it to turn to the epistemological perception. The researcher's epistemological stance will inevitably influence his or her theoretical perspectives, the choice of methodology, and the methods applied to select data for the research.

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[408] Detail refers to David E.Gray, *Doing Research in the Real World* (London: SAGE, 2009), 16-17; Miachael Crotty, *The Foundation of Social Research: Meaning and Perspective in the Research Process* (London, Sage Publications, 1998)

[409] Ian Hodder ed., *Interpreting Archaeology: Finding Meaning in the Past* (London and New York: Routledge, 1995), 236.

Ontologyis the study of being, that is, the nature of existence. While ontology embodies the understanding of what is, epistemology tries to understand what it means to know. Epistemology provides a philosophical background for deciding what kinds of knowledge are legitimate and adequate. Therefore, epistemology is a theory of knowledge. Epistemologies ask questions about knowledge itself: how can we know what we know? This encompasses questions such as the following: who can be a knower (acquire knowledge)? What things can be known? The researcher's epistemological position will impact every phase of the research process, including subsequent theoretical and methodological decisions. Epistemology influences the choice of a research subject, the goals of the research (the content that we are trying to explain), and consequently what and how we frame questions related to the real-life experience of the wage gap.[410]

6.2.3.1 Theory of Interaction in Western Design History

In Western design history, in comparison with previous discussions of products focusing on the designs of a particular designer, the discussion of knowledge was extended from its one-dimensional scientific or cognitive meaning to a multi-faceted cultural meaning. In recent research, the discussion of interactions between users and objects has become increasingly popular, particularly in participatory research, user-centred research, and emotional design research. As Erlhoff noted, "the interaction between user and object reflect nowadays design attention on user experience". He suggested that meaning should be built up through interaction

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[410] Sharlene Nagy Hesse-Biber and Patricia Leavy eds., *Approaches to Qualitative Research: A Reader on Theory and Practice* (New York: Oxford University Press, 2004), 2.

between users and objects, object language, and user experience[411]. He revealed a concept whereby design is defined as the interface between humans and the world, that is, the interaction between people and artefacts. Thus, design is thought of as the act of articulation of the relationship between subjects (users) and the material objects they receive.

However, the interaction between designer and user is also important. The concept of product language that gained currency in the 1980s implied that design is concerned chiefly with human-object relations. This means that design knowledge is focused on the relationship between users and objects. Of particular importance are the functions imparted by perception. Semiotics was used as an explanatory model in responding to the design issue of the "meaning of a product as the primary criterion instead of the usability of design.[412] John Heskett suggested that "the outcomes of design processes, the end result, should be considered in terms of interplay between designer's intentions and users' needs and perceptions rather than the central concern of the study and understanding of design".[413] This indicates that the usability and meaning of a product should be interpreted in a balanced manner, taking the design context into account.

In summarizing these two perspectives, Plowman indicated that people engage with a designed artefact by using it and that another dimension closely related to use is how

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[411] Michael Erlhoff and Tim Marshall ed., *Design Dictionary: Perspectives on Design Terminology* (Basel; Boston: Birkhäuser Verlag, 2008), 366.

[412] Bürdek, Bernhard E., *Design History, Theory and Practice of Product Design* (Basel, Boston, Berlin: Birkhäuser Verlag, 2005), 293.

[413] John Heskett, *Design: A Very Short Introduction* (Oxford, 2005).

products are experienced or interpreted. [414] He considered that the second dimension (experience and interpretation of products) incorporates two deeply cultural activities and lamented that it was only recently that the design community had begun to pay attention to the experience of designed artefacts and the impact of experience on consumption. He also commented that designers, engineers, and other professionals often face barriers (of a different nature) that prevent them from learning about the context and audience for their products, processes, and systems. The majority of designed artefacts is planned, prototyped, and produced without the benefit of primary ethnographic research on intended audiences and the context of use. [415]

6.2.3.2 Design Knowledge is Produced in Interaction

To respond to the product design research debates outlined above, this chapter presents an alternative approach to design knowledge. It is based on the features of the term "tools" as defined in the previous section on the theme of ontology. The features of the term "tools" demonstrate that "tool design", with its design activity implication, is an independent social activity. The design of "tools" becomes a meaningful social practice expressed by human intellectual capacity, creative inventions, and user experience across history. The historical design experience people accumulate through practice contributes to the production of valuable knowledge. This knowledge can be constructed by interactions between makers, tools, and users in their particular *life-world*, either historically, spatially or geographically. Their knowledge not only comes from the maker's creative ideas and design processes recorded in texts as "code knowledge", but is also a kind of "tacit knowledge" users

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[414] Tim Plowman, "Ethnography and Critical Design Practice." In *Design Research: Methods and Perspectives,* edited by Brenda Laurel (Cambridge, Mass: MIT Press, 2003), 31.

[415] Ibid, 32.

learn through practice. Both of these knowledge sources have been explored in the study of contemporary design history. In this chapter, the knowledge discussed and interpreted emphasizes the interaction of three elements – makers, tools, and users – that is importantly set in an historical and spatial context: people's *life-world*.

6.2.3.3 Model of Interaction: Makers, Tools, and Users, and their *Life-world*

This thesis proposes that the design knowledge found in Chinese everyday tools is produced by the interaction of makers, tools, and users within a particular *life-world.* This proposition references the hermeneutic triangle "consisting of a work, a worker (the producer of the work) and a recipient" that has been applied to the design arena in constructing the relationship between "the designer, the designed object, and the user". In this proposition, the maker's design intention, the design language of the tools, the using experience of the users, and the *life-world* context are the research foci to be addressed.

Maker - Design Intention

The activity of designing everyday tools is first understood as an element of social *practice* that accords with social construction and a value system. It not only belongs to the social realm, but also potentially contributes to the shaping of social values and conventions. In this thesis, the design activity of making tools is understood as an intellectual capability people possess that enables them to extend their physical limitations and change their environment, as well as driving change in systems of social values. Through the activity of design, human beings have manifest themselves in a variety of ways throughout history, whereby design is a means of contributing to technological, economic, and cultural change. These aspects of design have made substantial contributions to the development of social value systems, which in turn

determine people's behaviour and identity in their *life-worlds*.

To understand and explain the particular social practice of design, individuals' *intentions* become a key point to be addressed. Makers' design *intentions* determine the direction of the creative process and result in products, while users' product intentions determine their preferences and experience. In addition, people's intention, choice and ordering of the daily tools they need reflect their *life-worlds*. Understanding makers' and users' *intentions* and *behavior* in the design and use of tools can then be regarded as an active subject to be traced. Therefore, this study of ancient Chinese everyday tools examines design activity and user experience not only to 'discover' the past (as a means of focusing on the observation and recording of tools), but also to investigate the creative acts of *intention* and *experience* among users given the different social conditions and contexts in which they operate.

Tools - Design Language

To ensure their products are functional and useful, makers create an understandable design language for users through their products. Users perceive the language makers provide and use it skilfully; furthermore, the use habits and social customs, which become common to users' social groups, must also be understood by the maker. Therefore, makers and users commonly participate in the activity of making or designing. In such a Chinese *life-world* context, the interaction between makers and users shapes a communicative circle through the visible media of everyday tools.

Language is created for the purpose of communication. Design is the activity of making and communicating things to achieve the final outcome of visual material objects. Design language is usually expressed through visible form, function,

materials, technology, and decoration. Utility and aesthetics, as two of the main functions of product design, are always themes requiring description and analysis. Technology is a key means of making tools more effective and less costly. Materials are one of the main elements of Chinese design, as they are basic natural resources. Hence, in China, materials are very important to design, and are categorized as gold, wood, water, fire, and earth. Materials have also been developed as a standalone design philosophy.

German design historian Gert Selle stated in 1973 that design had become an everyday language. His comments proceeded explicitly from Ellinger's views: "one can speak of a product language to the extent that the design objects are not only carriers of function, but always carriers of information as well." Selle particularly referred to the societal function that increasingly falls to products. Signals are emitted through products: signals about users (e.g., their status) and signals about the producers of objects. He regarded product-language codification as an important future design task and advocated that it be researched scientifically: "for language is a means of interpreting reality, and product language provides the consumer opportunities to identify with the product and its linguistically proposed level of reality, which often appears irrational and dreamlike".

If text is a reality of linguistics, objects, as discrete things with tangible material qualities that are perceptible to human senses, whether designed by humans and manufactured by machines or found in nature, are a form of reality themselves. In the design context, language is a medium of industrial expression: this concept underlies much of literary theory, emphasizing authorial intentions, for example, and is

fundamentally committed to individualism. It takes sincerity and consistency as validity criteria, and looks for meanings in makers' emotions, ideas, and cognitive structures, and more generally in the structure of the human mind.[416]

Users - Experience

Design can be thought of as the act of articulating the relationship between subjects (users) and the material objects they perceive.[417] Product design is also a practice that involves the creation of objects that are simultaneously functional and aesthetic[418]. Users not only have physical needs such as functional and aesthetic requirements, but also have psychological and emotional satisfaction requirements. Physical needs in tools mainly used by hand, such as utility, are measured according to whether the tool is efficient and effective in achieving the task. The sense of touch and visual perception arouse psychological and emotional satisfaction in people. The idea or concept embodied in the toolmaker's intention might reflect social values, customs, and beliefs and thereby satisfy people's spiritual needs. All design language used by designers accords with users' lived experiences in their *life-world*, which is also the designer's *life-world*.

Context - Life-world

Tools are not objects that exist in isolation, but have relationships with people and the environment. Tools, people, and the environment together shape a *life-world* that

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[416] Klaus Krippendorff, *The Semantic Turn: a New Foundation for Design* (Boca Raton, Fla.: CRC/Taylor & Francis, 2006), 150.

[417] Michael Erlhoff and Tim Marshall ed., *Design Dictionary: Perspectives on Design Terminology* (Basel; Boston: Birkhäuser Verlag, 2008), 275.

[418] Michael Erlhoff and Tim Marshall ed., 309.

becomes the soil nourishing tool-making and use. This phenomenological approach to daily tools involves tools and their *life-world* being treated as the research object.

Life-world is a term Edmund Hussel (1859-1938) coined to describe an experienced world. It is a concept of phenomenology that concerns every phenomenological experience of human beings, including people, things, matters, and events that occur over the course of a person's life. The purpose of phenomenology research is to describe and explain the world of everyday life and extend our understanding of human experience. The main task of phenomenology is to develop our conception of the nature of the *life-world*.

In Hussel's last work, the term *life-word* has three meanings: first, as a narrow conception of the *life-world* reflecting the world of normal life that can be experienced through people's perception. The second meaning assigned is a special conception of the *life-world*: apart from their basic lives, people are also involved in manufacturing and cultural activities. Every activity has its own purpose and scope, and the various careers and interests individuals pursue give them different insights that shape their own special *life-world*. The third meaning ascribed to the *life-world* is a somewhat wider concept: that of the *life-world* uniting every individual's special *life-world*. In every special world, people have their own concept systems, but have basically similar sensual experiences. Based on their sensual experiences, people can communicate with each other and make mutual understanding possible.

It can be seen that the *life-world* shapes our experiences and that day-to-day living shapes our perception of the world. Day-to-day living demonstrates that human beings are not passive observers of the external world, but are active, subjective

participants in the creation of form such that both processes shaping our experiences and perception of the world occur simultaneously; on the other hand, we cannot deny the fact that our accumulated experiences are framed, not only by the physical environment around us, but also by the social and cultural contexts in which we live.[419]

In a similar vein, Gert Selle (1997) indicated that things exist in the context of social usage and unlived cultures. As soon as this context no longer exists and things can be isolated in the sterile space of the museum, they are already clinically dead. Hence, as a material reality, the makers and users of Chinese *Qi-ju* (everyday tools) cannot be treated separately with the contexts of a pre-existing *life-world* and a constructed *life-world*. Though people think that design and technology help people to shape and alter our material environment, the proposition made in this thesis is that the *life-world* also potentially shapes the forms, functions, and meanings of *tools*, the creative process of design engaged in by their makers, and the living experiences of their users. Therefore, *tools* and design are simultaneously generated from and respond to the broader context in which they are produced: the *life-world*.

6.2.4 Methodological Approach: How to Interpret Chinese Everyday Tool

Levi-Strauss viewed tool as "objects to think with". This implies that an additional function of a tool is to reflect the knowledge necessary to perform a task. What kind of research process ensures the knowledge acquired is valid? Methodological issues concern how we can validate what we claim to be knowledge. For example, how can we have logic of inquiry that gives us assurance in our knowledge? Should we use a

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[419] Michael Erlhoff and Tim Marshall ed., *Design Dictionary: Perspectives on Design Terminology*, 295.

deductive or inductive process; aim for generalization and explanation; or pursue context-based description aimed at emerging designs, categories, and theories? Are we interested in prediction, explanation or understanding?

As John Christ Jones stated, "methodology should not be a fixed track to a fixed destination, but a conversation about everything that could be made to happen".[420] As Bürdek wrotes, "in every other discipline, the theory and methodology of design develop on the basis of certain basic assumptions and requirements, most of which are self-evident and remain subconscious".[421] The methodological assumption of design knowledge in the *Qi-ju* (Chinese *everyday tools)* system is based on the framework of tools, knowledge, and interpretation.

6.2.4.1 Methodology

The definition and application of "methodology" have different emphases in the design discipline and social science.[422] In this thesis, the preferred definition of the term "methodology" is that of a system of methods and rules used to facilitate the collection and analysis of data. This provides the starting point for choosing an approach made up of theories, idea, concepts, and definitions of the topic; therefore, the basis of a critical activity consisting of making choices about the nature and characteristics of the social world (assumption) should not be confused with research

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[420] John Christ J., *Design Methods* (New York: Van Nostrand Reinhold, 1992), 73.

[421] Bernhard E. Bürdek, *Design: History, Theory, and Practice of Product Design* (Basel: Birkhaüser-Publishers for Architecture, 2005), 225.

[422] In design, "design methodology" as subject or field of enquiry is regarded as being launched in the conference on design method held in London in September 1962 (Thornley DG 1963, Cross 2007). For several decades, the field of design methodology has addressed design processes, epistemological considerations, and work practices in the design discipline.

techniques or the application of methodology.

Returning to the theoretical framework of tools (*Qi-ju*), knowledge, and interpretation, which is logically based on the premise that "the design of everyday tools (*Qi-ju*) is a meaningful activity", "tools" are things that are really "there" and can be seen, touched, felt, and perceived. Reading tools (*Qi-ju*) and their *life-world* implies some belief about whether it is possible to understand a *Qi-ju,* and if so, how. Whether there is something to be known in *Qi-ju* is a question of "epistemology" of meaning. Finally, how readers interpret the right knowledge is a question of choice and ethics. Taken together, these issues give rise to the statement that "humans are agents who produce meaning through design activity". This also concerns the issues of the nature of material reality, the possibility of knowledge, and the criteria for interpretation.

6.2.4.2 Interpretation

In treating design as a social practice amenable to study, design research interprets how the design knowledge found in daily tools is constructed. Hans-Georg Gadamer noted that interpretation is most usefully seen as an interaction between the activity, context, and prejudice (the horizon) of the reader, and the content, context, and background of the information.

By treating everyday tools as the "*life-world*", this thesis adopts a qualitative approach. What methods are used to approach this "*life-world*"? The "thick description and interpretation" method proposed by the anthropologist Geertz in 1993 and the qualitative researcher Denzin in 1989 is adopted in this thesis. The steps taken in designing a case study are observation, interaction, description, and interpretation.

The observation and interaction steps represent an attempt to help the researcher to establish a relationship with everyday tools; the description and interpretation steps are aimed at presenting the design knowledge and design meaning embodied in everyday tools.

Observation

The term observation, by which most social scientists mean participant observation, has come to be synonymous with field research.[423] Observational research is the most appropriate empirical procedure for the design process, and the objects and functions of this kind of research serve design most effectively. To behold, stare at, gaze, catch sight of, or even to follow and watch are all pleasant or unpleasant connotations of the word "observation". Observational research in design and qualitative observational research in particular, is an excellent method that can be applied to unconventional contexts. It allows the designer to gain a better understanding of the emotional and practical relationships between people and things, to identify usage patterns and wishes, and thus to develop a better understanding of people's motives.

Interaction

In hermeneutic tradition, social meaning is created during interaction, and the techniques of observation typically found within positivism do not reveal the meanings social actors attach to their everyday experiences. In these two steps, it is only when observing and experiencing tools that researchers can establish a relationship with everyday tools enabling them to understand the tools in question and

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[423]I.B.Williamson, D.A.Karp&J.R. Dalphin, *The Research Craft: An Introduction to the Social Science Method* (Toronto, Canada: Little Brown and Co., 1977), 19.

describe and interpret them in the following step.

Description and interpretation

"Thick description and interpretation" of everyday tools (the *life-world*) is a method devised by Geertz[424] and Denzin[425] as a new means of object analysis. According to the theory of Clifford and Denzin, the surface description of everyday tools focuses on form, function, material, color, texture, etc. Thick description extends to the details of everyday tools, the context in which they are used, interaction between users and tools, the social relationships of the user, etc. Thick interpretation involves elucidation of the design knowledge embodied in everyday tools, such as design principles, the meaning of everyday tools, and their historical significance.

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[424] Clifford Geertz, *The Interpretation of Cultures*: Selected Essays (London: Fontana Press, 1993).

[425] Norman K. Denzin, *Interpretive Interactionism* (Newbury Park, Calif.; Sage Publications, 1989).

VII. CONCLUSIONS

7.1 Answering the Research Questions

This thesis answers two research questions: "what were the original form and content of Chinese *Qi-ju d*esign knowledge?" and "how can we approach this design knowledge system? To approach these core issues, the thesis adopts an historical and methodological perspective, as stated in its title: *Qi-ju Design Knowledge: An Historical and Methodological Exploration of Classical Chinese Texts on Everyday Objects*.

It should be noted that although this topic implies a very broad research scope, it is impossible to present a complete picture of the design knowledge involved in Chinese traditional tools throughout China's long design history. The aim of this thesis is to offer a good starting point for exploring this topic, and to present a theoretical and methodological foundation for future research. The basic work includes:

A. A literature review of the topic in the context of Chinese contemporary design research;

B. A methodological review of the use of constructivism and hermeneutics for analyzing the ancient Chinese literature on design;

C. An historical investigation into the original state of Chinese *qi-ju* design in the pre-Qin dynasty era and its development in the later Song and Ming dynasties, focused mainly on the historical contexts and representative texts from the selected historical periods in which Chinese *qi-ju* was a core theme to be observed;

D. A genealogical examination of the Chinese terms *qi, ju, wu,qi, xiang,* and *fa*, with

analysis of the ontological, epistemological and methodological influence of Chinese ancient philosophy on *qi-ju*, and a discussion of the characteristics of *qi-ju* design and the nature of tacit design; and

E. A proposed theoretical framework for understanding Chinese traditional *qi-ju* design in future research.

The research findings and applications successfully answer the specific research questions and achieve the research objectives set out in the Research Methodology section of the thesis, as follows.

Specific research questions

(1) How did Chinese design knowledge originate and develop? How was it expressed, debated, and interpreted during the pre-Qin dynasty period? How did this original design knowledge develop in subsequent periods in terms of design history?

(2) What are the particular features of the design knowledge applied in Chinese everyday tools (*qi-ju*), as presented in the historical texts and context?

(3) How did specific philosophical considerations guide and influence the theory and practice of *qi-ju* design in terms of "methodology"?

Research objectives

(4) To construct a picture of the original state of Chinese *qi-ju* design knowledge by examining the descriptions of *qi-ju* presented in the relevant Chinese texts from the pre-Qin dynasty era and certain subsequent dynasties.

(5) To identify the features of this original design knowledge system by tracing the genealogy of Chinese *qi-ju* terms, the recorded design concepts, and the relevant

concepts or ideas recorded in Chinese classical literature.

(6) To develop a methodological framework for the study of Chinese *qi-ju*, and to provide a theoretical framework for future studies of Chinese traditional everyday tools.

The task of this thesis is to show what Chinese design knowledge is, and how this design tradition has been shaped and developed throughout the course of design history. The thesis uses classical ancient texts as the primary data to explore this particular design tradition. Through observing, reading, and analyzing ancient design texts written by Chinese literati (called *shi-da-fu* and *wen-ren*), the researcher has aimed to understand and interpret Chinese design tradition, and to finally present a picture of Chinese traditional design knowledge. Thus, the ancient texts that describe the design of Chinese everyday tools have served as the research resources for this investigation.

7.2 Research Contributions

This thesis aims to contribute to our understanding of original Chinese *qi-ju* design knowledge and respond to repeated calls in the design field for the creation of modern Chinese-style products. A secondary aim is to help establish a distinctly indigenous system for the theoretical and methodological study of ancient Chinese products. As the thesis title suggests, this research involves an examination of the classical texts related to Chinese design history in an effort to identify the original design terms, concepts, philosophies and practices of ancient Chinese design. The examination of such texts in later periods exposes the changing influence of this design knowledge in an historical and methodological perspective. The following sections show the main

contributions of the thesis.

7.2.1   Literature Review

In the literature review, the researcher sets a research context by presenting an historical picture of the early stage of Chinese modern design (1820-1940). This overview provides a contemporary design background and trace show key terms related to design emerged and developed at this time. During this period, the European terms *design*, *art* or *craft* and the Japanese terms *tu-an* (pattern) and *yi-jiang* (idea and craftsmanship) were introduced into China. These foreign words collided with native Chinese traditional design terms and concepts such as *qi, ju*, *gong, yi*, and *Tao*. The encounter with design terms from different nations or cultures and with new terms produced by local scholars introduced a level of complexity and confusion to the debates over design. Such debates over the terms of design lasted almost half a century. The researcher clarifies the issues in these debates and defines *qi-ju* in relation to modern design.

Next, the researcher provides a contemporary study of Chinese traditional *qi-ju* design from 1950 to now, using Western "paradigm" concepts to map the situation for research on *qi-ju* design. Three research paradigms are explored: *gong-yi mei-shu* (craft art) from the 1950s to the 1980s, *zao-wu yi-shu* (creation of object art) in the 1980s, and *she-ji yi-shu* (design and art) since the 1990s. The researcher evaluates these three paradigms as perspectives for studying traditional *qi-ju* design and its history. The researcher criticizes these three paradigms, or narrative patterns for their over emphasis on craft art for interpreting design history. Finally, the researcher argues that the best way to achieve an understanding of the ancient design knowledge

of *qi-ju* is through returning to the original historical context of Chinese design, recovering the ancient theory behind the *qi-ju* system of design, and exploring its related definitions, philosophy, and culture.

7.2.2   Research Methodology

The researcher highlights the importance of historical texts for contemporary designers, and proposes that we should revisit ancient classical texts that could help us understand Chinese traditional design. Beyond this, the researcher explores the methodological issue of how to approach these ancient texts, which has seldom been discussed and is absent in discussions of contemporary design history. This investigation applies constructivism and hermeneutics to the historical study of Chinese ancient classical texts on *qi-ju* design. In so doing, it responds to a long-standing issue concerning the lack of methods to help students approach, read, and interpret these ancient texts.[426] To study such texts, we need to learn how to approach and work with them.[427]

The researcher provides a theoretical guide on how to develop a research design, including how to select an appropriate qualitative research method, how to choose texts that are appropriate for data collection from Chinese classical literature, and how to analyze these ancient texts efficiently. "Interpretative analysis" is used to understand the classical design literature and to guide the research findings and discussions.

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[426] Most of these texts were written in the ancient Chinese language, which can be difficult to understand.

[427] Discussion of this issue in design history is often very vague and relies strongly on personal experience or preference, which may lead to unsatisfactory understanding or interpretation.

7.2.3   Research Analysis and Discussion

The researcher re-examines the past literature on "daily tools" by setting the texts in their historical contexts. To provide an overview of historical research and development on this topic, the researcher presents a chronological review of landmark works. The reviews of representative descriptions of Chinese *qi-ju* design in three selected dynasties (pre-Qin, Song and Ming) demonstrate the historical interest in this topic, and illustrate the different approaches taken according to the various viewpoints and methods that prevailed in these historical periods.

The researcher then presents design concepts and principles through the analysis of various texts, such as the *Kao Gong Ji* (*Book of Diverse Crafts*) and the theories of *qi-ju* design that were debated during the Hundred Schools period prior to the Qin dynasty. Other classical works analyzed include Shen Kuo's *Meng-xi-bi-tan* (*Sketchbook of Dream Brook*), Wen Zhengheng's *Chang-wu-zhi* (*Treatise on Superfluous Things*) and Song Yingxing's *Tian-gong-kai-wu* (*Heaven's Craft in the Creation of Things*). Through the textual analysis of these literati's descriptions of *qi-ju* design, the researcher illustrates Chinese design concepts, philosophies, and personal aesthetic experiences related to *qi-ju* design.

Through uncovering the historical contexts and classical ancient texts related to *qi-ju* design, an historical picture of Chinese *qi-ju* in three dynasties (pre-Qin, Song and Ming) are presented. This analysis of classical design-related texts addresses three issues: the historical contexts of the dynasties and texts concerned, the way *qi-ju* is

reviewed and intertwined with the related literature and the specific analysis of selected classical design texts.

7.2.4 Research Findings and Discussions

The researcher presents research findings on the "original Chinese *Qi-ju* design knowledge" based on a critical analysis of representative classical texts in chapter 4. Chinese *qi-ju* design is analyzed from four research perspectives, as described below.

First, the researcher traces the genealogy of terms *Qi, Ju,* and *Wu* in the historical literature, revealing the literary meanings, connotations, and philosophical connotations of these terms from a design perspective. Examinations of the terms *xiang, qi,* and *fa* are recorded in ancient archives, in texts such as the *I Ching*. These terms show how Chinese people perceived "reality" and "being" in ancient times, and how these perceptions generated original Chinese design concepts.

Second, the researcher presents a description of the original state and features of *Qi-ju* design. Comparing different expressions of "terms," "concepts" and "categories" in Chinese and Western contexts, the researcher finds that Chinese characters have particular pictographic features in the form called *xiang-xing* (pictography) that can be traced back to the Neolithic age and to the earliest creation of characters by Cang Jie (the ancient sage described in the *I Ching*). The pictographic features of these characters and artifacts share common origins whether they are recorded in the *I Ching,* the *Xi Ci II* or the *Kao Gong Ji* (*Book of Diverse Crafts*). These discoveries lead to findings on the origin of *qi-ju* at the root of civilization in Chinese history.

Third, the researcher discusses the philosophical context in which the Chinese design

knowledge system evolved, and relates the viewpoints, approaches, and methods underlying the Chinese perception of *Qi-ju*. The philosophical context in which design knowledge has been formed indicates how Chinese people have understood nature and the universe, how design knowledge has been developed, and what methods have been used to construct this kind of knowledge.

Fourth, the researcher constructs the features of Chinese *Qi-ju* design as (1) an ancient tradition that has greatly influenced the design and manufacture of basic tools or crafts; (2) a Chinese design concept that lays a simple, clear-cut emphasis on functionality; (3) a design tradition that has been particularly reliant on the craftsmen's experiential knowledge and perception of the surrounding environment, including nature, geography, seasons and materials; (4) a design process in which the elements of craftsmen's *ji-yi* (technique) and *jing-yan* (experience) have been intertwined; (5) a uniquely Chinese approach to design that is radically different from Western product design.

7.2.5   Research Application

In applying these findings, the researcher makes two kinds of contributions. First, the study of Western product design research offered in this thesis may serve as a methodological reference for contemporary Chinese design. The methodological approach of research on Western product design differs from the approach used in contemporary Chinese studies of daily tools, which mainly take a craft art history approach.

The researcher implicitly defines Western terms that have been commonly used in Western design research: *things, objects, artifacts, tools* and *products* (Chinese terms

qi and *wu*). In comparing the three paradigms of *gong-yi mei-shu*, *zao-wu yi-shu* and *sheji-yishu* that are used in studies of contemporary Chinese design history, the researcher similarly identifies two paradigms, "*object making*" and "*object interpreting*," that have emerged in the contemporary Western design research context. A comparative approach reveals the differences between the Eastern and Western methods of studying everyday tools, which involve different underlying patterns of design knowledge, research tradition and methodology. The Western perspective on product design knowledge provides an alternative reference to Chinese studies of *qi-ju* in the new age.

The thesis next proposes a theoretical framework based on "reality, knowledge, and interpretation" to inform future studies on traditional everyday tools in China. The proposed theoretical framework of "reality, knowledge, and interpretation" not only provides a methodological perspective on the study of *Qi-ju* based on the ontological and epistemological understanding of the topic, but also offers a specific method for conducting object studies. The proposed framework addresses the lack of a methodological approach in current design history studies and answers the question of how we can approach this design knowledge system.

7.3 Final Remarks

This thesis presents a general picture of *Qi-ju* design in Chinese history, focusing on the pre-Qin, Song, and Ming dynasty periods. It should be noted, however, that it is impossible to present a complete picture of the 2,000 years of Chinese *Qi-ju* development in one thesis, and such a task would, in any case, be better undertaken in the field of design history. Rather, this thesis provides a different perspective from

which to understand and interpret Chinese traditional design, with a focus on *qi-ju* design.

The researcher believes that there are two ways to approach Chinese traditional design. One approach is to study texts, and the second is to study objects (or *qi-ju*). In this sense, "objects" (products) are a kind of "text" that can be read (according to Russell's definition of "text" in anthropology). However, these two approaches to design knowledge involve different methods. As design knowledge can be obtained from visual objects, the researcher suggests that a phenomenological perspective is appropriate. However, as this approach is not the intended content of this thesis, the researcher would like to undertake this interesting exploration in future works.

The hermeneutical approach to historical texts provides theoretical guidance on how to understand historical *texts* (of Chinese classical literature) in a historical *context*. This thesis cannot provide a standard method for interpretation of texts, because each individual will have his or her own understanding of the texts. However, the researcher presents a hermeneutical approach to understanding ancient Chinese texts on design. The researcher agrees with Gadamer's view that hermeneutical understanding is historical understanding. For him, historical hermeneutics mediates the past and present; it brings together the horizon of the past and the horizon of the present. The hermeneutical understanding of Chinese traditional *Qi-ju* design presented in this thesis contributes to the study of contemporary design history. The researcher believes that "*Understanding is to be thought of less as a subjective act than as participating in an event of tradition*, a process of transmission in which past

and present are constantly mediated."[428]

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[428] Crotty, Michael, *The Foundation of Social Research: Meaning and Perspective in the Research Process* (London: Sage Publications, 1998), 101; Hans George Gadamer (1900-2000), *Truth and Method* (New York: Crossroad, 1989), 290.

Bibliography

Han Yu Da Zi Dian 1999-2009. Wuhan: Hubei People's Publishing House.

Xin Hua Zi Dian 1989. Hong Kong: Shangwu yinshuguan.

Adamson, Glenn and Giorgio and Teasley Riello Sarah, eds. 2011.*Global Design History*. London; New York: Routledge.

Aristotle. 1980. *Nicomachean Ethic*. Translated by David Ross. Oxford: Oxford University Press.

Attfield, Judy. 2000. *Wild Things: The Material Culture of Everyday Life*. Oxford, N.Y.: Berg.

Babbie, Earl R. 2004.*The Pracitice of Social Research*. Belmont, Calif.: Thomson/Wadsworth.

———. 1998. *The Practice of Social Research*. Translated by Meihua Li. Taibei: Shi Ying Press.

Baber, Christopher. 2003. *Cognition and Tool use: Forms of Engagement in Human and Animal use of Tools*. London and New York: Taylor & Francis.

Bernard, H. Russell. 2011. *Research Methods in Anthropology: Qualitative and Quantitative Approaches*. 5th ed. Lanham, Md: Rowman Altamira.

Bernard, H. Russell. 2011. *Research Methods in Anthropology: Qualitative and Quantitative Approaches*. 5th ed. Lanham, Md: Rowman Altamira.

Black, C. E. 1972. *Dynamics of Modernization: A Study in Comparative History*. Taibei: Huan Yu Press.

Blanche, Terre, Martin, Kevin Durrheim, and Desmond Painter, eds. 2008.*Research in Practice: Applied Methods for the Social Sciences*: Juta and Company Ltd.

Bo, Mou. 2009. *Chinese Philosophy A-Z*. Edinburg: Edinburgh University Press.

Boltz, William G. 1993. *Shuo Wen Jie Zi in Early Chinese Texts: A Bibliographical Guide*. Early China Special Monograph Series., edited by Michael Loewe. Vol. 2. Berkeley, Calif.: Society for the Study of Early China and Institute of East Asian

Studies, University of California, Berkeley.

Bruce, Archer. 1981. *A View of the Nature of Design Research*. Design: Science: Method. edited by Jacques R, Powell J. Guildford: Westbury House.

Buchanan, Richard. 1995. "Rhetoric, Humanism, and Design." In *Discovering Design: Explorations in Design Studies*, edited by Richard Buchanan and Victor Margolin. Chicago: University of Chicago Press.

Bürdek, Bernhard E. 2005. *Design History, Theory and Practice of Product Design*. Basel, Boston, Berlin: Birkhäuser Verlag.

Cai, Renhou. 1993. "Zhongguo Sixiang Shi (the History of Chinese Thoughts)." In *Guo Xue Dao Du* [The guidance of Chinese study], edited by Xianyou et al Qiu.Vol. 3. Taibei: Sanmin chubanshe.

Cao, Zhao. 1987. *Ge Gu Yao Lun*. Shanghai: Shanghai guji chubanshe.

Chan, Wing-Tsit (1901-1994). 1963. "Naturalistic Confucianism: Hsün Tze." In *A Source Book in Chinese Philosophy*. Princeton, N.J.: Princeton university press.

———. 1963. *A Source Book in Chinese Philosophy*. Princeton, N.J.: Princeton University Press.

Chen, Bozhang. 2000. "The Theoretical Basis of Qualitative Research Methods."Chiayi: National University of Education Research Institute.

Chen, Hengke. 1991. "Drawing Originating from Practice." In *Contemporary Chinese Art*, edited by Huaishuo He. Taibei: Artist Press.

Chen, Ruilin. 2009. *Zhongguo She Ji Shi* [Chinese design history]. Beijing: Tsinghua University, Institute of Art and Design.

Chen, Wenju. 2001. *Shijing Qi Wu Kao Shi* [Textual Research of Tools in the Book of Poetry]. Taibei: Wenjin chubanshe.

Chen, Xiaohua. 2007. *Technology and Design: The Modernity Course of Chinese Art Design in Twentieth Century*. Chongqing: Chongqing University Press.

Chen, Yuanlong (1652-1736). 1992. *Ge Zhi Jing Yuan*. Shanghai: Shanghai guji chubanshe.

Chinese philosophy history editing group, ed. 2012.*Chinese Philosophy History*.Vol. 1. Beijing: Renmin chubanshe; gaodeng jiaoyu chubanshe.

Chiu, Chunlin. 2009. *She Ji and Wen Hua* [Design and Culture]. Chongqing: Chongqing University Press.

Clunas, Craig. 2009. *Art in China*. Oxford; New York: Oxford University.

———. 2007. *Empire of Great Brightness: Visual and Material Cultures of Ming China 1368-1644*. London: Reaktion Books.

———. 1991. *Superfluous Things: Material Culture and Social Status in Early Modern China*. Cambridge: Polity Press.

Confucius. 1997. *The Analects of Confucius: Lun Yu*. Translated by Huang Chichung. New York: Oxford University Press.

Cross, Nigel, John Naughton, and David Walker. 1980. "Design Method and Scientific Method." In *Design: Science: Method: Proceedings of the 1980 Design Research Society Conference*, edited by Robin Jacques and James A. Powell: Guildford: Westbury House.

Crystal, David, ed. 1999. *The Cambridge Paperback Encyclopaedia*: Cambridge University Press.

Csikszentmihalyi, Milhaly. 1995. "Design and Order in Everyday Life." In *The Idea of Design*, edited by Victor Margolin and Richard Buchanan. Cambridge, Mass: MIT Press.

Curtin, Philip D. 1984.*Cross-Cultural Trade in World History*. Cambridge: Cambridge University Press.

Dai, Wusan, ed. 2003. *Kao Gong Ji Tu Shuo*. Jinan Shi: Shandong huabao chubanshe.

Darvill, Timothy, ed. 2002. *The Concise Oxford Dictionary of Archaeology*. 3rd ed. New York: Oxford University Press.

Denzin, Norman K. 2001.*Interpretive Interactionism*. 2nd ed. Thousand Oaks, Calif.: Sage Publications.

———. 1989. *Interpretive Interactionism*. Newbury Park, Calif.: Sage Publications.

Ding, G., ed. 2001. *Nationalization and Internationalization: Two Turning Points in China's Education in the Twentieth Century*. Education, Culture, and Identity in Twentieth-Century China, edited by Glen Peterson, Ruth Hayhoe, and Yongling Lu. Ann Arbor: The University of Michigan Press.

Duan, Yucai (1735-1815). 1981. *Shuowen Jiezi Zhu (Commentary to the Shuo Wen Jiezi)*. Shanghai: Shanghai guji chubanshe.

———. 1939. *Commentary on the Shuo Wen Jie Zi*. Shanghai: Shanghai commercial press.

Dubs, Homer H. 1966. *Hsüntze: The Moulder of Ancient Confucianism*. London: Arthur Probsthain.

Edmund, Hussel. 1970. *The Crisis of European Sciences and Transcendental Phenomenology: An Introduction to Phenomenological Philosophy*. Translated by David Carr. Evanston: Northwestern University Press.

Elman, Benjamin A. 2005. *On their Own Terms: Science in China, 1550-1990*. Cambridge, Mass: Harvard University Press.

Erlhoff, Michael and Tim Marshall, eds. 2008.*Design Dictionary: Perspectives on Design Terminology*, edited by Tim Marshall. Basel, Boston: Birkhäuser Verlag.

Fadiman, Clifton, ed. 1992. *The Treasury of the Encyclopaedia Britannica: More than Two Centuries of Facts, Curiosities, and Discoveries from the most Distinguished Reference Work of all Time.*, edited by Robert McHenry Bruce L. Felknor. New York: Viking Penguin.

Fallan, Kjetil. 2010. *Design History: Understanding Theory and Method*. Oxford, UK; New York: Berg.

Fang, Hanshen. 2006. *Xifang Wenhua Gailun* [Introduction to Western culture]. Beijing: China Ren min University Press.

Flusser, Vilém. 1999. *The Shape of Things: A Philosophy of Design*. London: Reaktion.

Forty, Adrian. 1986. *Objects of Desire, Deign and Society since 1750*. London: Thames and Hudson.

Friedman, Ken. 2000. "Design Knowledge: Context, Content and Continuity." Clusaz,

France: Staffordshire University Press.

Gao, Cheng (11th cent). 1982. *Shi Wu Ji Yuan*. Si Ku Lei Shu Cong Kan. Taibei: Shangwu yinshuguan.

Gao, Feng. 2006. *Zhongguo Sheji Shi* [Chinese Design History]. Taipei: Jimu wenhua chubanshe.

Gao, Lian. 1987. *Zun Sheng Ba Jian*. Shanghai: Shanghai guji chubanshe.

Geertz, Clifford. 2000. *Local Knowledge: Further Essays in Interpretive Anthropology*. Translated by zhang hailong and Wang jiaxuan. Beijing: Zhong yang bianyi chubanshe.

———. 1993. *The Interpretation of Cultures: Selected Essays*. London: Fontana Press.

———. 1983. *Local Knoweldge: Further Essays in Interpretive Anthropology*. New York: Basic Books.

Gill, Rosalind. 2006. "Discourse Analysis." In *Documentary Research*, edited by John Scott. Vol. 1, 209-229. London; Thousand Oaks, Calif.: SAGE.

Gottschalk, Louis A. 2006. "The History and Historical Documents." In *Documentary Research*, edited by John Scott. Vol. 1, 8-47. London; Thousand Oaks, Calif.: SAGE.

Gove, Philip Babcock, ed. 1993. *Webster's Third New International Dictionary of the English Language, Unabridged: A Merriam Webster*, edited by Merriam-Webster editorial staff. Springfield, Mass: Merriam-Webster.

Graham, A. C. 1978. *Latter Mohist Logic, Ethics, and Science*. Hong Kong: Chinese university of Hongkong.

Gray, David E. 2009. *Doing Research in the Real World*. London: SAGE.

Guba, Egon G. ed. 1990. *The Paradigm Dialog*. Newbury Park, Calif.; Sage Publications.

Guba, Egon G. and Lincoln, Yuonna S., ed. 2004. *General Questions Or Problems of Epitemology, Paradigm, and Methodology*. Approaches to Qualitative Research: A Reader on Theory and Practive, edited by Hesse-Biber, Sharlene Nagy and Leavy,

Patricia. New York: Oxford University.

———. 1994. *Competing Paradigms in Qualitative Research*. Handbook of Qualitative Research, edited by Denzin, Norman K and Lincoln,Y.S. London: SAGE.

Guo, Enci. 2008. *The Birth of Chinese Modern Design*. Shanghai: Dongfang chubanshe.

Guo, Tingyi. *Zhongguo Sixiang Chuantong De Xiandai Fansi* [The modern reflection of Chinese traditional thinking].

Hang, Jian. 2009. *She Ji Dao: Zhongguo Sheji De Jiben Wenti (the Way of Design: The Basic Problems of Chinese Design)*. Chongqing: Chongqing University Press.

———. 2007. *Zhongguo Gongyi Meishu Shi (History of Chinese Craft Art)*. Beijing: People's Fine Art Press.

———. 1996. "Dao Qi Lun (the Discussion of Dao and Qi)." In *Zhongyang Gongyi Meishu Xueyuan Yishu Sheji Lunwen Ji* [The collection of papers of The Central Academy of Arts and Design], edited by Zhongyang Gongyi Meishu Xueyuan. Beijing: Fine Arts Press.

———. 1994. *Zhongguo Sheji Meishu Sixiang Shi (History of Thoughts on Chinese Arts and Crafts)* [The way of design: the basic problems of Chinese design]. Taiyuan: Beiyue wenhua yishu chubanshe.

Hansen, Chad. 1985. "Chinese Language, Chinese Philosophy, and Truth." *Journal of Asian Studies* 3: 492.

Hart, Chris. 1998. *Doing Literature Review*. Thousand Oaks, New Delhi: SAGE Publications London.

Hese-Biber, Sharlene Nagy and Leavy, Patricia, ed. 2004. *Approaches to Qualitative Research: A Reader on Theory and Practice*. New York: Oxford University Press.

Heskett, John. 2005. *Design: A very Short Introduction*. Oxford: Oxford University Press.

Heylighen, Ann and Martin, W. Mike and Cavallin, Humberto. 2005. "How to Teach and Archive Tacit Design Knowledge." *Design Intelligence* 11 (6).

Highmore, Ben. 2005. *Everyday Life and Cultural Theory: An Introduction*. Translated by Zhou Qunying. Yonghe (Taiwan): Weibo Wenhua International Co.,

Hodder, Ian, ed. 1995. *Interpreting Archaeology: Finding Meaning in the Past*. London and New York: Routledge.

Hong, Handing. 2001. *Quan Shi Xue: Tade Lishi He Dangdai Fazhan (Hemeneutics: History and Contemporary Development)*. Beijing: Renmin chubanshe.

Hsü, Chung yueh (Immanuel). 2001. *The Rise of Modern China*. Translated by Ji Qiufeng et al. Hong Kong: Chinese University Press.

Hu, Daojing and Jin,Liangnian. 2009. *Meng Xi Bi Tan Dao Du (the Introduction of Meng Xi Bi Tan)*. Beijing: zhongguo guoji guangbo chu ban she.

Hu, Daojing. 2012. *Shen Kuo Yan Jiu; Ke Ji Shi Lun* [The research of Shen Kuo; The history of technology].Shanghai: Shanghai renmin chubanshe.

Huang, Guangguo. 1999. "Multi-Paradigm Research Approach: On the Localization of Social Psychology." *Journal of Social Theory* 2: 1-51.

Huang, Shijian. 2007. *Dongxiyang Meiyue Tongji Zhuan* [Eastern Western Monthly Magazine]. Zhengzhou: Da xiang chubanshe.

Huang, Yue. 2010. *Myth Narrative and Collective Memory: Cultural Interpretation of Huainan Zi*, edited by Ye Shuxian. Guangzhou: Southern Daily Press.

J.Christopher, Jones. 1992. *Design Methods*. New York: Van Nostrand Reinhold.

Jean, Baudrillard. 1996. *The System of Objects*. Translated by James Benedict. New York: Verso.

King, Ambrose (Jin,Yaoji). 1995. *From the Traditional to the Modern*. Taibei: Shibao wenhua chuban.

Kingery, W. David, ed. 1995. *Learning from Things: Methods and Theory of Material Culture Studies*. Washington, D.C.: Smithsonian Institution Press.

Kjell Erik Rudestam and Rae R. Newton (Sage Publications,2007. 2007. *Surviving Your Dissertation: A Comprehensive Guide to Content and Process*. 3rd ed. Sage Publications, 2007.

Kong, Yingda. 1998. *Shang Shu*. Beijing: Zhonghua shuju.

Krippendorff, Klaus. 2006. *The Semantic Turn: A New Foundation for Design*. Boca Raton, Fla.: CRC/Taylor & Francis.

Kuhn, Thomas S. 1994.*The Structure of Scientific Revolutions*. Translated by cheng shude et al. Taibei: Yuanliu chuban shiye.

———. 1970. *The Structure of Scientific Revolutions*. Chicago: University of Chicago Press.

Lackner, Michael and Iwo and Kurtz Amelung Joachim, eds. 2001.*New Terms for New Ideas: Western Knowledge and Lexical Change in Late Imperial China*. Leiden: Brill.

Lai, Tianyuan. 1993. "Guo Xue Gai Lun." In *Guo Xue Dao Du* [The guidance of Chinese study], edited by Qoi Xianyou et al. Taibei: Sanmin chubanshe.

Lao, zi. 2008.*Dao De Jing (Electronic Resource)*. Translated by Edmund Ryden. Oxford University Press Inc.,: Oxford, UK.

Laurel, Brenda, ed. 2003. *Design Research: Methods and Perspectives*. Cambridge, Mass: MIT Press.

Li, Changli. 2005. "Yang Buyi Zai Wan Qing De Liuxing Ji Shehui Wenhua Yiyi." *Hebei Xue Kan* 2: 161-168.

Li, Chenyang. 2006. *Confucianism in a World of Diversity*. Taipei: Wu-nan Book Company Ltd.,

Li, Lixin. 2010. *Sheji Yishuxue Yanjiu Fangfa (the Methodology of Design and Art)*. Nanjing: Jiangsu meishu chubanshe.

———. 2004. *Zhongguo Sheji Yishu Shilun (the Research of China Art Design History)*. Tianjin: Tianjin renmin chubanshe.

Li, Yanzu. 2008. "Wisdom of Design--Outline of Ancient Chinese Design Thought History." *Journal of Nanjing Arts Institute Fine Arts & Design* 4: 27-32.

———. 2007. *She Ji Zhi Wei (the Thinking of Design)*. Chongqing: Chongqing University Press.

———. 2002. *Zaoxing Yishu Xinshang (the Appreciation of Design Art)*. Taipei: Wunan Publishing Co., Ltd.,

———. 2002. *Zhuangshi Zhi Dao (Way of Decoration)*. Taibei: Wunan Tu shu Company.

Li, Yu. 2003. *Xian Qing Ou Ji Tu Shuo*, edited by Lianhai Wang. Translated by Wang Lianhai. Jinan Shi: Shandong huabao chubanshe.

Liang, Shiqiu and Zhang, Fangjie. 1992. *Yuan Dong Han Ying Da Ci Dian* [Far East Chinese-English dictionary]. Taibei: Yuandong tushu gongsi.

Liang, Suming. 1963. *Zhongguo Wenhua Yaoyi* [General introduction of Chinese culture]. Hong Kong: Jicheng Tushu Gongsi.

Liu, Shanling. 1999. *Xiyang Feng: Xiyang Faming Zai Zhongguo* [The West Wind: Western Invention in China]. Shanghai: Shanghai Classics Publishing House.

Love, Terence. 2000. "A Meta-Theoretical Basis for Design Theory." La Clusaz, France, Staffordshire University Press.

Luo, Mi (12th cent). 1979. *Lu Shi*. Taibei: Taiwan shangwu yinshuguan.

Marshall, Donald G. 1997. "Truth, Universality, and Interpretation." In *Disciplining Hermeneutics: Interpretation in Christian Perspective*, edited by Roger Lundin. Grand Rapids, Michigan: William B. Eerdmans Publishing Company.

Matthew, David and Sutton,D.Carole. 2007. *Social Research: The Basics*. Translated by Wang Ruoxin et al trans. Yonghe: Weibo wenhua guoji.

———. 2004. *Social Research: The Basic*. London; Thousand Oaks, Calif.: SAGE.

McDermott, Catherine. 2007. *Design: The Key Concepts*. Abingdon, Oxon; New York: Routledge.

Miller, Daniel. 1987. *Material Culture in the Social World: Values, Activities, Lifestyles*. Oxford: B. Blackwell.

Myers, Michael D. 1997.*Qualitative Research in Information System* MISQ Discovery.

Nan, Bei. 2005. "Zhongguo Chuanton Giju Sheji Lilun Yantaohui Zongshu." *Meishu Yu*

Sheji (Art and Design) 3: 152.

Needham, Joseph. 1980. *Mechanical Engineering, Science and Civilization*. Translated by Chen Lifu. Taibei: Taiwan Commercial Press.

Nesbitt, Kate, ed. 1996. *Theorizing a New Agenda for Architecture, an Anthology of Architectural Theory 1965- 1995*. New York: Princeton Architectural Press.

Norman, Donald A. 1990.*The Design of Everyday Things*. 1st ed. New York: Doubleday.

Oeming, Manfred. 1979. *Contemporary Biblical Hermeneutics: An Introduction*. Translated by Joachim F. Vette ASHGATE.

Palmer, Richard E. 1969. *Hermeneutics: Interpretation Theory in Schleiermacher, Dilthey, Heidegger, and Gadamer*. Anston, Ill.: Northwestern University Press.

Pan, Jixing. 1992. *Tian Gon Gkai Wu Yi Zhu (the Translation of Tian Gong Kai Wu)*. Shanghai: Shanghai guji chubanshe.

———. 1990. *Song Yingxing Ping Zhuan (a Critical Biography of Song Yingxng)*. Nanjing: Nanjing University press.

———. 1988. *Tian Gong Kai Wu Dao Du (the Guidance of Tian Gong Kai Wu)*. Chengdu: bashu shushe.

Pan, Shuman. 2003. *Zhixing Yanjiu Yingyong* [Qualitative research: theory and practice]. Taibei: Xinli chubanshe.

Parker, Ian and Bolton Discourse Network. 1999. *Critical Textwork: An Introduction to Varieties of Discourse and Analysis* Open University Press.

Petroski, Henry. 1992. *The Evolution of Things*. New York: Knopf.

Plowman, Tim. 2003."Ethnography and Critical Design Practice." In *Design Research: Methods and Perspectives*, edited by Brenda Laurel. Cambridge, Mass: MIT Press.

Polanyi, Michael (1891-1976). 2003. *Personal Knowledge: Towards a Post-Critical Philosophy*. London: Routledge.

———. 1966. *The Tacit Dimension*. Glucester, Mass: Peter Simith.

Qian, Binsi. 1951. *Zhongguo Wenhua Daolun* [An introduction to the history of Chinese culture]. Taipei: Zheng Zhong Press.

Qiu, Xianyou, He Zhou, and Boyuan and Tian, eds. 1993.*Guo Xue Dao Du (the Guidance of Chinese Study)*.Vol. 3. Taibei: Sanmin shuju.

Qiu, Chunlin. 2009. "The Interactive Base between the Scholars and Craftmen of Ming Dynasty from Tao an Meng Yi." In *Design and Culture*, 154-163. Chongqing: Chongqing University Press.

Redfield, Robert. 1956. *Peasant Society and Culture*. Chicago: University of Chicago: University of Chicago Press.

Ruan, Rongchun and Hu, Guanghua. 1991. *The History of Chinese Modern Art 1911-1949*. Chengdu: Sichuan Fine Art Publishing House.

Rudestam, Kjell Erik and Newton.Rae R. 1992.*Surviving Your Dissertation: A Comparehensive Guide to Content and Process*. Newbury Park, Calif.: SAGE.

Schäfer, Dagmar, ed. 2012. *Cultures of Knowledge: Technology in Chinese History*. Leiden; Boston: Brill.

Schiffer, Michael B. and Andrea R. Miller. 1999. *The Material Life of Human Beings: Artefacts, Behaviour, and Communication*. London, New York: Routledge.

Schwandt, T. A., ed. 1998. *Constructivist, Interpretivist Approaches to Human Inquiry*. The Landscape of Qualitative Research: Theories and Issues, edited by N. K. and Lincoln Denzin Y.S. London: SAGE.

Scott, John, ed. 2006. *Documentary Research*. Vol. 1. London; Thousand Oaks, Calif.: SAGE.

———. 2006. "Social Research and Documentary Sources." In *Documentary Research*. Vol. 1, 6-7. London; Thousand Oaks, Calif.: SAGE.

———. 1990. *A Matter of Record: Documentary Sources in Social Research*. Cambridge: Polity.

Segre, Cesare. 1988. *Introduction to the Analysis of the Literary Text*. Bloomington: Indiana University Press.

Shang, Gang, ed. 2007. *A New Compilation of History of Chinese Craft Art*. Beijing: Higher Education Press.

———. 2007. *Exploitation of the Works of Nature--Craft Art in the Ancient Times*. Beijing: SDX Joint Publishing House.

Shao, Qi et al. 2009. *A Brief History of Zaowu and Design*. Shanghai: Shanghai Bookstore Press.

Shen, Kuo. 1937. *Mengxi Bi Tan*. Changsha: Shangwu yinshuguan.

Shen, Kuo (1031-1095). 2011. *Meng Xi Bi Tan Zhu*. Translated by Wang Xiang annotated. Vol. 16. Zhejiang: Jiangsu University Press.

———. 2002. *Chang Xing Ji*. Vol. 19. Hong Kong: Dizhi wenhua chubanshe.

Simon, Herbert Alexander. 1996. *The Sciences of the Artificial*. Cambridge, Mass; London, England: MIT Press.

Song, Yingxing. 2002. *Tian Gong Kai Wu*. Beijing: China Economic Publishing House.

———. 1978. *Tian Gong Kai Wu*. Translated by zhong guangyan. Hong Kong: Zhonghua Shuju.

———. 1939. *Tian Gong Kai Wu*. Shanghai: Shanghai Commercial Press.

Stake, Robert E. 1995. *The Art of Case Study Research*. Thousand Oaks, Calif: Sage Publications.

Sun, Ji. 2006. *An Illustrated Description of Material Culture Sources in the Han Dynasty*. Shanghai: Shanghai Ancient Book Press.

Sun, Zhirang (1848-1908). 2001. *Mo Zi Jian Gu*. Vol. 1. Beijing: Zhonghua Book Company.

Tang, Degang (Tong,Te-kang). 1998. *Wan Qing Qi Shi Nian* [The last seventy years of late Qing dynasty]. Taibei: Yuanliu Chuban shiyegu.

Tian, Zibing. 1985. *Zhongguo Gongyi Meishu Shi (Hsitory of Chinese Craft Art)*. Shanghai: Zhishi chubanshe.

Toynbee, Arnold (1889-1975) and Somervell, David. 1964. *Civilization on Trial, and*

the World and the West. Cleveland: The World Pub. Co.,

Turner, Matthew. 1993. "Ersatz Design - Interactions between Chinese and Western Design in Hong Kong" 19502 - 1960s."Royal College of Art.

Vanhoozer, Kevin J. 1998. *Is there a Meaning in this Text?: The Bible, the Reader, and the Morality of Literary Knowledge*. Nottingham: Apollos.

Wang, Jinguang and Wen, Renjun. 1985. "Scientific Achievements and Contributions of Shen Kuo." In *Research of Shen Kuo*, edited by Hangzhou, Song history research room of university of. Hangzhou: Zhejiang renmin chubanshe.

Wang, Ban. 2004. *History and Memory: In the Shadows of Globalization*. Hong Kong: University of Oxford press.

Wang, Hu, ed. 2004. *Zhongguo Chuantong Qiju Yanjiu (Research on Design of Traditional Tools in China)*. Nanjing: Jiangsu meishu chubanshe.

Wang, Jiashu. 1994. *Zhongguo Gongyi Meishu Shi* [The History of Chinese Arts and Crafts]. Beijing: Culture and Art Publishing House.

Wang, Kaifu. 1993. *The Introduction of Chinese Philosophy*. Guo Xue Dao Du (the Guidance of Chinese Study)., edited by Xianyou Qiu, Zhou, Tia He and Boyuan. Taibei: Sanmin chubanshe.

Wang, Qian. 2009. *Dao Ji Zhijian: Zhongguo Wenhua Beijing De Jishu Zhexue* [Between Tao and Ji: the technique philosophy under Chinese culture]. Beijing: Renmin chubanshe.

———. 2001. "Lun "Xiang Si Wei" (the Discussion of the Thinking of "Xiang")." *Graduate School of Chinese Academy of Social Science Journal* (2).

Wei, Zhengtong. 1990. *Zhongguo Sixiang Chuantong De Xiandai Fansi* [The modern reflection of Chinese traditional thinking]. Taibei: Guiguan.

Wen, Renjun. 2012. *Annotation to Kao Gong Ji*. Shanghai: Shanghai ancient books publishing house.

Wen, Zhenheng.2008. *Tu Ban Chang Wu Zhi*.Translated by wang youyuan and hu tianshou. Chongqing: Chongqing University Press.

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Wen, zhenheng.1984. *Chang Wu Zhi Jiao Zhu*.Translated by Zhi Chen. Nanjing: Jiangsu kexue jishu chubanshe.

Wen, Zhenheng, ed. 1936.*Chang Wu Zhi (Treatise on Superfluous Things)*. Shanghai: Shangwu yinshuguan.

Williams, Raymond. 2005. *Keywords: A Vocabulary of Culture and Society*. Translated by Liu Jianji. Beijing: Sanlian Publishing Company.

———. 1988. *Keywords: A Vocabulary of Culture and Society*. Translated by Liu Jianji. London: Fontana; New York: Oxford Univeristy Press.

Wing-tsit, Chan, ed. 1963.*A Source Book in Chinese Philosophy*.Translated by Wing-tsit Chan. Princeton, N.J.: Princeton University Press.

Wong, W. S. 2006. "Contemporary Design in China: The Road to Modernity and Commercialization." Lisbon, Design Research Society.

Woodham, Jonathan M. 2004.*A Dictionary of Modern Design*. Oxford: Oxford University Press.

Wu, Haokun and Pan, You. 1985. *The History of Chinese Studies on the Oracle Bone Inscriptions*. Shanghai: Shanghai people's press.

Wu, Hung. 1995.*Monumentality in Early Chinese Art and Architecture*. Stanford, Calif.: Stanford University Press.

Wu, Kang. 1972. *Zhe Xue Da Gang* [The Outline of Philosophy]. Taibei: Shang wu yin shu guan.

Wu, Renshu. 2007. *Pin Wei She Hua: Wan Ming De Xiao Fei She Hui Yu Shi Da Fu*. Taibei: Zhongyang yanjiuyuan: lianjing chuban.

Wu, Shan, ed. 1988.*Zhongguo Gongyi Meishu Da Ci Dian*.[Chinese great dictionary of craft art]. Nanjing: Jiangsu meishu chubanshe.

Xia, Nai. 2000. *Kao Gu Xue Lun Wen Ji* [Archaeology Treatise]. Shijiazhuang: Hebei jiao yu chubanshe.

Xia, Yanjing. 2011. *Chinese History of Art and Design*. Shanghai: Shanghai People's Fine Art Press.

Xie, Guian. 2003. "Xiqi Dong Chuan Yu Qian Jindai Zhongguo Shehui." *Academic Journal* 8: 81-19.

Xu, Shen. 1981. *Suowen Jiezi (Describing the Pictograms and Explaining the Compound Characters)*. Beijing: Zhonghua shuju.

Xu, Biao. 2007. *Liang Song Wu Zhi Wen Hua Yin Lun*. Nanjing: Nanjing : Jiangsu mei hu chubanshe.

———. 1999. *Cheng Qi Zhi Dao: Xian Qin Gong Yi Zao Wu Si Xiang Yan Jiu*. Nanjing: Nanjing shifan daxue chubanshe.

Xu, Ping. 1998. *Zao Wu Zhi Men* [Gate of Creation of Objects: Collection of Papers on Art Design and Cultural Studies]. Xian: Shanxi renmin yishu chubanshe.

Xu, Shen, ed. 1966. *Postface of the Shuo-Wen Chieh-Tzu: The First Comprehensive Chinese Dictionary*. Wisconsin China Series.Translated by K. L. Thern.Vol. 1. Madison: University of Wisconsin.

———. 1963. *Shuo Wen Jie Zi*. Beijing: Zhonghua Shu Ju [Book photocopying].

Xuan, Qian. 2001. *The Application of Rites*. Qian Xuan- the Book of Rites. Changsha: Yuelu chubanshe.

Yang, Zhishui. 2010. *Color of Luxury--Research on Gold and Silver Ware in the Song, Yuan and Ming Dynasties*. Vol.1. Beijing: Zhonghua Book Company.

———. 2004. *A New Research of Tools in Ancient Poetry and Essays*. Beijing: Forbidden City Press.

———. 2004. *Gu Shiwen Mingwu Xin Zheng*. Beijing: Zi jin cheng chu ban she.

Yuan, Daoxun 1989. 1989. *Interpretation of Huai Nan Hong Lie*. Vol. 1. Shanghai: Shanghai Ancient Books Publishing House.

Yuan, Xiyang. 2003. *Zhongguo Sheji Jiaoyu Licheng (A Study on Chinese Art Design Education Progress)*. Beijing: Beijing Institute of Technology press.

———. 2000. *Research on the Developmental Course of Art and Design Education in China*. Nanjing: Nanjing Academy of Art Press.

Yuan, Yunkai. 1996. "The Achievements of Natural Science and Scientific Thoughts of Shen Kuo." *Magazine Nature*: 43.

Zhang, Baichuan. 2001. "An Inquiry into the History of the Chinese Terms Jiqi (Machine) and Jixie (Machinery)." In *New Terms for New Ideas: Western Knowledge and Lexical Change in Late Imperial China*, edited by Michael Lackner and Iwo and Kurtz Amelung Joachim, 177-195. Leiden: Brill.

Zhang, Dai. 2001. *West Lake Dream -Memory in Tao Cottage*. Shanghai: Shanghai Classics Publishing House.

Zhang, Dainian. 2002. *Key Concpets in Chinese Philosophy* [Zhongguo gu dian zhe xue gai nian fan chou yao lun]. Translated by Edmund Ryden, edited by Edmund Ryden. New Haven, Conn.: Yale University Press, Foreign Languages Press.

———. 1982. *Zhongguo Zhe Xue Da Gang: Zhongguo Zhe Xue Wen Ti Shi*. Beijing: Zhonghua shuju.

Zhang, Daoyi. 2007. "Don't Maltreat Tu-an." In *Sheji Zhi Mou (Design is Scheming)*. Chongqing: Chongqing University Press.

———. 2007. "The Science and the Humanities Spirit of Kao Gong Ji." In *She Ji Zai Mou (Design is Scheming)*. Chongqing: Chongqing University Press.

———. 1999. "Zao Wu Art Theory." In *Collection of Zhang Daoyi's Essays*. Hefei: Anhui Education Press.

———. 1994. *Pandect of Industrial Design*. Nanjing: Jiangsu Technology Press.

Zhang, Dingguo. 1997. "Hermeneutics, Hermeneutics Theory, Philosophy of Hermeneutics." *NCCU Philosophical Journal* 4: 115-141.

Zhang, Jingeng, ed. 1988. *Gong Yi Mei Shu Shou Ce*. [The handbook of craft art]. Jinan: Shandong kexue jishu chubanshe.

Zhang, Mengchang. 2002. *Tools as Vehicles of Tao--Study of the History of Chinese Craft Art in Different Periods*. Beijing: China Photography Press.

Zheng, Xuan, ed. 2002. *Zhou Li Zhu Shu*.Translated by Jia gongyan. Hong Kong: Di zhi wenhua chuban youxian gongsi.

Zhongguo gongyi meishu xue yuan, ed. 1988.*Gong Yi Mei Shu Ci Dian*. [The dictionary of craft art]. Heilongjiang: Heilongjiang renmin chubanshe.

Zhu, Chun and Shao,Qi. 2009. *Zhongguo Gudai Sheji Sixiang Shi Lue* [The general history of Chinese ancient design thoughts]. Shanghai: Shanghai shudian chubanshe.

Zhu, Cishou. 1989. *Zhongguo Jindai Gongye Shi* [China's Modern Industrial History]. Chongqing: Chongqing University Press.

Zhu, Heping. 2003. *Outline of Chinese History of Design and Art*. Changsha: Hunan Fine Art Press.

Zhu, Shuai. 2008. *Zhongguo Wenhua He Sheji shiJiang* [Ten Lectures on Chinese Culture and Chinese Design]. Beijing: Zhongguo dianli chubanshe.

Zhu, Yan. 1993. *Tao Shuo*. Shanghai: Shanghai keji jiaoyu chubanshe.

Zhuge, kai. 2007. "The Change of China Design Concept and its Theoretical Value." In *Lie Bian Zhong De Chuan Cheng (the Inheritance of "Fission")*, edited by Gekai Zhu. Chongqing: Chongqing University press.

———. 2007. "Han Yi Chu Yi (on Chinese Translation of Design)." In *Lie Bian Zhong De Chuan Cheng (the Inheritance of "Fission")*. Chongqing: Chongqing University Press.

———. 2007. "Academic Value of Zaowu Art Theory." In *Liebian Zhong De Chuancheng (Inheritance Amids Fission*. Chongqing: Chongqing University Press.

Zou, Zhenhuan. 2011. *Wan Ming Hanwen Xixue Jingdian: Bianyi, Quanshi, Liuchuan He Yingxiang* [The late Ming Chinese Western classic: compilation, interpretations, spreading and influence]. Shanghai: Fudan University Press.

Zuo, Qiuming. 1997. *Zuo Zhuan -the Third Year of Emperor Cheng*. Shanghai: Shanghai Ancient Books Publishing House.

Appendix A: Chinese Dynasties and Historical Periods

Xia			
Shang		1600-1050BC	
Zhou Dynasty: 1050-221BC	Western Zhou		1050-771BC
	Eastern Zhou	Spring and Autumn Period	770-480BC
		Warring States Period	480-221BC
Qin Dynasty		221AD-207BC	
Han Dynasty: 206 AD-220BC	Western Han	206AD-8BC	
	Xin(Wang Mang)	9-23 BC	
	Eastern Han	25-220BC	
Three Kingdoms	Wei	220-265 BC	
	Shu	221-263 BC	
	Wu	222-280 BC	
Jin Dynasty:265-420	Western Jin	265-316 BC	
	Eastern Jin	317-420BC	
Northern and Southern Dynasties: 386-589	Northern Dynasties: 386-581	Northern Wei	386-534 BC
		Eastern Wei	534-550 BC
		Western Wei	535-557 BC
		Northern Qi	550-577 BC
		Northern Zhou	557-581 BC
	Six Dynasties (Southern Dynasties): 420-589	Liu-Song	420-479BC
		Southern Qi	479-502 BC
		Liang	502-557 BC
		Chen	557-589 BC
Sui		581-618 BC	
Tang		618-907 BC	

Five Dynasties and Ten Kingdoms: 907-960		907-960 BC
Liao (Khitan) Dynasty		916-1125 BC
Song Dynasty: 960-1279	Northern Song	960-1126 BC
	Southern Song	1127-1279 BC
Xixia (Tangut)		990-1217BC
Jin (Jurchen) Dynasty:		1115-1234 BC
Yuan (Mongol) Dynasty		1279-1368 BC
Ming Dynasty		1368-1644 BC
Qing (Manchu) Dynasty		1644-1911 BC
Republic of China		1912-1949
People's Republic of China		1949- …

The Chinese Dynasties and Historical Periods is referenced the information of Louis Komjathy/Kang Siqi 康思奇, Ph.D.Center for Daoist Studies.

Appendix B: The framework of Chinese philosophy

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1. The issue of universe –cosmology and ontology

  1.1   Cosmology – the issue of the origin of universe

   a.   universe, space, time, material – philosophy of Nature

   b.   the origin and the nature of life – Philosophy of Evolution

  1.2   Ontology – the construction of universe, the issue of reality and being

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2. The issue of Life - Philosophy of Human Life

  2.1   Philosophy of Mind

   a.   Soul

   b.   Spirit and body

   c.   Will

  2.2   Axiology or Philosophy of Value – the behavior of Human being and the value

   a.   Theory of Value of Knowledge

   b.   Moral Philosophy

   c.   Esthetics or Philosophy of the Beautiful

   d.   Philosophy of Religion

  2.3   Philosophy of Society or social Philosophy

   a.   Sociology

   b.   Political Philosophy

   c.   Philosophy of Economics

   d.   Philosophy of Hisotry

   e.   Philosophy of Law

   a.   d. Philosophy of Cultur

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3. The issue of Knowledge - Epistemology or Methodology

  3.1   Logic – the method of knowing knowledge

  3.2   Epistemology- the content of knowledge

Note: The source is cited from Qiu Xianyou, Zhou he, Tian Boyuan (Eds). *Guo Xue Dao Du* (*The Guidance of Chinese study*). Taibei: Sanmin Shuju, 1993. pp. 6-7.

Chinese scholars arranged various frames of Chinese philosophy according their understanding. The pioneer scholars include Wu Kang, Tang Junyi, Zhang Dainian, Zhang Liwen etc. Referring to the method of classification of Western philosophy, Chinese scholar Wu Kang sorts out a classification in his book *The Outline of*

Philosophy (*1972*). [429] In this classification, Wu Kang also took metaphysics and epistemology as "theoretical philosophy", philosophy of human life as "practical philosophy".

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[429] Wu Kang (1895-1976). (1972). *Zhe Xue Da Gang* (*The Outline of Philosophy*).Taibei: Shangwu yinshuguan.

Appendix C: Methodological Consideration: Basic Theory and Application

The key concepts used in this thesis have been debated by social scientists who hold various theories and perspectives. It is therefore necessary to clarify the concepts and theories preferred for the research in this section. The key concepts and theories concerned include those of qualitative research, paradigms, Guba and Lincoln's Four Research Paradigms (1994), etc. This section clarifies the use of these concepts, while also explaining applications of the constructivist paradigm, the hermeneutic approach and interpretative text analysis.

This thesis adopts the qualitative research method. Basically, the qualitative researcher must understand that qualitative research work is a continuous process, involving epistemology, methodology, and other research considerations. These factors must be considered as closely related in the research framework, and not independent or irrelevant to it. It should be noted that only when researchers have a basic understanding of qualitative research, and enter into the stage of research design, can they truly grasp the spirit of qualitative research.[430] Therefore, to provide an overview of the qualitative research method employed, this chapter is divided into three parts, covering the epistemology, methodology, and research methods involved in qualitative research.

1. Qualitative Research and Quantitative Research

Quantitative research and qualitative research are two distinct logical thinking

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[430] Pan Shuman, *ZhixingYanjiu: LilunyuYingyong* (Qualitative research: theory and practice) (Taibei: Xinli chubanshe, 2003), 106.

patterns, and these two research approaches have their own approaches to theoretical thinking, terminology, data collection methods, and other techniques. Quantitative research mainly utilizes standardized measurement tools to analyze data collected by the researcher, and then applies statistical analysis methods to reduce the studied phenomenon to correlations between numbers. In contrast, qualitative research attaches more importance to the interactive relationship between researchers and research objects in natural situations. Qualitative researchers understand their life experiences and their inner worlds in daily life through taking the point of view of the research objects themselves.[431]

The quantitative research approach involves the belief that the operation of human society and of the world is mainly influenced by general rules, so that researchers can predict human behavior through the exploration of these rules. In other words, the advocate of quantitative research believes that general principles can be developed from the data collected by researchers through scientific, objective, neutral data collection processes; and that the rules they derive from this process can apply to other objects with similar characteristics. The qualitative research approach mainly comes from the tradition of phenomenology, which advocates that each individual object has its own uniqueness, and the researcher can understand the significance of life experiences involving the research object only through taking the research subject's standpoint.[432]

Although, we are used to dividing social science research into two distinct camps of quantitative and qualitative research, studies of social phenomena and human

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[431] Pan Shuman, 2003, 4.

[432] Ibid.

problems often produce very different results, because of the different positions and attitudes of the researchers. Therefore, the concept of a "paradigm shift"[433] is put forward in the field of social science. Uses of the term "paradigm" is meant to suggest that the researchers in the course of the study have a complete set of values and beliefs, and certain basic assumptions about social reality. Therefore the researchers will also develop their analysis of issues, their choice of questions, and their research techniques according to these assumptions about social facts. Each research approach is a scientific research "paradigm", leading the researcher to look at the nature of social reality, and to choose what kind of attitude or position to take in the course of the study, to enable interaction with the subjects concerned.[434]

2. Research Paradigm

In social science, the concept of "paradigm" derives from the work of T. S. Kuhn (1962), and his notion of socially constructed worldviews. In *The Structure of Scientific Revolutions*,[435] Kuhn describes paradigms as worldviews through which all knowledge is filtered, He used this concept to describe how scientists work within accepted (usually unquestioned) ways of defining, assigning categories, theorizing and forming procedures, both within disciplines and during particular historical periods. Different eras of science are characterized by particular worldviews (or paradigms) that are taken as objective knowledge, and are used as accepted standards

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[433] Paradigm shifts occur when the dominant paradigm is successfully challenged by another paradigm, which is able to incorporate the existing paradigm and also offer a wider explanation.

[434] Pan Shuman, *ZhixingYanjiu*, 5-6.

[435] T. S. Kuhn, *The Structure of Scientific Revolutions* (Chicago: University of Chicago Press, 1970), 175.

in forming solutions to problems, explaining events, and undertaking research.[436] Kuhn describes a paradigm as a distinctive way of orienting to the world. A research paradigm is a concept about how people find out the truth. This is a concept of what you believe about truth, which directly influences the way you collect your data. However, most people are unable to offer a clear explanation or definition of the term *paradigm.* This ambiguity of the concept, according to Guba (1990) leaves "the term in such a problematic limbo because it is then possible to reshape it as our understanding of its many implications improves."[437]

Guba and Lincoln (1998) assert that paradigms supersede methods in distinguishing qualitative inquiry from quantitative approaches, because the paradigm from which research flows impacts selection of theory and method. A paradigm might therefore determine whether a project will be qualitative by design.[438] These authors' full definition of paradigms is as follows:

> A paradigm may be viewed as a set of basic beliefs (or metaphysics) that deals with ultimate or first principles. It represents a worldview that defines, for its holder, the nature of the 'world,' the individual's place in it, and the range of possible relationships to the world and its parts, as for example, cosmologies and theologies do. … Inquiry paradigms define for inquirers what it is they are about, and what falls within and outside the limits of legitimate inquiry.[439]

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[436] See Chris Hart, *Doing Literature Review* (London, Thousand Oaks, New Delhi: SagePublications, 1998), 126.

[437] Guba, 1990.

[438] Guba and Lincoln, 1998, 6.

[439] Guba and Lincoln, 1998, 200.

According to Kuhn, a paradigm is the basic point of view of the philosophy of science, and also the conceptual pattern used by researchers for seeking significance. But science itself is a continuous process of development and improvement, and a paradigm will also make appropriate adjustments along with external changes. When the existing paradigm is unable to answer questions, researchers begin to have doubts about the existing paradigm, resulting in changes to the science paradigm. However, changing the process in the philosophy of science often drives the transformation of human perspectives and ways of interpreting the social world. There can be a gradual transition from a single or a specific perspective to a multi-paradigm perspective.[440]

For instance, the worldview described by the word "positivism," as put forward by French sociologist Auguste Comte (1798-1857), became a scientific research paradigm that grew foundational to the modern philosophy of science. Until the early 20th century, the Chicago School of sociology applied qualitative research methods to the study of living conditions for urban residents. As a result, the quantitative research paradigm dominated by positivism was greatly challenged. At the same time, The Chicago School approach is no longer the only research paradigm in the field of social science. In the past seventy or eighty years of development process, the qualitative research paradigm has evolved in a dialectical process of constant use and correction, which has led to a multi-paradigm situation.[441]

3. Epistemological and Ontological Perspectives

Kuhn (1962) describes paradigms as distinctive ways of orienting to the world. A

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[440] Huang Guangguo, "Multi-paradigm Research Approach: On the Localization of Social Psychology", *Journal of Social Theory*, 2, 1999, 1-51.

[441] Pan Shuman, *Zhixing Yanjiu*, 35.

research paradigm is a concept about how people find out the truth (Guba, 1990). This is a concept of what you believe about truth, and this belief directly influences the way you collect your data. As for the contents of paradigms, Guba and Lincoln (1994) maintain that inquiry paradigms can be viewed as basic sets of beliefs about the nature of the reality and how to gain understanding of that the reality. Such paradigms suggest answers to three basic questions. The first is the ontological question of "What is the form and the nature of reality?" The second is the epistemological question of "What can be learned?" "What is the relationship between the learner and the learned?" The third is the methodological question of "how to learn the reality"or"how the researcher finds the reality that he believes is acquirable?"[442]

Traditionally, the humanities have taken on a special role in the development of the methodology and theory of design. These disciplines have faced a constant crisis of meaning, which has led social scientists to critically examine their epistemological perception. The researchers' epistemological stance inevitably will influence their theoretical perspectives and their choices of methodology in conducting research. Ontology is the study of being, that is, the nature of existence. While ontology embodies understanding of what is, epistemology tries to understand what it means to know. Epistemology provides a philosophical background for deciding what kinds of knowledge are legitimate and adequate. Therefore, epistemology is a theory of knowledge. Epistemologies ask questions about knowledge itself, such as the following: How can we know what we know? What things can be known? The researcher's epistemological stance impacts every phase of the research process, including all

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[442] Egon G.Guba and Yvonna S. Lincoln, "Competing Paradigms in Qualitative Research." In *Handbook of Qualitative Research*, edited by N. K. Denzin and Y. S. Lincoln (London: Sage, 1994), 105-117.

theoretical and methodological decisions. Epistemology influences the choice of a research subject, the goals of the research (what we are trying to explain), and consequently what and how we frame questions related to real-life experience of issues such as the wage gap.[443]

Multiple epistemological positions, theoretical frameworks, and research methods are included in qualitative research. The interdisciplinary landscape of qualitative research is rich because it does not privilege one philosophical grounding or methodological approach to the research process. It is the array of epistemological, theoretical, and methodological choices made by qualitative researchers that sets qualitative research apart as a particular and fruitful way of understanding social phenomena.

4. Guba and Lincoln's Four Research Paradigms

Guba and Lincoln (1994) suggested four underlying "paradigms" for qualitative research: positivism, post-positivism, critical theory, and constructivism[444]. A paradigm is a basic belief system or a worldview that guides the researcher. The emphasis of this chapter is on these four paradigms, their assumptions, and the implications of those assumptions for research.The four paradigms are then examined with regard to ontology (what is the form and nature of reality?), epistemology (what is the nature of the relationship between the knower and what can be known?), and methodology (how can the inquirer go about finding out whatever he or she believes

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[443] Sharlene Nagy Hesse-Biber and Patricia Leavy, ed**s.**, *Approaches to Qualitative Research: A Reader on Theory and Practice* (New York: Oxford University Press, 2004), 2.

[444] EgonG.Guba and Yvonna S. Lincoln, "Competing Paradigms in Qualitative Research" in *Handbook of Qualitative Research*, edited by N. K. Denzin and Y. S. Lincoln (London: Sage, 1994), 105-117.

can be known?). Comparison charts will help to show the differences between these paradigms (see below Table 3.1).

Orlikowskiand Baroudi (1991), following Chua (1986), suggests three categories of paradigms: positivist, interpretive and critical, based on their underlying research epistemology. This three-fold classification is the one adopted here. However it needs to be said that while these three research epistemologies are philosophically distinct (as ideal types), in the practice of social research these distinctions are not always so clear cut. There is considerable disagreement as to whether these research "paradigms" or underlying epistemologies are necessarily opposed, and whether more than one paradigm can be accommodated within one study.[445]

It should be clear from the above that the word "qualitative" is not a synonym for 'interpretive'. Qualitative research may or may not be interpretive, depending upon the underlying philosophical assumptions of the researcher. Qualitative research can be positivist, interpretive, or critical (see Figure 1). It follows from this that the choice of a specific qualitative research method (such as the case study method) is independent of the underlying philosophical position adopted. For example, case study research can be positivist, interpretive, or critical, just as action research can be positivist, interpretive, or critical.

This thesis uses the paradigm classifications of Guba and Lincoln (2004) and Shuman (2003). Based on its differencein standpoints and theoretical perspectives,social science research is divided into positivism, post-positivism, interpretive social science, critical social science, and four other kinds of research approaches[446].

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[445] Michael D. Myers, *Qualitative Research in Information Systems* (MISQ Discovery, 1997).

[446] Egon G. Guba and Yvonna S. Lincoln, "Competing Paradigms in Qualitative Research:

Items	Positivism	Post-positivism	Constructivism	Critical Theory
Ontology	Naïve realism–"real" reality, but apprehensible	Critical realism–"real" reality, but only imperfectly and probabilistically apprehensible	Relativism–local and specific constructed realities	Historical realism–virtual reality shaped by social, political, cultural, economic, ethnic, and gender values; crystallized over time
Epistemology	Dualism/ objectivism; findings true	Modified dualism/objectivism; critical tradition/ community; findings probably true	Transactional/ subjectivist; created findings	Transactional/ subjectivist; value mediated findings
Methodology	Experimental/ manipulative; verification of hypotheses; chiefly quantitative methods	Modified experimental/ manipulative; critical multiplicity; falsification of hypotheses; may include qualitative methods	Hermeneutical/ dialectical: emphasizing the objective experience and reduction of the meaning of phenomenon	Dialogic/dialectical: emphasis on the process of dialogue to critique and reconstruct the unfair society

Theories and Issues." In *Approaches to Qualitative Research: A Reader on Theory and Practice*, edited by Sharlene Nagy Hesse-Biber and Patricia Leavy (New York: Oxford University Press, 2004), 24. Table 1.1, Basic Beliefs (Metaphysics) of Alternative Inquiry Paradigms; Pan Shuman, *Qualitative Research: Theory and Application* (Taipei: Psychology Press, 2003). The chart provided by Pan Shuman is added with the column of research methods.

Research Method	Experimental method	Experimental method; Social investigation method	Deep interview; field observation; text analysis	Action research; content analysis

Table C-1. Basic Beliefs of Alternative Inquiry Paradigms

5.   The Application of Constructivism Paradigm in This Research

This section explains the adoption of constructivism as the theoretical basis for this research. According to this paradigm, the design of research efforts and the organization of knowledge is a personal and interpretative construction.

Basic Theory of Constructivism

In recent years, qualitative research has attracted growing attention and produced great changes in the humanities and social science fields. As advocated in "The Fifth Moment of Qualitative Research" by GubaandLincoln (1994), the constructivist paradigm has gained far-reaching influence, and has largely replaced the earlier-advocated naturalistic inquiry approach.[447] In Guba and Lincoln's earlier discussion of qualitative research methodology (1985), constructivism, or the constructivist paradigm, was described as naturalistic inquiry. Then in 1989, these writers began to replace this term word with constructivism. Constructivism as advocated by Guba and Lincoln does not involve a specific philosophical theory, but a theory that integrates several theories of nature, interpretation, and hermeneutics. In other words, the constructivist paradigm does not hold any kind of knowledge as an eternal truth. Knowledge is meant to be questioned and refuted. Discovered truths are

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[447]   GubaandLincoln, 1985.

limited to specific objects, or are meaningful in specific cultural contexts.[448]

This thesis, then, adopts an approach based on the constructivist paradigm. Qualitative methods are usually linked to a constructivist theory of knowledge, because qualitative methods tend to focus on understanding experiences from the point of view of those who live them. Thus, the reason for this thesis adopting constructivism, and the relationship between constructivism and this thesis, is mainly based on the following three characteristics of constructivism.

First, in this paradigm, knowledge is not "found" or "discovered", but constructed. The term *constructivism* is a name for the epistemology associated with the view that what people may consider objective knowledge and truth are a result of perspective. For the constructivist, knowledge is not based on "discoveries" of pre-existing facts, but is constructed as the invention of an active, engaging mind.[449]

Second, constructivist theory views the phenomenon of daily human life as a construction of personal subjective ideas, by which experience is built into meaning. Guba and Lincoln (1985, 1989) put forward an argument that the constructivist paradigm needs to replace the traditional empirical research paradigm, which lay emphasis on the objectivity of rationalism and empiricism. Constructivist theory argues that the meaning we give to experience entirely depends entirely on subjective perception of the situation. Therefore, the nature of social phenomena is not a direct "representation" of the real world, as is argued in positivism. Instead, knowledge is a

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[448] Lincoln, 1990.

[449] Kjell Erik Rudestam and Rae R. Newton, *Surviving Your Dissertation: AComprehensive Guide to Content and Process*, 3th ed. (Sage Publications, 2007), 35.

process of meaning building, which implies multiple possible construction results of knowledge construction. This viewpoint is called "relative realism". [450]

Third, constructivist theory explains and interprets how the daily life experience and action of mankind are constructed. In the constructivist paradigm, the researcher's main purpose is not to find the true nature of all phenomena or actions in daily life, but to explain and interpret how these experiences and actions are constructed. The process of constructing meaning is based on the relationship between the subject and the researcher. This process is completed through continuous dialogue and dialectic interchange. From the perspective of constructivism, "each person's understanding of the world and understanding of himself/herself is carried out in the notation and interpretation". [451] In the constructivist paradigm, the researcher carries out interpretation through symbolic presentation, or by a thick description of phenomenon, to outline the image of human daily life in the world, and interpret daily actions in ways that readers can understand.

Fourth, constructivism, as a research paradigm, involves an understanding that both people and the reality to which humans are exposed in the surrounding environment are experienced through a process of scanning and interpreting in the brain, and this process involves human intuition.The production of interpretation or judgment is therefore highly specific to the viewer. Therefore, "facts" perceived by humans cannot be separated from their personal interpretations of the context background, which are formed by using their existing cognitive schemata. In other words, any "facts" are

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[450] Guba, 1998; Schwandt, 1998; Zhu Rouruo, 2000; Pan Shuman, 2003, 48.

[451] Zhang Dingguo. "Hermeneutics, Hermeneutics Theory, Philosophy of Hermeneutics," *NCCU Philosophical Journal* (1997):119 (115-141); Abel, 1995, 381.

likely to be products of a "personal construct" based on individual cognitive schemata, or a "social construct"based on social and cultural interaction.

Fifth, in terms of how we understand and reconstruct knowledge, humans resort to unique concepts or constructs which they set up in special physical, psychological, social, and cultural contexts. These constructs are the result of people taking initiative to activelyunderstand the context they have experienced. However, in such a meaning-making process, humans rely on endlessly emerging experience to continue expanding, refining and modifying their constructs. Therefore, proactive construction of understanding does not confine its builder in a mental prison, but views understanding as a "dynamic frame", [452] which can be revised, expanded, or abandoned according to individual needs, in order to establish a newer and better frame. This is exactly what Kelly (1995) describes as 'constructive alternativism', in which"all the facts can be availableforconstructive alternativism … as long as we have enough creativity, even the most obvious details in daily life will have different changes because of different waysby which we will construct". [453] Obviously, we really "cannot directly contact the reality without interpretation". [454] If researchers attempt to understand personal or human behaviors; they must understand how they construct their unique contexts. They must investigate both their construct system and their construction process.

Finally, based on above world outlook, this thesis incorporates a view expressed by with GubaandLincoln (1994), that the main aim of the constructive research method is

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[452] Pope, 1995.

[453] Kelly, 1995; Kelly, 1977.

[454] Bannister andFransella, 1986.

to gain "understanding and reconstruct the construct system initially held by people to understand its connotation and the new interpretation when experience has increased breadth and complexity". The focus of the constructivist researcher is, on the one hand, to understand the research participant's inner psychological construction, which will enable understanding of their experience, i.e., personal theories, philosophy or beliefs. On the other hand, the constructivist researcher aims for commitment to building or rebuilding a new understanding and interpretation of the phenomenon experience, together with research participants in the research course.

Another explanation of constructivist research was put forward by Schwandt (1998), who described the "construct" personality as having the following characteristics:

1. "Construct" is the effort to explain or understand life experience.

2. The nature of the "construct" depends on the information obtained by the constructor himself/herself.

3. The "construct" is a widely shared experience reaching toward consensus.

4. The "construct" must have its meaning, but the meaning is always known to be limited and incomplete.

5. The appropriateness of the "construct" connotation is only meaningful for this particular paradigm, and cannot be measured by other paradigms.

6. The "construct" often faces challenges and correction, but when constructorsare aware of obvious conflict between new information and old construction, the constructor will modify the original construction architecture[455].

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[455] T.A. Schwandt, "Constructivist, Interpretivist Approaches to Human Inquiry". In N.K. Denzinand and Y. S. Lincoln, editors, *The Landscape of Qualitative Research: Theories and Issues* (London: Sage Publications, 1998), 243-244.

The Application of Constructivism: How the Design Knowledge of Chinese Qi-ju is constructed in this Research

This section presents the researcher's efforts to relate constructivist inquiry to the modes of understanding and learning developed in the traditional design knowledge of Chinese *Qi-ju*. Seeking, through examining the texts, history and culture involved, we can construct the understanding, meaning, and the knowledge system of early "Chinese traditional daily utensils". The "original design knowledge system" set forth in this thesis is a hypothesis and also a reconstructed tradition. The proposed original independent design knowledge system is a relative concept, because all "facts" of the history concerned are also constructions, made for the builders own reasons.

Therefore, there is neither a so-called original design knowledge system, nor a relatively independent design knowledge system. The "original" and "independent" systems mentioned here have "relative" characteristics. On the one hand, Chinese culture is not a completely independent and closed system, but has been formed in continuous integration with different cultures over the course of history. But on the other hand, Chinese culture has its unique characteristics, and its independent properties in world culture, with striking distinctions from other cultures in the world.

Tradition, in this thesis, is also a constructed reality. In early Chinese history, Chinese utensil design, technology, thought, and practice may have been formed by simple, natural creativity. But when the texts discussing Chinese utensils become sources for researchers who sought to restructure and synthesize the thoughts, ideas, and practices presented in different texts, then the tradition presented in this thesis becamea constructed tradition. Researchers could not definitely consider their interpretations of

this tradition as historical objectivity, but only as hypotheses and a re-creations put forward by the researchers, according to the evidence of texts and histories.

Therefore, the Chinese original design knowledge system concerning *Qi-ju*(utensils) as presented in this thesis is a constructed tradition, or a presentation of a knowledge system with a personal interpretation. The researchers hope that the reconstructed form of this tradition can be closer to the content and ideas presented in the text at that era. Reconstruction of the tradition is a hypothesis, and also an exploration of meaning. This is also a characteristic of qualitative research, as it includes an open, exploratory perspective. Therefore, the interpretation involves attention to the meaning of design knowledge presented in the texts. It does not just concern what the text illustrates, what the design is, or how to design, but we expect to show the meaning and value of the design knowledge. This meaning also provides possibilities for the future of design.

1.6 The Application of Hermeneutics in this Thesis

As can be seen in Table 3.1, the methodology of the constructivist paradigm mainly includes phenomenology and hermeneutics. Research methods of the constructivist paradigm mainly include in-depth interviews, field observations, and textual analysis. The hermeneutic theoretical basis of constructivism indicates that this thesis adopt interpretative text analysis as the primary research method.In this thesis, the researcher mainly uses the hermeneutical approach and text analysis method. This section presents why the researcher adopts a hermeneutical approach, introduces the definitions involved, and reviews key concepts of hermeneutics from the work of other theorists' work, such as *explanation*, *understanding*, *meaning, interpretation*,

context, *the meaning of the text,* etc. This section will also explain the specific method of hermeneutics concerned, which is *interpretative analysis of text*.

Why does this research adopt the hermeneutical approach? As Thiselton indicated, "hermeneutics explores how we read, understand and handle texts, especially those written in another time or in a context of life different from our own."[456]This is one of the tasks of this research project—to seek understanding on how to read the ancient literatures of design, and to interpret the meaning of design knowledge. Furthermore, hermeneutics ask critically what exactly we are doing when we read, understand, or apply texts. Hermeneutics explores and conditions and criteria that operate as we try to ensure responsible valid, fruitful, or appropriate interpretation.[457]

Therefore, the theory of hermeneutics guides this effort to read and interpret Chinese ancient texts. Hermeneutics as a methodological tool helps the researcher to approach Chinese historical texts about design, and try to listen to what texts say, to understand the meanings, and interpret design-related knowledge with the attitude of openness, while connecting that knowledgewith today's design context. As Lindsay Jones writes,

> Hermeneutics reflection is crisis driven. It arises from the encounter with otherness or strangeness. Hermeneutics is the disciplined exercise of the imagination. By the grace of hermeneutics, distant meanings are brought close, the seemingly absurd begins to 'make sense,' the strange becomes familiar, and bridges arise between the once and the now. When the sense of a text, artwork,

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[456] Anthony C. Thiselton, *Hermeneutics: An Introduction* (Grand Rapids, Michigan/Cambridge, U.K.: William B. Eerdmans Publishing Company, 2009), 1.

[457] Thiselton, 2009, 4.

action, or institution is immediately self-evident, understanding proceeds unimpeded; interpretation is noncontroversial and no hermeneutical reflection is required.[458]

Definition of Hermeneutics

What is hermeneutics? The roots for the word hermeneutics lie in the Greek verb *hērmeneuein*, generally translated as the verb "to interpret," and the noun *hermeneia*, or "interpretation". Interestingly, scholars define this term from Greek myth and. As Bernard provides in the textbook of anthropology:

> The ancient Greek god, Hermes (known as Mercury in the Roman pantheon—he of the winged hat), had the job of delivering and interpreting for humans the messages of the other gods. From this came the Greek word *hermeneus*, or interpreter, and from that come our word *hermeneutics*, the continual interpretation and reinterpretation of texts.[459]

Webster's Third New International Dictionary defines *hermeneutics* as "the study of the methodological principles of interpretation and explanation; specify: the study of the general principles of biblical interpretation." As H. Russell Bernard (2011) explains this tradition in relation to biblical studies,

> Modern hermeneutics in social science is an outgrowth of the Western tradition of biblical exegesis. In that tradition, the Old and New Testaments are assumed

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[458] Lindsay Jones, *The Hermeneutics of Sacred Architecture: Experience, Interpretation, Comparison*, "Volume One: Monumental Occasions, Reflections on the Eventfulness of Religious Architectures". (Cambridge, MA: Distributed by Harvard University Press forthe Harvard University Center for the Study of World Religions, 2000), 4.

[459] H. Russell Bernard, *Research Methods in Anthropology: Qualitative and Quantitative Approaches*, 5th ed. (Lanham, MD: AltaMira, 2011), 17.

to contain eternal truths, put there by an omnipotent creator through some emissaries—prophets, writers of the gospels, and the like. The idea is to continually interpret the words of those texts to understand their original meaning and their directives for living in the present.[460]

However, hermeneutics also has a multidisciplinary nature. As Richard Palmer writes, "though this is a good introduction to 'hermeneutics' in the context of theology, the claims do not furnish an adequate foundation for comprehending the nature and significance of hermeneutics as a general, non-theological discipline."[461]

Hermeneuticsas a philosophy of interpretation can be applied in all contexts of life. Bürdek defined hermeneutics as the philosophy of interpretation and understanding in his*Design: History, Theory, and Practice of Product Design*, explainingthat

Hermeneutics in the strict sense is the art of interpreting, explaining, and translating texts. Interpretation is the key to understanding. This can be applied to nearly all contexts of life, including actions and gestures, works of science, literature and art, and historical events. As a theory, hermeneutics explains reflections on the conditions and norms of understanding and expresses them in language. In particular hermeneutics is a method for interpreting texts, but more

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[460] Ibid., 17

[461] For details see Richard E. Palmer, *Hermeneutics: Interpretation Theory in Schleiermacher, Dilthey, Heidegger, and Gadamer* (Evanston, IL: Northwestern University Press, 1969), 4. Palmer defined the field of hermeneutics in six fairly distinct ways (1), the theory of biblical exegesis; (2), as general philological methodology; (3), the science of all linguistic understanding; (4), the methodological foundation of *Geisteswissenschaften* (human science); (5), the phenomenology of existence and of existential understanding; (6), the systems of interpretation, both recollective and iconoclastic, used by man to reach the meaning behind myths and symbols.

generally the word refers to the art, skill, theory and philosophy of interpretation and understanding.[462]

Many theorists trace hermeneutics' widening application, from a modern mode of biblical exegesis to a method for all the human sciences, to Hans-Georg Gadamer's contested claim that

> A version of hermeneutical reflection is at issue in every occasion of human interpretation and understanding, whether academic or otherwise. The (re)emergence of hermeneutics as a fashionable (if variously revered and reviled) interpretive paradigm with widely cross-disciplinary applicability—a "set of assumptions that guide the interpretation of virtually anything that can be 'read' as a 'text,' from single words or phrases to whole culture.[463]

In terms of the significance of hermeneutics to design research, Bürdek states,

> Whatever the hermeneutics continually have been shifting in contemporary Western history, such as the changes of status, the philosophical turns, or its turning from a methodological or didactic aid for other disciplines to various possibilities. Until now, not only hermeneutics is about symbolic communication, its more fundamental area, that of human life and existence, hermeneutics has provided the critical horizon for many of the discussions of contemporary

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[462] Bernhard E. Bürdek, *Design: History, Theory, and Practice of Product Design*(Basel: Birkhäuser-Publishers for Architecture,2005), 244.

[463] GilesGunn, *TheCulture of Criticism and the Criticism of Culture* (New York: Oxford University Press, 1987), 131. Gunn immediately qualifies this way of characterizing hermeneutics. Also see MireyaFolch-Serra, "A Postmodern Conversation,"*Queen's Quarterly,* 95 (Autumn 1988): 620. Quoted in Lindsay Jones, *The Hermeneutics of Sacred Architecture: Experience, Interpretation, Comparison*, 5.

philosophy and indispensably influence design theory.[464]

Different Approaches to Knowledge: Understanding versus Explanation

We should note the totally different stance between"philosophical hermeneutics" and traditional philosophical thought. As Anthony Thiselton (2009) explains,

> Most writers on philosophical hermeneutics, including Gadamer and Ricoeur stand at a considerable distance from, and be almost opposite to, the rationalism of Rene Descartes (1596-1650) and empiricism of David Hume (1711-1776). It is far removed in spirit and outlook from the rationalism of the secular Enlightenment and its subsequent deification of the natural sciences as the controlling model for all human knowledge.[465]

Thiselton presents significant and distinct points of difference between hermeneutical and traditional practices of knowledge, which benefit the researcher's perceptions of the nature of hermeneutics in seeking knowledge:

> While admittedly a rational dimension remains within the process of hermeneutical inquiry, the more creative dimension of hermeneutics depends more fundamentally on the receptivity of the hearer or reader to *listen with openness*. To appreciate and to appropriate what we seek to understand with sensitivity have priority over the traditional method of scrutinizing "objects" of perception, thought, and knowledge. This "listening" dimension is often described as part of the process of "*understanding*" in contrast to the more

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[464] Bürdek, 2005, 244.

[465] Anthony C. Thiselton, *Hermeneutics: An Introduction*, 2009, 7.

rational, cognitive, or critical dimension of "*explanation*".[466]

Contemporary hermeneutics is partly derived from nineteenth-century German historians such as Dilthey, whose central concern was the distinction between natural and social phenomena, and hence the natural and social sciences, with their different modes of acquiring knowledge, i.e., *understanding* versus *explanation*.[467] Many writers on hermeneutics distinguish between the two valid dimensions of *understanding* and*explanation*. The axis of *explanation* is more akin to the traditional flow of *knowing*; *understanding* entails a more personal, intuitive, or supra-rational dimension.[468]

These two different ways of understanding and approaching knowledge lead to different attitudes toward research objects. They affect how we look at *Text*. As Thiselton explains,

> Some writers, including James Robinson, expound this principle (*listening* and understanding *texts*) as a "reversal of the traditional flow" in epistemology, or in the theory of knowledge.[469] In the rationalism of Descartes and other rationalist philosophers, the human self, as active subject, scrutinizes and reflects upon what it seeks to seek to know as a *passive object*. But in hermeneutics *the text itself* (or what a person seeks to *understand*) operates almost, in effect, as the

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[466] Thiselton, 2009, 8.

[467] Ian Hodder, *Interpreting Archaeology: Finding Meaning in the Past* (London: Routledge, 1995), 237.

[468] Anthony C. Thiselton, *Hermeneutics: An Introduction*, 2009, 9.

[469] James M.Robinson, "Hermeneutics Since Barth," In *New Frontiers in Theology*, vol. 2, *The New Hermeneutic*, editors, James M.Robinson and John B. Cobb, Jr. (New York and London: Harper and Row, 1964), 23-24.

active subject, exposing and interrogating the human inquirer as *its object* of scrutiny.

Understanding, *Meaning* and *Interpretation*

Hermeneutics carries an important set of concepts concerning "understanding" and "meaning". Tracing the origin of hermeneutic philosophy, German sociologist Max Webber (1864-1920) and philosopher WilhemDilthey (1833-1911) raised the concept of "*verstehen*". The root of the German word "*verstehen*" means "understanding" or "insight". According to Webber, in people's everyday world life it is difficult to analyze many events and phenomenon by objective evidence. If people want to understand the meaning behind social actions, they should take the position and view of the actors. Therefore, in a researchcontext, if the researcher has no "presence feeling", and no direct experience of the research object, the knowledge and information obtained through the research process will have no deep meaning.[470]

As Manfred Oeming (2006) points out concerning the nature of hermeneutics,

> Hermeneutics is concerned with the scholarly analysis of an elementary problem: how does understanding work? When can I say that I have understood something or someone? … no matter how complex hermeneutics becomes, however, it always retains its connection to the very practical aspect of providing guidance and meaning for everyday life.[471]

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[470] Chen Bozhang, "Theoretical Basis of Qualitative ResearchMethod", *Qualitative ResearchMethod*symposium (Chiayi [Taiwan]: Graduate Institute of Education, National Chung Cheng University, 2000), 28.

[471] Manfred Oeming, *Contemporary Biblical Hermeneutics: An Introduction*, translated by Joachim F. Vette (Ashgate, 2006), ix.

As Bürdek defines it, "hermeneutics is more than a method for interpreting texts, but more generally the word refers to the art, skill, theory and philosophy of interpretation and understanding".[472] Interpretation is the key to understanding. This can be applied to early all contexts of life, including actions and gestures, words of science, literature and art, and historical events. According to the explanation given in the *Stanford Encyclopaedia of Philosophy*, the term hermeneutics covers both the first order art and the second order theory of understanding and interpretation of linguistic and non-linguistic expressions.[473]

Lawrence E. Sullivanprovides another insightful opinion:

> There is, then, a profound truth in the insistence that one should attend to one's method. In order to offer an authentic interpretation of another cultural condition, one must be sensitive to changes in one's own being, which transformations are necessary to understand another world of meaning. This is why historians of religion insist on the value of hermeneutics, the knowledge that comes from the act of interpreting.[474]

Text, Context and *Interpretation*

This thesis is concerned with usinghermeneutics as a specific mode of analysis. Hermeneutics is primarily concerned with a text or text-analogue (anexample of a

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[472] B ürdek, 244.

[473] B ürdek, 249.

[474] Lindsay Jones, *The Hermeneutics of Sacred Architecture: Experience, Interpretation, Comparison*, 2000, 4; Lawrence E. Sullivan, *Icanchu's Drum: An Orientation to Meaning in South American Religions* (New York: Macmillan, 1988), 16.

text-analogue is an organization, which the researcher comes tounderstand through oral or written text). The basic question in hermeneutics is, whatis the meaning of this text?[475] Taylor writes that

> Interpretation, in the sense relevant to hermeneutics, is an attempt to make clear, to make sense of an object of study. This object must, therefore, be a text, or a text-analogue, which in some way is confused, incomplete, cloudy, seemingly contradictory—in one way or another, unclear. The interpretation aims to bring to light an underlying coherence or sense.[476]

Hermeneutics has been described as the interpretation of texts or transcribed meanings[477]. One engages in a hermeneutic approach to data to derive a better understanding of the context that gives it meaning. It can be argued that hermeneutics is more of a theoretical perspective than a particular research methodology.[478]

There is growing interest these days in the analysis of texts. Bernard (2011) provided a broad definition to text, explaining that the text is extended to books from artifacts, images, behaviors and events:

> Most of the recoverable information about human thought and behavior in complex societies is naturally occurring text: books, magazines, and newspapers, diaries, property transactions, recipes, correspondence, song lyrics, billboards … And not limited on this. *Artifacts* (clay pots, houses, toys, clothing, computers, and furniture) and *images* (family photo albums and videos, slasher films,

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[475] Radnitzky, 1970, 20.

[476] Taylor, 1976, 153.

[477] Polkinghorne, 1983.

[478] Crotty, 1998.

sitcoms) are texts. *Behavior* (making beer, laying out a garden, dressing the dead for funerals) and *events* (church ceremonies, homecoming games, blind dates) are texts. All these things come to us raw, in qualitative form. We can study them raw or we can code them—turn them into variables—and study the relations among the variables. Both approaches produce insight and understanding.[479]

In anthropology, the texts may be myths or folk tales. The hermeneutic approach would stress that (1) the myths contain some underlying meaning, at least for the people who tell the myths; and (2) it is our job to discover that meaning, knowing that the meaning can change over time and can also be different for subgroups within a society.[480] Text from ancient cultures, for instance, may be analyzed in their historical context with the notion of applying their meanings to current issues.[481]

What is context? According to Vanhoozer,

> Contexts identify the circumstances relevant to something under consideration. What is under consideration in interpretation is the nature of communicative action. In particular, we need to identify the relevant circumstances and the background rules that make a string of words or sentences count as such and such a communicative act. Let us define "context" as the various factors one has to take into consideration together with the text in order to understand the author's intention. Any number of circumstances or contexts might be relevant to this task: historical, linguistic, literary, canonical, sociological, and so forth[482].

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[479] H. Russell Bernard, *Research Methods in Anthropology: Qualitative and Quantitative Approaches*, 5th ed. (Lanham, MD: Rowman Altamira, 2011), 407.

[480] Bernard, 2011, 17.

[481] Rudestam and Newton, 2007, 48.

[482] See chapter 5, "Resurrection: Meaning Is A Communicative Action". In Kevin J. Vanhoozer, *Is There a Meaning in This Text?* (Taibei: Campus Evangelical Fellowship, 2007).

What is the function of context? The author's intention cannot be separated from the beliefs and custom system—the context of communication actionsis therefore generated. Michael Lafarge believes that the Bible interpreter should restore the author's contextin addition tohis/her thought i.e., the way of thinking: "how does the author connect words and patterns and how does he managelanguage and literature and customs in his speech, his concerns, and the interaction betweenthe author and the text?" In other words, the interpreter should not only restore the author's intention, but also needs to restore group intention constituting the language and literature custom at a specific time, because it can be said that the author's life andworld was constructed by the prevailing group intentions. When we clearly know the context, we can regain the author's ability to use thelanguage and text, namely "viewing the entity in the author's eye."[483]

The Significance of Text

There is a certain definite thing inside the text—the meaning intended to express—and the meaning is fixed and invariable in the standard explanation of history. Discussion on relevance—i.e., targeting how to apply the text into the current situation in the time of reading—is the so-called "significance" h. The difference betweenmeaning and significance lies in that the significance of a text can be changed, because the text processes the relationship between the definite meaning of the text and its peripheral context (even another era, culture and theme).[484] As to Hirsch, "if the meaning is not fixed or can be recognized, the interpretation is impossible to

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[483] Kevin J. Vanhoozer, *Is There a Meaning in this Text?: The Bible, the Reader, and the Morality of Literary Knowledge* (Nottingham: Apollos, 1998).

[484] Vanhoozer, *Is There a Meaning in This Text?* 358.

generate knowledge".The entity of meaning is an action based on the pastness: therefore, fixed meaning is dependent on the pastness.[485]

Texts (or objects) can become sources of evidence and knowledge tools. They can not only tell us something about the author (what he did); they can also can reveal the author's feelings, imaginings, and observations. The text stands in the midst of the author and the reader, in the identity of embodied intention, and transfers the things noticed by the author and his/her attention model into the readers' world through various text techniques, so that readers can respond to the same things in the right ways. Vanhoozer views knowledge of literature as a kind of "thick description".[486] Coincidentally, anthropologists also divide their interpretation of the phenomenon or events into "thin description" and "thick description". Therefore, meaning comes from obtaining correct, appropriate, useful knowledge, and it is also derived from complete understanding and proper interpretation of object, the author, and the context of works.

Interpretative Text Analysis

As argued previously, the methodological choices that are determined by research paradigms help researchers locate themselves in the qualitative research process, and the choice of research method. This thesis uses "*interpretive text analysis*" as its method to analyze the research object—Chinese ancient literatures on *Qi-ju* design. In social science, scholars link three broad *text analysis* approaches with three research paradigms, namely (1) content analysis (positive paradigm), (2) interpretive text

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[485] Vanhoozer, 1998, 274-275.

[486] Vanhoozer, 1998, 370.

analysis (social constructivist paradigm), and (3) critical textual analysis (critical paradigm).[487] Therefore, it seems that each research paradigm is characterized by specific methodological principles which inform the evaluation criteria for the associated text analysis approaches.

As the method *text analysis* has been seldom used in Chinese design history studies, it is necessary for researchers to consult other disciplines. Russell Bernard's descriptions of *text analysis* in anthropology provide us the categorization of *text analysis*. For him, text analysis is for positivists and interpretivists alike, and there is no single method for doing it. According to his theory, some of traditions of *text analysis* include: (1) interpretive analysis, (2) narrative analysis, (3) performance analysis, (4) conversation analysis, (5) schema analysis, (6) grounded theory, (7) content analysis, and (8) analytic induction. The first four methods rely mostly on the intuition and erudition of the analyst, while the last four make increasing use of computer programs.[488]

According to Bernard, *interpretive analysis* is extended to the study of all kinds of texts, including jokes, sermons, songs, and even actions. In the late nineteenth century, Wilhelm Dilthey (1989 [1883]) argued that this method of text interpretation was central to the human sciences. A century later, Paul Ricoeur (1979, 73) argued that human behavior itself could be treated as an interpretable text. In anthropology, the person most associated with this tradition is Clifford Geertz (1972, 26), who famously called culture "an assemblage of texts"[489] that were available to be interpreted—that

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[487] Detail refers to Chua, 1986.

[488] Details refer to H. Russell Bernard, *Research Methods in Anthropology: Qualitative and Quantitative Approaches*, 5th ed. (Lanham, MD: Rowman Altamira, 2011), 408.

[489] Clifford Geertz, 1972, 26.

is, to be understood as those who acted them out understood them, and to be related to

larger social forces.[490] Though the object of interpretive analysis is broad in this

research, the *interpretive analysis* is focused on Chinese ancient literatures of *Qi-ju*

design under their historical contexts. This thesis adopts Bernard's theory on the

interpretive text studies as in the table below:[491]

Analysis	Data	
	Qualitative	Quantitative
Qualitative	a) Interpretive text studies. Hermeneutics, Grounded Theory	b) Search for and presentation of meaning in results of quantitative processing
Quantitative	c) Turning words into numbers. Classic Content Analysis, Word Counts, Free Lists, Pile Sorts, etc.	d) Statistical and mathematical analysis of numeric data

Table C-2 Qualitative-Quantitative Data Analyses.

Source: H. R. Bernard, "Qualitative Data, Quantitative Analysis" in *Cultural Anthropology Methods Journal,* Vol. 8 (Sage Publications, 1996), 9–11.

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[490] Bernard, *Research Methods in Anthropology*, 415.

[491] "The interpretive analysis" here made a reference from relevant table from H. R. Bernard, "Qualitative Data, Quantitative Analysis", *Cultural Anthropology Methods Journal,* Vol. 8 (Sage Publications, 1996), 9–11.

Moreover, in the application of the "interpretive analysis" research method in this research, it should be acknowledged that since there are almost no successful examples of applying the method of hermeneutics and interpretive text studies in Chinese design history research for reference, the researcherwould take this research as an experiment. Researchers can't know for sure if this understanding and application of methodology captures the spirit of constructivist, hermeneutics, and this is still an experiment with methods for presenting Chinese classical texts related to *Qi-ju* design. However this interpretive effort, borrowed from social science and anthropology, tries to understand and present the meaning of Chinese *Qi-ju* design utterances and practices to a modern audience.

Summary

These reviews present the researchers' flow of considerations for the methodology of this research and the rational for the research design. This section is constructed through answering three questions: Why is hermeneutics used in this research? What is hermeneutics? How should a hermeneutical approach be conducted in this research? This section provides a methodological foundation and theoretical basis for the practice of research.

APPENDIX D: Research Method

1. Qualitative Research

This thesis adopts a qualitative research approach rather than a quantitative research approach. According to Matthew David and Carole D. Sutton's explanation of the term "qualitative research"refers to data collection and analysis which lays moreemphasis on measuring significance than measuring numbers, more emphasis on induction than deduction, more on constructivism/ phenomenology (for noticing small group interaction) than on objectivism/ realism (for attention to social structure and the limits), and more emphasis on in-depth analysis than on general rule analysis.[492]

Due to its adoption of a qualitative research approach, this thesis will employ qualitative research methods, qualitative research involves three kinds of methods: interviews, observations and analysis of documents. These methods can be respectively further divided into several forms.Interview and observation methodsare mostly used in ethnographic research. This thesis will primarily use text or document analysis to collect data, basically takinghistorical texts—China's ancient literature on dailyutensils—as text data for collection and analysis. Therefore, this chapter on the research method mainly explains the research frame of this thesis, including the methods in two parts: data collection, and data analysis.

2. Induction and Exploratory Research

Qualitative research involves extensive use of induction and exploration methods, but

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[492] Matthew David and Carole D. Sutton, *Social Research: The Basics*. Wang Ruoxinet, et al.,trans. (Yonghe: Weibo wenhuaguojichuban youxian gongsi, 2007), 566.

less use of the existing theory for deduction. Exploratory inductive research tries to establish a set of interpretations of reality from the data collected, so it is unnecessary to realize the establishment of a set of measuring and counting methods. Inductive and exploration methods require researchers to have keen insight; otherwise they cannot pick out the objects that should be given priority in interviews and observations, or in perusing "whose" texts or artificial utensils. Therefore, the research design steps, including the architecture of the research problem, the formation of the research sample, as well as the design of interview questions and research log, shall retain some degree of "openness".[493] Research design in this thesis follows a logical process from literature review to statement of problems, then to research questions, and further to data collection and research analysis. However, this is not just a one-way process. In qualitative research, the relationship between literature reviews, formation of questions, data collection, and theory establishment can be variable at any time. Data collection may induce new theories, which will change the modes of data collection.[494]

3. Research Data: Sources and Standards of Text

This thesis takes texts as research data, and *Chinesehistorical classic literature of design* as texts to be investigated and analyzed. This section describes texts as data from three theoretical aspects: the source of text, the standards for choosing the text, and the historical characteristics of text.

To start with a definition, 'text' is "a term used to refer to all objects that can be

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[493] Matthew David and Carole D. Sutton, Wang Ruoxinet, et al. trans., 126.

[494] Ibid.

'read'". Therefore, both images (paintings, photographs or postcards) and other significant traces of human activities (such as buildings, costume and furniture) can be used as 'text' data.[495] John Scott pointed out two characteristics of text data. First of all, text data usually live longer than their authors. Historians have always been dependent on text records to research those objects that are unavailable for interview or direct observation. Second, text data are "non-reactive". Humans will have reactions to the research object, but text will not be subject to this effect.[496] John Scott proposes a classification system according to text sources and access levels. He divides text into four types in accordance with the sources: (1) personal; (2) private (commercial/media/charity professionals); (3) official. Scott then divides the four types of texts into four subtypes according to their access levels: (1) confidential; (2) limited access; (3) open (literature); (4) open (publication).[497] According to Scott's view, sampling usually refers to the selection of research materials, and the selected group is used to "represent" thepopulation catering to theinterestofresearcher.

On the other hand, John Scott also maintainsthat the selection of text data and evaluation on its feasibility should involve consideration for the following four standards: (1) authenticity; (2) credibility; (3) representativeness; (4) meaning. *Authenticity* means whether what is said in the text is true (whether the content is forged), and whether the author of the text is a real person. *Credibility* means the degree of our trust in the "text", according to whether the content of the text merits our trust, whether its source is reliable, and whether the authoris honest and shows

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[495] Matthew David and Carole D. Sutton, Wang Ruoxin et al., trans., 188.

[496] John Scott, *A Matter of Record: Documentary Sources in Social Research* (Cambridge: Polity, 1990), 3.

[497] Scott, 1990, 14.

correct judgment. *Representativeness* refers to degree that the text and the author sufficiently represent the community concerned with maternal. Not all textsare well preserved, and also not all textsare available for our acquisition. Therefore, the text obtained by researchers may not have representativeness. *Meaning* refers to the meaning actually expressedin the texts.[498]

Since this thesis adopts *Chinesehistorical classic literatures of design* as its research data, the historical characteristics of the texts should be explained here. As Gottschalk indicated,

> The *word document* has been used by historians in several senses. On the one hand, it is sometimes used to mean any written source of historical information as contrasted with oral testimony or with utensils, pictorial survivals and archaeological remains. On the other, it is sometimes reserved for only *official and state papers* such as *treaties, laws, grants, deeds*, etc., …[499]

In their classic compendium of research practice, Langlois and Seignobos remark that "Documents are the traces which have been left by the thoughts and actions of men (sic) of former times."[500] It is only though these traces, they argue, that we can know that past: "For there is no substitute for documents: no documents, no history". This contention is rooted in the nineteenth-century revolution in historical writing initiated by Ranke, and it became the cornerstone of professional academic history. Written documents discovered in libraries and archives were regarded by Ranke as superior to

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[498] Matthew David and Carole D. Sutton, Wang Ruoxinet, et al. trans.,191.

[499] Louis Gottschalk, "The History and the Historical Documents", In Joan Scott, *Documentary Research*. Vol. 1, 6-7. (London; Thousand Oaks, Calif.: Sage, 2006), 47.

[500] Refer to Scott, 2006, 12.

observational and archaeological evidence, and to reminiscences or oral traditions.[501] These documentary survivals are regarded as especially valuable because they are not deliberately designed for the benefit of the historian.

According to Gottschalk,

> The process of critically examining the records and survivals of the past is called the historical method. Historical method consists of (1) the collection of probable sources of information; (2) the examination of those sources for genuineness (either in whole or in past); and (3) the analysis of the sources or parts of sources proceed genuine for their credible particulars.… By means of historical method and historiography (both of which are frequently referred to together simply as historical method) the historian endeavors to reconstruct as much of the past of mankind as he can. As has already been said, he can never tell the whole story of the actual past, for the records are not complete. What is more important, despite Ranke, "any part of the past" as it actually occurred" also escapes him (since human imagination is incapable of such re-creation). But he can endeavor to approach the entire and actual past places a limit, to use a geometrician's phrase".[502]

In summary, qualitative analysis is based on the analysis of the meaning, so the selection of texts affects the exploration of meaning in the texts. Therefore, the text and its "situational context" (i.e., 'reason': time, location, author and other information, production and maintenance of the texts in personal or formal documents)

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[501] Refer to Scott, 2006, 12.

[502] Gottschalk, 8-47.

will influence the position of texts in social situations, and must be properly recorded. Data collection of the original texts for this thesis was completed by means of non-intrusive data collection, which was characterized by indirect interaction with the producers of the texts collected. This is the limitation of historical texts and also their merit.