

The Model of Thinking Analysis for Teaching Content of Design History in Taiwan

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Abstract

Design history is a course of design theory in design education. Its major contents include development process of design events, evolution of design style and design value that influences following generations. The teaching purpose is to inspire students to learn about design styles, renowned designers, design works and value, so as to enhance students' knowledge about design philosophy and background of design history. Design history is a course that has inspiration concept. During the process of teaching, it should not be just describing historical events or design works, but explaining multiple implications that the design content represents, so as to introduce the thinking pattern of design philosophy and design value.

The purpose of this study is to explore how the teaching content of design history can be developed into the study of "design philosophy" and "design value". The research direction is to use apprehended thought of design as the basis for development framework to introduce teaching content. This paper redefines the purpose of "design historiography" and discusses the guidance, applicability and importance of design history education.

Keywords: design history, design philosophy, design value, design education history, design thinking.

I. Introduction

The course of design history has always been regarded as secondary theory courses in the domestic design education. The attention it receives cannot be compared with other practical courses (e.g. product design, visual design and computer drawing), theoretic courses (e.g. design methodology, study of color and design management). In normal teaching content of design history course, teachers usually provide an overview of past design works and the description of historical events. Very few of them make in-depth discussion of value and analysis of design thinking on the content of design history (Wang, 1997). Most teachers who teach design history are ordinary design teachers. It's hard to find teachers who are willing to devote to the study and teaching of design history or general theories of design. Teaching materials of design history (or industrial design history) are in great need (those published in Taiwan include Li Yulong, Wang Shouzhi and Luo Xiaowei). There are many university teachers who wrote *World Design History* (Wang Shouzhi), *Birth of Modern Design in China* (Guo Enci), *Design History in China* (Hu Guanghua) and *History of Industrial Design* (He Renke). Most of the books were written in the form of historical progress and the description of design events that should be read and memorized. They are

just plain textbooks.

The course of design history involves diversified professional fields of design, including industrial design, graphic design, process design and inner design etc. It is very difficult to learn such diversified concepts in a short term. Therefore the previous teaching method of browsing through design styles and memorizing historical events needs to be corrected. The purpose of design education is not just to memorize or understand; it is more important to let students have correct concepts and independent thinking capacity. The teaching content of design must be in the same pace with social and cultural events. The teaching method must focus on the interaction and discussion between teachers and students.

The study of design history in design departments mainly aims at the formation of basic design concepts and the cognition of fundamental thinking through learning the knowledge of design styles. The teaching method should be changed from traditional "reading" to "understanding", from "memorizing" to "thinking". The content should be changed from "the evolution of design styles" to "the concept of design styles". Therefore the teaching method of design history should introduce the concept of philosophy so as to combine the value of design. And after the study of design history, students can

better (1) know the philosophy thinking of design concept, (2) think about the implication of design classics and (3) better recognize the value of design (Figure 1).

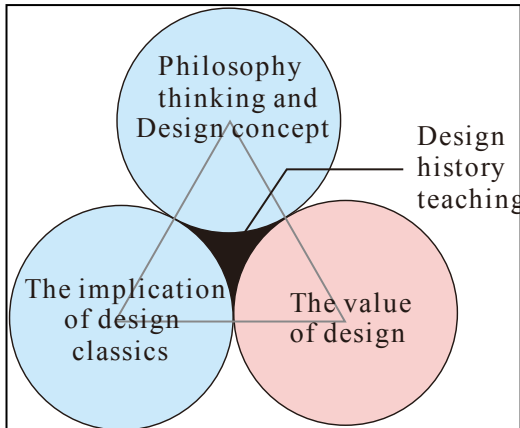


Figure 1 The study of design history

After the study of design history, students themselves can know more clearly which specialty of design is more suitable for them to study, students can also fully understand the purpose of learning design and which kind of knowledge and attitude they should have in the future. These are questions that should be considered for teaching method. In the society of information development and progress rapidly, the content of the course of design history should follow the steps of the society and the teaching of the cause should lead to the value that design development is connected to the human life.

II. Purpose of the research

In the courses of design theories, the teaching of design history cannot be neglected because design history is the source

that inspires students to learn about design and then to think about the goal and the spirit of design and finally to promote their value concept of learning design. The teaching of design knowledge requires long term understanding of concepts, the reading of information, the thinking of history and the cognition of value. Generally, the concept of the design history mainly stays at the stages of history revolution. However, the definition of the course of design history should not be so narrow. The training of the course can help students to have think about basic design concept thinking. It can also help students who study other relevant design fields to learn about the definition and scope. The major purpose of design teaching is to train a student who studies design concept to have in depth understanding and insights of the origin of design (design culture, society, morality, philosophy and value). This is to cultivate the students' academic foundation of design to prepare enough that can be transformed into future design thinking capacity.

The knowledge of design history not only includes the developing process of historical events so far, but also considers about the cause and spirit of design development. The course of design history should include the revolution of design styles in a broader view. Meanwhile, the philosophy and value that it leads to can establish the foundation of new design theory (Figure 2).

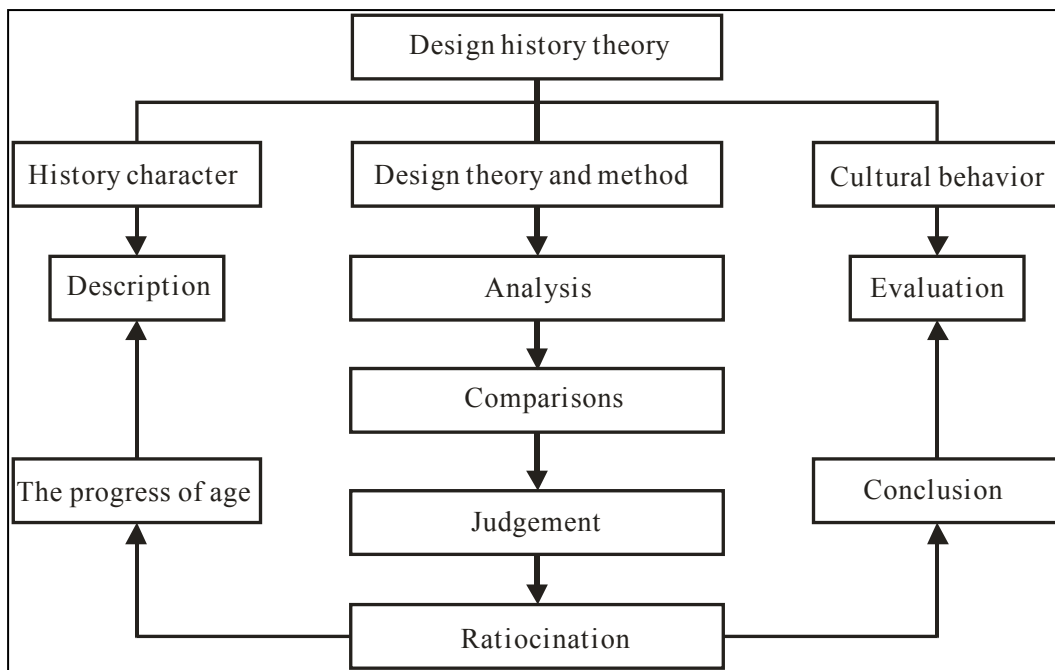


Figure 2 Research structure of design history

Thus design history is not just the description of history, but also the source of design knowledge. It is even another kind of design philosophy concept that lives in the society. The teaching of the course of “Design History” bears the responsibility of integrating humanity, arts and social development. Therefore, all students who study design and art designing should study the course of design history so as to learn about the value and thinking of design. For such a purpose, this paper aims at exploring the origin of the course of design history and reinterpreting the key contents of design history, so as to inspire students’ design thinking concept.

It is expected to achieve the following three results through this study:

(1) Discussing the design history from “historical” background to build the

connection between historical styles and its culture and understand the entire origin of the evolution of design.

(2) The arguments can be derived from the description (theory) and the methods (thinking) during the teaching of design history and can be used as the evaluation of in-depth study and discussion for teaching.

(3) The new teaching content of design history can lead to the study of “design philosophy” and “design value”.

III. Literature review

In terms of entire design history events and activities, it can be traced the earliest to the middle of 18th century when British businessmen including Thomas Chippendale, Josiah Wedgwood and Matthew Boulton be-

gan to produce some consumptive commodities under the Arts and Crafts Movement initiated by British artist William Morris. It has a history of 250 years till now, covering a broad range and containing many contents. Before the middle of 20th century, commercial activities (production, technology and consumption) were the major driver for the development of design, thereafter, because people had new interpretation and insights in culture, the development of design theory and the new concepts of designers made design turn to a new design pattern. In the 21st century, design phenomena oriented by high-technology former another wave of design style, the speed and variations of which cannot be forecast (Figure 3).

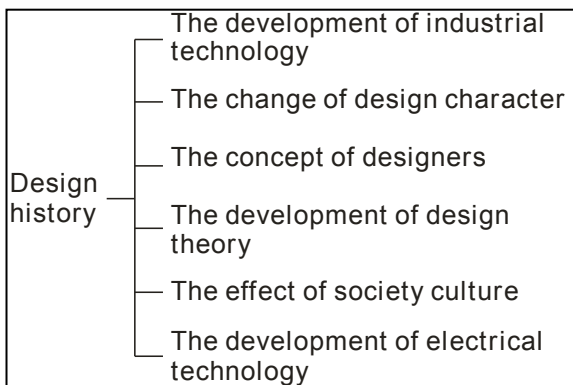


Figure 3 Factors affecting design history activities

Therefore it is necessary to look through social and cultural concepts and the changes of science and technology if we want to study design theory today. The course of modern design history must implement in depth analysis and review on design history, theo-

retical foundation and cultural philosophy. But from which angle should we start our exploration? What content? How to extract the essence of design history and give students correct design concepts? All these need to be explored in this study.

There is no standard in teaching method, content and teaching material in the course of design history, but the purpose of teaching should be the same. The major ideas in the teaching of design history is to describe important to design periods, thinking concepts of representative designers, design works and causes for the critical design events in design history. The major tasks are to narrate the “study of design history” in the aspect of history and “design thinking” in the aspect of design concept basis along with the “design value” derived from design styles. These three theoretical foundations can establish a deep background for learners, as is the major starting point for the course of design history.

In Taiwan, the contents of existing teaching material on design history or industrial design history on market now are different, most of them describe the historical context in year’s order, some uses works style as the basis to discuss the cause and effect of design history.

There are mainly the following 4 types of textbooks regarding design history and sum-

mary domestically and internationally:

- (1) focus on the sequence of design history:
“Design Source Book ” written by Keith Parish, published in 1986, “Landmarks of Twentieth-Century Design ” edited by Kathryn B. Hiesinger and Georee H. Marcus, published in 1993 (Hiesinger and Marcus, 1993).
- (2) focus on the subcategories of design filed: “Objects of Desire ” written by Adrian Forty, published in 1986, “Design History ” written by Hazel Conway, published in 1987.
- (3) focus on the style of design works:
“Industrial Design written by John Heskett, published in 1980, “Design in Context ” edited by Penny Sparkle, published in 1987, “The World Modern Design” written by S, J. Wang, published in 1997, “Twentieth-Century Design ” written by Jonathan M. Woodham, published in 1997.
- (4) focus on designers unit: “Design a Concise History ” written by Thomas Hauffe, published in 1998, “A Century of Design ” written by Penny Sparkle, published in 1998 (Sparke, 1998).

“Design movement” and “designers” are the two major topics discussed in most of the current design history books. Almost all of them follow the same pattern of narration and introduction, very few discuss the cause and effect of these two topics, not to mention the

development of computer science design and the update of social phenomena in 21st century.

Design history has passed the development of 150 years. In the evolution of the numerous styles, character and factor of each generation of design style must be considered. Corresponding to the change factors of society and culture, the cognition of design value that the change of design style brings to the public should be discussed. Speaking of the development of modern design style, the consideration of design concept combines factors such as high-technology, cultural reproduction, fashion popularization, consumption trend and integrated design etc. The consideration of technology combines various digital production methods. Therefore, today's teaching content of design history includes the “understanding” of design style, the “thinking” of design concept and the “cognition” of design value, as is the spirit and goal of the course of design history that should be learnt about in this study.

To discuss the leading foundation of theories and methods in the study of design history, we must have a clear concept of the destination and sources of design history theories. The sources should be explored in four directions (1) the context of design history revolution, (2) the definition of design

field and its development condition, (3) the characteristics of design works focusing on styles and (4) the design concepts and methods implemented in traditional, contemporary and modern design. Method is a must in the study or teaching of design history and such method takes the thinking analysis of “design history theory” has the subject of the entire structure of research or teaching.

The theory of design history uses the resolution of design styles as major methods. After acknowledging the feature of the style, this study extracts systematically major characteristics of each kind of design during the revolution of design activities, compares comprehensively the same and different design concepts for literature review. The conclusion after the comparison of the factors in historical, technical and cultural evolution as well as the judgment of design style can lead to the teaching content and method of design history. Because the development of new design ideas and new concepts are generated under activities of design integration, every design fields maintains a close interactive relationship.

IV. Analysis of the theories of design historiography

It is mentioned in the previous discussions that the purpose of researching design history is not only to learn about the

evolution of design activities and design styles; further discussion must be performed on the character of contemporary design activities. Events and activities other than designs must be understood clearly because they involve the factors for design history changes. The beginning of the design history developed starts from the change from traditional fine arts process into industrial arts, as seeks to find back the spirit concept of artists (Heskett, 1998). In the year 1919, the concept of “technology integrates with arts” from Bauhaus school in Germany initiated the creation method of “industrial design” and started the style of functionalist design age. Due to the development of industrial technology and the invention of new materials at that time, it was naturally that functionalism lead the popularity trend of contemporary form style. Meanwhile, the concept of “forms follows function” was applied by designers gradually and became the leading theory of modernism design. This is a style change caused by industrial technology factor.

Time context of design history

The time context of design history should be traced from Art and Craft Movement to the technology age of 21st century, with duration of 150 years. The major changing factors are changes of form styles around the axis of civilization; the intention is to lead the main-

stream consciousness of design. Its overall procedure of development can be divided into four major phases and the evolution of detailed form style events during the years are displayed in Figure 4:

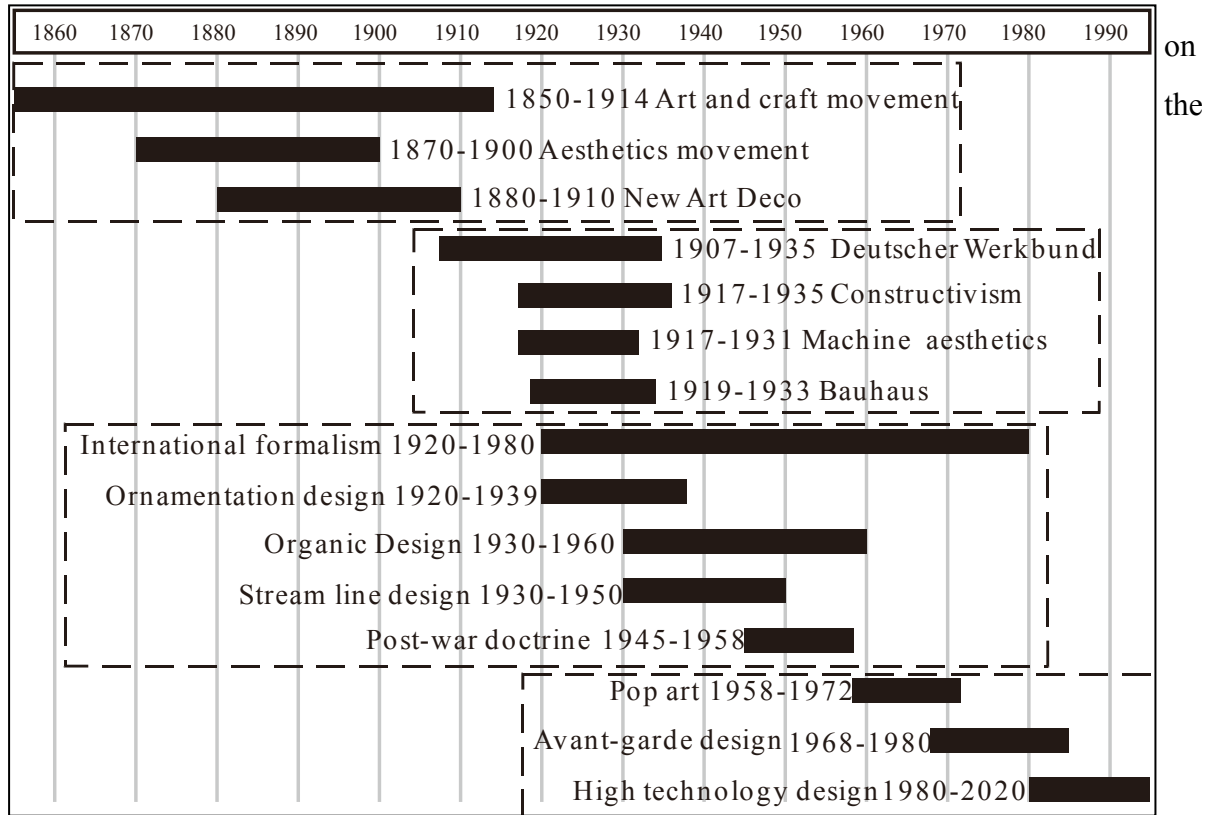


Figure 4 Detailed form style evolution of four phases in design history

Phase 1: 1850-1914, Art and Craft Movement led by William Morris. They tried to fight against the replacement of art and craft creation by industrial technology by presenting decoration and aesthetics concept. They considered that industrial machines killed the life of art creation and refused to take “style form” and “standardized pattern” as the norm for art creation, this became the famous Art and Craft Movement in design history (Figure 5). The opinions of artists and designers at that time were still focusing

concepts of aesthetics and arts. They mainly used pure handwork for the creation of artworks. The concept of art in their works played a significant role. Their creations were mainly made in single piece and mass production of models was introduced later on. They didn't accept the method of creating artworks by using machinery in a great deal as right because the concepts of mass production or modular design were not mature at that time. During the period of aesthetic and art movement, commercial trading had

emerged in Britain. Due to the trading and consumption of goods, different materials and ways of production was applied in making handicrafts and craft goods to meet different demands of consumers. Later these goods developed into design the products gradually.



Figure 5 Art creations in Art and Craft Movement

Phase 2: 1920-1960, functionalism, paragon of design concept inspired by pioneers of modernism. When functionalism was popular, it first gave up the ornamentation art that was used for quite a long time through new theoretical methods and concepts of architectural designers and discussed the importance and practicability of “function” on design (Figure 6). Functionalism advocated to use geometric forms oriented by structure and technique to replace the elegant and flashy natural form (1998), bringing about a reform trend of beyond-age styling. Due to the progress of industrial technology and the invention of new

materials, functionalism led the form style trend at that time. In the time of machinery aesthetics, designers had begun to pay attention to the appearance of products due to a massive introduction of industrial technology in design and manufacture, as made the forms of products more and more connected with the modern social life. The design of a product must take its technical features, technical application method, material modification and structure update into consideration. On the other hand, the novelty of appearance must comply with the market condition, as made modernism the leading design theory of 20th century (Wang, 1997).



Figure 6 Functional products in Machinery aesthetics age

Phase 3: 1960-1985. After 1960, a new design thinking focusing on “social order” and “culture” rose and developed among some historians, critics, design theorists and design practitioners (Woodham, 1997), as resumed the definition of design. Architectural theorist

Robert Venturi described another definition of design in his work “Complexity and contradiction in architecture” (1966) with various bizarre ideas, for example, using hybrid to replace pure, distortion to replace line, conventional to replace designed, redundant to replace simple, thus starting the new form style against functionalism. Then another architectural theorist Charles Jenks followed and developed Venturi’s concepts. He published “Language of Post-Modern Architecture” with the term of post-modern design. Besides, Eclecticism, Ornamentation, Kitsch, Wit and Irony as well as Alchymia, Memphis, Alessi in Italy propagated post-modernist theories (Figure 7). Later on, as the concept of ornamentation emerged, new art and design creation styles such as organism, streamlined design, OP art and art deco etc appeared, leading the definition of design into reproduction of “international formalism”.



Figure 7 Tea cettle designed by Michael Graves

Phase 4: 1985-2015, time of electronic tech-

nology. The application of electronic technology was introduced into people's lives. Under such circumstances, design behaviors made products (product, graphic visual and multi-media) tend to use the form of electronic digitalization to enter into people's lives. Various electronic products flooded into market (figure 8). Different kinds of communications in daily life were changed from traditional paper or cable communication to invisible electronic network, computer and cloud technology system. The scope of application is very broad, for instance, news, commerce, finance, shopping, communication, currency, entertainment, defense industry, medical system or education etc. Such new and advanced design forms filled people's way of life and change the traditional application method and usage interface, adding an unprecedented “innovative style” to the evolution procedure of design and forming a new trend of pursuing popularity, technology, taste and novelty in the modern society. People are willing to try these electronic series of products and thus form another wave of high design in electronic age (translated by Wang , 2001).



Figure 8 Electronic 3C products

2. Definition of design field and development condition

The definition of design from the 1930s to the 1970s was mainly the extension of art creation. Because the technology at that time was immature, the development of design was to meet the demand of living; therefore, functionalist design concept became mature. Since the 1980s, design experienced great changes, including application of new technology, new functions, new streamline forms and new product interface, different from the design in early 20 century that focused on structure and function only.

Since the 1960s, design style changed from functionalism to New Art Deco. Designers abandoned the restricted rational concept and began to try ways of playing with design to lead consumers' style taste, including Memphis team in Italy, famous Alessi design company and the French designer Philippe Starck, Richard Shaper and Michael Grave in Britain, all being change of styles due to cultural and new society order factors.

In the age of post modernism since 1970s, new design thinking centered at “culture” and “society” was introduced into design concept, as made the definition of design resumed and thus design was located under the violation of common rules and formed a twisted phenomenon.

After entering 21st century, the rapid development of electronic technology involves the content of design, making design phenomenon not just pursuing function and new streamline, but providing innovative, cultural and personal service to mankind. With the highly developed electronic technology and the influence of formalism (translated by Wang, 2001), design has become an extremely commercialized form. People's lives are changed greatly; the major characteristics are the diversified forms of communication. The communication among individuals and between people and goods has changed from the traditional face-to-face method to the form of internet system facilities (computer multimedia, mobile phone, email, internet access). The mankind is making effort to pursue all sorts of new popular trends. That is because formalism caused the change of form in background and influences the evolution of design history.

3. Design features taking style as axis

The classification of “style” is an impor-

tant approach to study design history and can correspond to the phenomena of every design period from modern, post-modern to the fashion era (Wong, 1995). “Style” is one of the major reasons that influence the change of different kinds of design forms. Each evolution in every phase of design history reflects not only social environment conditions and standard of living, but also viewpoints of designers' concepts. As a matter of fact, architects and designers play a critical role in leading the change of styles for every transition phenomenon discussed in design history. After 20th-century, some architects, industrial designers and theoretical design scholars began to study using contemporary social phenomena and cultural aspects as foundation of developing design concepts. In the beginning, Louis H. Sullivan proposed from the viewpoint of architectural design that the form of architecture must be determined by the demands of different functions (fire control, lighting, space usage and structure etc.) when the architecture is built. Later American architect Frank Lloyd Wright (1920) and Le Corbusier (1922) published *International Style*, suggesting that geometric modeling should be used to form the elevation and plane form of a building. This is the start of a discussion with an academic foundation. Following architect and practitioners adopted that as reference for case design (Figure 9).



Figure 9 Skyscrapers in New York City represent rational offspring of modernism (photographed by author in New York city, 2008)

In 1960s, design activities have been divided into many different specialties (design method, design management, design information and ergonomics etc.) from the single concept of function aesthetics, for instance, early stage designer Henry Dreyfuss (1903-1972) kept studying ergonomic and published the book “*The measure man*” in 1957 (Hauffe, 1998). In addition, architects and industrial designers in Britain such as Christopher Jones (1960) and Bruce Archer (1970) proposed system design methodology, using theoretical approach to expound the theoretical background of practical design. At the same time, American architect and architectural theorist Robert Venturi proposed postmodernism concept first and reinterpret the definition of design.

American architect Charles Jencks followed them in the 1970s, using new cultural social order to carry forward post-modernism

concepts, including decoration, sign and symbol. He set forth the characteristics and building techniques of architectures at that time with the concept of satire, humor and change (Jencks, 1973). In the 1980s, American industrial designers Donald Norman and Michael McCoy proposed using “human psychology cognition” and “product semantics” of contemporary cultural and social concept perspective as theoretical accordance for design studies, leading the scope of design history into the exploration of “human psychology” and “philosophy notion”.

Most of the above mentioned theoretical system design means, methodology and concepts were applied to design practices at that time. These theories were spread into teaching of design education, teachers of design courses in many countries started to use design method, perception concepts and design theory to teach students. These design methods and design theories have significant relationship with the culture and lifestyles of the society at that time, that is to say, the evolution of human life and social culture is a classic of design history. Through many years' evolution, design history experienced the transition from styling to design theories and innovative thinking models centered on design culture. The entire course is to transfer the discussion of historical design topics to the inference

study of design thinking.

The above arguments are another characteristic emerged after modern design about design history description. If analyzing the context carefully, we will discover that these theoretical design researcher or practical architects and designers hope to lead the trend of design forms with the concepts of design method or thinking developed by them, or even to lead the popularity trend of the society, thus forming the so-called mainstream of “style”, through which direct the trend of the whole society's modeling art. Therefore, design concepts led by designers affected the change of design art styles. Reflected on people's lifestyle and quality, it influenced the level of social and cultural advancement directly. Thus unique design characteristics were left in each period. In the 21st century, the amazing development of technology and the diversification of design changes are hard to tell, the design style of hi-tech age is a important factor that change human culture and social style.

4. Design concepts and methods elaborated by traditional, contemporary and modern design

Design has a history of 150 years from traditional classical aesthetics, contemporary functional aesthetics to modern cultural aesthetics. The essence of human culture is represented on artworks of painting, music

drama, literature, fine arts and engraving. It came into being through concentration with the sublimation of aesthetics to present the connotation of living aesthetics. Under the modern social structure, many living peculiarity were generated and the experiencing ways and methods of aesthetics became diversified accordingly.

Classical aesthetics happened under the conflicts and contradictions between “art” and “industry”. Designers and artists or architects tried to find balance points. The appeals of Art and Craft Monument and Art Nouveau Movement in 19th century were death struggle that artists made in the end. They insisted that lofty artistry must be transmitted forever and could not be replaced by any industrial achievements. What their design concepts wanted to express was “art can control everything”. After the change of condition and time, industrial design technology overcame ultimately and replaced pure art design. In the early 20th century, concept of combining industrial technology and aesthetics rose, functional aesthetics emerged. In the end of 20th century, architects and industrial designers proposed that current cultural/social notions and human psychological and perceptive concepts should be used as the theoretical accordance for design studies, introducing human psychology and philosophy notions into research scope of de-

sign history. Plenty of theoretical system design approaches, methodologies and concepts were applied to design practice continuously. Meanwhile in the education of design, perception concepts and humanity culture design theories were involved to teach students. These design concepts and approaches were formed due to the connection between current social culture and human lifestyles. The evolution of human life and social culture is the essence of design history.

V. Philosophy ideology and value of design

In the most predominant period of modernism in 20th century, design thinking focused on function. Its ideological value lies in the design phenomena of transition from industrial technology to human perception. Generally speaking, the trend of evolution and the concepts of design achievement in the past decade is to pay attention to the innovation focus on “humanity”. According to the evolution of design thinking in 21st century, science and technology should finally be the inheritance of artistic cultural. “Design” is the major media that can transform “science and technology” into art with a cultural aspect while design philosophy is the source of inspiring artistic cultural. It can be expected that “design is gradually leading the evolution of entire social pattern”. The design method in the new era must take the value of human be-

haviors and spiritual aspects into consideration. The new thinking that designers need is to define design concept and design behavior. The new design thinking is to care for human value perceptive concepts (e.g. product application context, human behavior demand, culture and civilization promotion, preservation of landscape etc.). This affects the future direction and form of design (style), expresses the procedures and phenomena that all mental mechanism presents including sense, consciousness, emotion, imagination, desire and comprehension.

Design thinking combines three meanings of emotions, rational and intellect. Emotions is the perception to stimulation from external things; rational is the perception from logical judgment after reasoning (Hsie and Fan, 2007); intellectual is the derived perception combining sensibility and rationality. Thus design thinking contains sensible perception and rational judgment (Figure 10). Human factors of design style, including designer's traits, creation technique, preference and sense, belong to sensible perception whereas factors such as social changes, technical development, international trend, consumer preference belong to rational judgment. These factors other than design itself require thinking after understanding and judgment before making argumentation of design value.

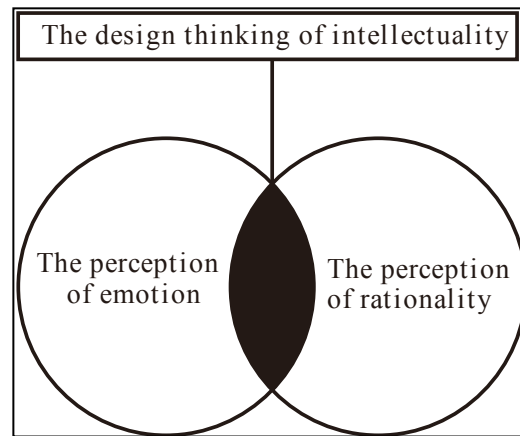


Figure 10 The intellectuality of design thinking

How should we explore “design”? How should we define it and think about it? It is really a tough mission to define design. The term “design” has been discussed for many years. What is it actually? How should it be defined? What's its difference with the commonly mentioned art? For the value of design on concept, there still exists great dispute in design field. The philosophy thinking of design is to involve human concepts into design methods, covering cultural ideas and artistic conception into a mode of expression by design in modeling, color and material. In today's new design concepts, we should discuss whether the thinking mode that takes sensibility as connotation can also be applied to industrial design procedures. Besides consolidating the particular style of modeling, it can promote the connotation of application context of products and complies with the design principle of personalization.

British industrial designer Daniel Weil

considers that new design thinking lies in the smart coordination of the interaction between industry and art and employs design method to imagination of products and make it succeed. Kiyoshi Sakashita, executive of industrial design department, Sharp Corporation of Japan thinks the best design of balancing aesthetics is to take into account ideas focus on personality (including universal design, sensibility engineering, interaction design, culture reproduction and green design etc.), which forms the value perception of new era design history in 21st century. The focus of discussion is the relationship between philosophical ideas and design, the combination between design and aesthetics. The future trend has turned to “designization” of living aesthetics and “daily life” of design aesthetics, which brought the study of design history to the level of culture, art and philosophy knowledge.

Table 1 Teaching plan of design history

Subject	Content	Teaching method	Learning goal
Design history and style	<ul style="list-style-type: none"> •Design activities, events, backgrounds and origin during each phase in western countries •Background and cause of creating design and art works •Design forms and styles during each phase 	To compare and discuss the procedures of historical activities during each phase, design works and styles.	To learn about knowledge and attitudes that students should have in design. To learn design concepts and foundation for comment.
Design concept, design theory and design method	<ul style="list-style-type: none"> •Different kinds of design philosophy and methodology •Development foundation for arts of design concepts •Brief introduction of design, design process, universal design, application design of modeling, semantics, semiology and aesthetics etc. 	To analyze and evaluate characteristics, connotation and process of different design theories and methodologies; to comment on style concepts of designers and works	Be able to think about connotation of classic designs and know about correct design concepts, be able to understand the foundation for design theories and methodologies.
New design thinking	<ul style="list-style-type: none"> •Pace of society and culture •Combination of high-tech with art and design •Evolution of personalization and life •Design psychology 	To use horizontal thinking and vertical thinking in creative thinking, problem solving and design method; to practice with cases and practical methods.	<ul style="list-style-type: none"> •Identify the value of design •Be able to learn about the philosophic thinking of design concepts •Independent thinking and value determination

VI. Teaching content structure of design history

20th century is a very important period to the development of design history. It has lasted for 70 years and affected the development of design forms. The transition involves a wide range of factors, industrial technology and electronic technology progress is a major factor; economic market, social culture and structure as well as human lifestyle trends etc. are external influencing factors; internal factors of design itself include aesthetics ecology, human psychology, cultural philosophy and so on. The scope of design concepts is really too extensive. It's impossible to teach all the contents discussed in design history completely in a semester's course of eighteen weeks. Therefore, systematic arrangement must be performed in teaching plan to discuss the significance of each phase properly (Table 1).

Generally speaking, the teaching of design history mainly starts from the Art and Craft Movement in the middle of 19th century and ends at modernist design and post-modernist design in the latter half of 20th century. Actually, the end of 20th century and the beginning of 21st century was a period that turned the overall situation of design. The teaching of new design history will discuss the design types and design trends in 21st century, so contents such as latest design trends and concepts should be taught to students. From this point of view, the teaching of design history should bear the responsibility to establish basic conception to students studying in design department. Coming back to the research purpose of this paper, the teaching schema of design history can be summarized in three levels (Figure 11): background of design history, concept, theory and method of design and new design thinking. The detailed contents are described in the following:

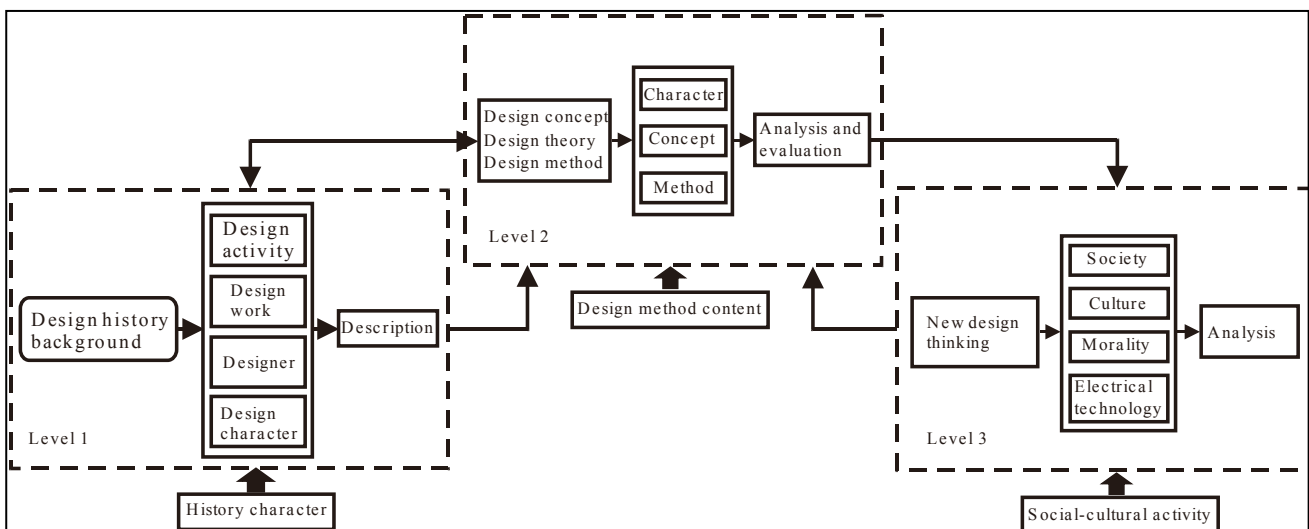


Figure 11 Three levels in design history teaching

Level 1: To discuss the origin, historical sites of important design activities and design styles of the four phases in design history, using narration method to discuss historical background with the aim of enabling students to understand the major events in design history evolution and the social patterns at that time. The main task is to illustrate the origin, cause and influence of milestone events in each phase, so as to establish knowledge resource of historical background.

Level 2: To analyze the design styles, concepts and methods of concepts proposed by influential designers and their representative design works (as analytic object) and to make comparison, judgment and comment. Narration method will not be used to discuss its origin, with the purpose of making students to understand the thinking source of “design theory and method” and learn about the academic foundation for design masters' methodology.

Level 3: After students having proper knowledge of historical background and design theory from the first 2 levels, this level is to use the method of “deduction” and “demonstration” to discuss the evolution of development events from the middle of the 19th century to the beginning of the 21st century, including the internal and external factors and background hidden behind them. Students will be asked to think by themselves, how they can look at the evolution character of entire design culture as a designer. Major topics will be the relationship among electronic science and technology, human lifestyle and design and the cause-effect between important influence in human life and design value from the end of the 20th century to the beginning of the 21st century.

This is a level regarding design philosophy and design value.

From the new academic theoretical bases mentioned from above levels, the three academic theoretical directions can be derived from this course's subject: (1) the evolution of industrial technology and social culture is narrating the peculiarity of design history evolution, (2) designers' concepts and design styles form the basic relationship between philosophical thinking and design, (3) electronic (digital) technology development forms the direction of human cultural behavior and life development. From this new design thinking, the teaching content of design history can lead to two academic theoretical mainstream connotations, i.e. “design philosophy” and “design value” (Conway, 1987) (Figure 12).

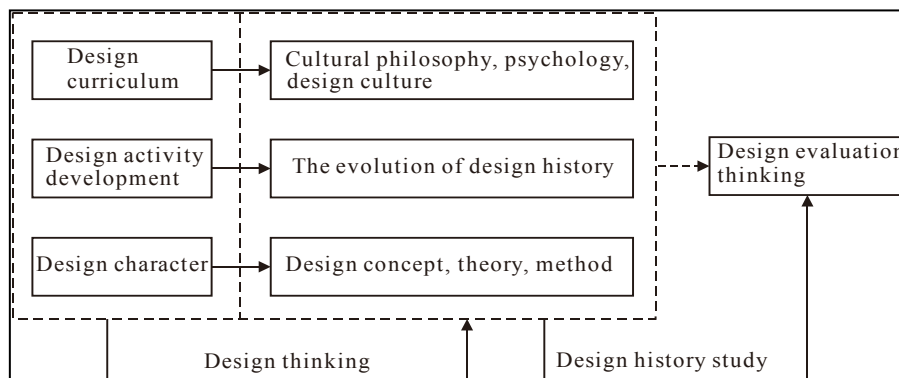


Figure 12 Academic theoretical mainstream connotations of design history subjects

Till now, the subject of design history has become a deduction of new design thinking. If we observe the factors such as the lifestyle, culture level, technology development, environmental change and social morality of current society and aim from the design for human welfare, we can conclude that the role that “design behaviors” play in the 21st century is to integrate different kinds of design factors (for example, human behavior and social environment) that can influence design achievements. Level 1 and 2 mainly focus on the narration, analysis and comment of historical design events, while the deduction of design thinking in level 3 is to verify whether the involvement of electronic (digital) technology into the third wave design thinking model really has benefit to human wellbeing and design culture in this century.

VII. Conclusion

We can tell from the above examples that relevant factors to design history and diversity including elements of technology market, information, society culture, art, morality and environment etc. Thus studying or researching design history has to discuss the social cultural characteristics of current time. It is more demanding to analyze culture and comment background. Therefore the name of the course of “Design History” should be changed to “Design Historiography” to make

the course able to integrate the three characteristics of design history style, development of theory and methodology as well as value & thinking. It then becomes the new modern academic theoretical foundation for design.

It has existed for quite a long time in the domestic design teaching that focuses only on “skills” instead of “thinking”. This attributes to the improvement of computer-aided science and technology. In such an era of information science, students are willing to devote all of their energy to the study of IT but they are not willing to spend a little time to study more of concept thinking method and knowledge of design cultural background. Students are neither willing to read some theoretical academic research achievements. Theses or designs, and artist writings related to design cannot arouse their interest. These writing only stay among teachers as media for academic communication or as reference for article writing, as makes student lose the thinking method of design value (design culture and design morality), not to mention the capacity of commenting designers' concepts and works' connotation. For high-quality design education, this is a serious problem. Students think that as long as they can use advanced IT techniques or their models are the same as prototypes, their works are good design products. This is a completely wrong

idea.

Moreover, the rapid and diversified development of computer drawing and CAD software/hardware makes design teaching became more and more focused on courses training computer skills (computer drawing, CAD and manufacture, multimedia and network design etc.), some thinking idea courses about humanity, art and concept (for example, design history, introduction of aesthetics, design culture, design thinking, design philosophy, design review and analysis etc.) are ignored gradually. Courses regarding humanity and thinking become optional supplementary courses. The entire course system of design teaching has degraded and the major reasons are as follows:

- (1) After taking and studying conceptual courses such as design history, instant design achievements or results cannot be seen;
- (2) The content of these courses are very boring, students must read and understand to acquire something, no real drawing or practice is involved.
- (3) These historiographic and theoretical courses are quite far from the perception of practical design and almost all are abstract notions that are difficult to understand.
- (4) Teachers with specialized training and teaching materials such as research findings/resources about design history are insuffi-

cient.

Under the above adverse circumstances, the teaching of design history has always been confined in a tough teaching environment and cannot receive sufficient concern. The three levels of teaching schemata developed in this study cover the entire framework of historical style, new design theory and methods as well as social culture behaviors. For the spirit and target of design history courses, such achievements have got rid of the teaching models of pure “design critique” of traditional design history courses. This research has absolutely promoted the form of explanation and description into “thinking” (analysis and deduction) forms. The achievement of this study is to adjust traditional forms of teaching to flexible methods and frameworks, as is the goal that as we, design education professionals, should discuss and make of.

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