

# An Analysis of "Digital Bauhaus"

## A Case Study of Teaching System of Basic Design Course

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**Abstract**—The teaching system of basic design focused on the "three major construction" has made an important contribution to the basic education of Chinese modern design. With the continuous development of society, especially in the 21st century based on information, the drawbacks of basic education focusing on the "three major construction" is increasingly prominent. This paper reviews Bauhaus basic course teaching that has have a profound impact on the world, analyzes its development trend, puts forward the concept of "digital Bauhaus" and makes an initial analysis of this concept.

**Keywords**—three major construction; Bauhaus; digital

### I. INTRODUCTION

Bauhaus, founded in 1919 in Germany, is the first institute built for the exploration and development of design education in the world. This is the institute founded by the famous German architect Gropius, which integrates Soviet constructivism, de stijl and design result of European countries in the early 20th century through the efforts of more than 10 years and improve and develop it. It greatly promoted the movement of European modernist design and thus became the headquarters of modernist design. Although the college has only gone through 14 years, but the modernist design style it created and the education framework of modern design it laid exert a huge and far-reaching impact on the development of industrial design in the world.

### II. THE ORIGIN OF "BASIC COURSE" TEACHING SYSTEM

Connection of China with Bauhaus can dates back to the 1920s. A group of Chinese overseas students brought Bauhaus ideas into the country. After they return home, they devote themselves to the creation and practice of arts and crafts, and have made great significance and influence in this field. In 1940, Sichuan Province Art College was established, and Li Youxing was appointed president. It regards design as the combination of "technology" and "art", and there is the sign of modernist design philosophy. "Composition" class and pattern lesson began to be used in teaching, especially the pattern basic course of Professor Li Youxing, which won the students praise. The new teaching model represents the formation of a new concept, and this new concept undoubtedly borrows part of the European design teaching model. Emphasis and cultivation of practical ability of

students run through the whole teaching process from beginning to end; the combination of technology and art is also paid attention to. It focuses on the training of basic knowledge and practical ability of students, which links with design and production and recognizes promoting effect of the art and design on production and even the national economic development. Central Academy of Craft Art was established in 1956, which makes it clear to take the concept of "combination of art and science" as the teaching guidelines. Especially the "pattern class" added by Lei Guiyuan later, laid a certain foundation for domestic industrial design. Since the 1980s, with the publication of works in Bauhaus period in China, the academic community has a deeper understanding and research, and approves the teaching and creative idea of Bauhaus. The domestic basic education system of design forms today's system as time passes.

Yin Dingbang et al of the Guangzhou Academy of Fine Arts takes the lead in introducing the teaching system of Western modern design content represented by "three major construction" in Japan and Hong Kong to the mainland, carries out the experimental teaching of composition course, and make roadshow in the major academy of art in China, which creates the new situation of China's modern design education. Shortly thereafter, Central Academy of Craft Art, Wuxi Institute of Light Industry and other colleges also introduced the modern design education content centering on "three major construction" into teaching. Since the introduction of "three major construction", the basic education of modern design in China gradually formed and separated from the influence of arts and crafts education centering on traditional handicraft.

From this we can see that China's basic teaching system of design art can be divided into two stages, the first stage is the arts and crafts education focusing on the "pattern" before reform and opening up, the second stage is the modern education focusing on "three major construction" after reform and opening up. Although there are many differences between the two in curriculum, they have played an important role in the different stages of China's design education, and their educational philosophy and objectives are derived from Bauhaus's basic education system. With the continuous development of society, especially in the information-based 21st century, negative effects of the basic

education based on "three major construction" are gradually recognized.

### III. THE ERA OPPORTUNITY OF DIGITAL BAUHAUS

Since 21st century, the impact of science and technology on the arts has become increasingly rapid. At present, we are in a new social period- the period of information explosion, which is also called post-industrial society. As the trend of the times, internationalization will definitely become the mainstream leading the world civilization in the first half of 21st century. Of course, art design in the information age will also be different from that of the industry civilization when Bauhaus lived. "In the postmodern society, one of the main features dominating the structural form of people's work is the ubiquity and randomness of new technologies," said French scholar Mark Digny, "from manual handling to machine work, to computers as tools, the rapid changes led individuals and groups to change themselves for adaptation to particular working environment ..... The design has become a more complex and multidisciplinary activity compared with that in the past. "In such design activities, the design is significantly different from traditional design activities. Because of the development of science and technology, tools of design have gradually become non-material, especially the popularity of computers and development of hardware making the original appearance, methods and means of design change fundamentally. Traditional design relies on the uninterrupted interaction between idea and manufacture, to test the design constantly through the model and ultimately completes the design. Therefore, operational ability becomes a major goal of cultivating design students, which is also one of the most important abilities of design students. In the information society, the whole process of design is comprehensive completed in the digital platform, no longer relying on the continuous interaction between idea and manufacture. Regardless of abstract, concrete and even the final products, all are directly completed by computers in the digital platform. The emergence of 3D printing technology in recent years fully explains the process of design in the information society. In the most advanced design office of developed countries, the rendering system of blueprints that has lasted for hundreds of years has already been discarded. The draftsman and stylist have disappeared from the modeling workshop and the research room, and to be exact, they have been replaced by the computer. All the images that need to be drawn can be completed by computers, whether whole or partial and whether facade, side or cross section. Thus, the arrival of the information age brings great changes to the design field, so the art and design education closely related to design areas is certainly no exception. From the end of the 20th century, various majors related to the art and design are founded in the domestic universities, which transport a large number of design talent to the society each year, showing a new scene of full prosperity. However, in the art of education behind the prosperity and development, with the set of curriculum system, especially the basic course of teaching did not keep up with the pace of the times. At present, there are more than one thousand colleges setting up the major of art design. Although the directions are different, the basic

courses are based on the "three major construction". Since the introduction of "three major construction" in the 1990s, its form has not been changed nearly three decades and all colleges mainly use the same model and same method to teach. In spite that the "three major construction" has played an important role in domestic basic education, the teaching method is finally found to have negative effects in many ways due to the mental slavery over a long time. For example, teacher pays too much attention to the results of tasks while pay little attention to the cultivation of students' creative thinking, so students spend the main energy in the production of homework for a long time and the results of tasks are nearly the same. Some art colleges try to break through the drawbacks of "three major construction" in the basic courses, but it is still difficult to get rid of the form. Some scholars set sights back on Bauhaus, holding that Bauhaus is not outdated at this stage ... For the design circle in China that develops modern design or design education on the road of industrialization or new industrialization, Bauhaus is still the basis that cannot be passed as well as the lesson to be deeply studied. The famous design theorist Wang Shouzhi has also said: "The basic curriculum of contemporary design education is largely influenced by the Bauhaus basic course and, many schools, has not been able to surmount it, or even did not reach the height of Bauhaus". From the current situation, it is inadvisable to completely copy the basic education system of Bauhaus or abolish the basic course based on "three major construction". Since the "three major construction" origins from the basic education system of Bauhaus, and the current information age provides a good opportunity, this paper presents the assumption of "digital Bauhaus"- that is, the construction system combining Bauhaus, "three major construction" and digital technology.

### IV. THE CHARACTERISTICS AND CONNOTATION OF DIGITAL BAUHAUS

The so-called digital Bauhaus operates the basic course based on "three major construction" on the digital platform when implemented in the current basic teaching. The "three major construction" curriculum here is skeletal framework of the whole system, teaching philosophy of Bauhaus basic course is the spiritual connotation of the whole system and the digital platform is the accomplishing means of the whole system.

The important teacher of the basic class of Bauhaus, Kandinsky predicted: "Art in the future must be a combination of multi-media, no longer the performance of a single media." Compared with the traditional basic curriculum teaching, digital Bauhaus teaching system has obvious differences and advantages. Judging from the implementation platform, the means of digital platform not only can realize the traditional hand-painted process and reduce the error, but also saves plenty of production time compared with traditional manual ways. The author takes the emission composition of plane composition as an example. the traditional drawing process is to first draw the outline on a whiteboard with drawing tools and pencils, then re-draw the line with drawing pens and a ruler, and finally fill it with

gouache paintings. Because of the visual complexity of emission composition, students usually spend a lot of effort and time on drawing. Besides, there will be many problems like perspective error, improper color, and inability to modify in drawing process. The digital platform will provide a new workflow, with the traditional drawing tools being replaced by computers. The designers can input design pattern or the required specific data in the software, and then the computer will be able to provide accurate data processing, automatic perspective view, and rich color scheme. It ensures the accuracy of drawing, reduces the error of hand drawing, saves the drawing time, and provides the convenient functions including reversible modification, preservation and duplication, which can help designers make up for the inadequacies, and provide people with rich choice. Even if designers want to pursue the effect of traditional hand-painted, increasingly mature technology and gradually popular tablet in recent years have solve this problem perfectly. It should be noted that, with the support of the digital platform, the operational ability of students is not reduced, while operational ability itself is actually reflected in the using process of digital technology. The comparison between digital platform and traditional platform is shown in the "Table I".

TABLE I. COMPARISON BETWEEN DIGITAL PLATFORM AND TRADITIONAL PLATFORM

	Traditional Platform	Digital Platform
<i>data collection</i>	Refer to printing books, mainly manual records and text materials	Refer to digital books, mainly download record and image material gotten by using cell phones or digital cameras
<i>design ideas</i>	Express with sketches by using traditional hand-painted way	Use digital panel and professional software (Photoshop, Coreldraw and 3D Max, etc.)
<i>design analysis</i>	arrange sketches, analysis, compare, and synthesize various plans before forming the final draft	Use of professional software, analyze and compare from different perspectives and different colors
<i>design process</i>	implement in traditional hand-painted or model production methods and the process is irreversible	Use two-dimensional or three-dimensional software to adjust the shape, color or material at any time and the process is reversible
<i>sample test</i>	Manufacture samples and use test equipment for testing	The digital model is tested in a virtual environment
<i>batch production</i>	Convert the sample into construction drawings (flat, vertical and planing)	Directly connect the relevant digital equipment for production

The teaching system of the Bauhaus period is "factory apprenticeship". Students are called "apprentices" and teachers are called "masters". Apprentices should learn from two masters teaching "technology" and "form" respectively in the learning process at the same time. "Factory apprenticeship" implements "combination of art and technology ". Today, technology that students of Bauhaus should master has been replaced by digital technology. However, the digital Bauhaus is not a simple combination of

"three major construction" and computer. The concept connotation of teaching is the deep meaning behind the basic course of Bauhaus. The real purpose of the Bauhaus basic course is to stimulate students' creativity through theoretical education, to lay a solid foundation for further professional design.

## V. THE IMPLEMENTATION WAY OF DIGITAL BAUHAUS

Digital Bauhaus is the organic integration of Bauhaus's educational philosophy, the curriculum framework based on three major constructions and the digital technology, which needs the joint efforts of schools and teachers. As the knowledge inheritance of human society, school education has the feature of the social simulation, and has the independent feature detached from the society in a certain degree at the same time. It has the advantage of influencing academic atmosphere and group environment, which plays an important role in the formation of students' personality. It is also the main place for cultivating creative design talents for the society. School environment and atmosphere play a subtle role for students, so schools should have the imaginary space that encourages the coexistence of original and inspiration and logical thinking. For example: rich extracurricular activities students have in Bauhaus period and a variety of academic lectures organized in "Bauhaus week" strengthen the cognition of students to the new ideas and new concepts; on the other hand it also embodies the guiding ideology of "new unification of art and technology of Bauhaus in multi-side and multi-level.

Today, there are nearly thousands of colleges setting up the design major, but qualified design talents and professional design teams are quite scarce. The reason for this situation may be multifaceted while school education has an inescapable responsibility. Modern educational theory holds that the curriculum is always at the center of any educational system, so the education policy and training objectives of schools are concentrated and specifically embodied in the curriculum. At present, courses of design major in most domestic colleges begins with sketch and color, and then is the course of three major construction, and professional software or other digital technology are generally placed after the basic course. As mentioned above, this is bound to cause separation between courses, and students will spend more energy in the production, so that teachers and students pay more attention to the results rather than the process itself, and thus the creativity of students cannot be excited. Therefore, schools should adjust the order of the courses based on different professional emphasis. For instance, they can start relative professional software courses before "construction" course to integrate the application of professional software into study and training of "construction" course, aiming to extricate students from the previous heavy manual work of "three major construction" course, focus on cultivating students' creativity and skilled digital technology and lay a solid foundation for major courses in senior grades.

Teachers are the key factor of digital Bauhaus. First, the digital platform facilitates the teaching of content and conversion of teacher-student roles. On the one hand, digital

technology share the burden of student production, which provides more time for students to make creative thinking; on the other hand, digital technology also provides students with more channels to obtain professional knowledge, so the authority of classroom knowledge is eliminated. This also encourages teachers to change the teaching methods and organizational forms. In class, the students are transformed from the learner who are instilled knowledge to the participant who resolves the task while the teachers changes from the authority who impart knowledge to the organizer of the classroom, the provider of projects, and the participant of opinions, to transfer the focus of class from conferring knowledge to exploratory learning that solves practical problems. In this process, digital technology not only serves as a means that transmit information and complete the work, but also promote students' knowledge construction through forms of dialogue, co-exploration and reflection and so on. Second, digital technology can be expressed in a variety of media and teachers can use it to present genuine and credible materials to participate in more challenging and complex tasks as well as carry out the design case analysis and discussion from multiple angles, so that students can be attracted to participate in them. For example, color composition course makes students have a vague cognition of the principle of "colors solid" because of various reasons in the previous teaching. Teachers can show to student virtually in multi-angle by using digital technology and organize students to use digital technology to restore the model of colors solid, so that students can form a comprehensive understanding of the colors solid naturally in the process of participation. Another example is the teacher can organize students to observe and seek the construction in nature and life, using mobile phone shooting to make a real record, so that students can understand the construction is around everyone, and closely related to our lives through observation. Finally, in the teaching of basic course, the cultivation of students' creativity should be an important issue throughout the subject. Teaching in Bauhaus period attached much importance to this point. "It's a fundamental question of design education to shape a student with rich personality into a person with comprehensive and complete creative ability", says Eaton, a teacher who argues that teaching should "release the creative potential sleeping in every student's mind firstly". Professional teachers should pay special attention to the cultivation of students' creativity to stimulate students' enthusiasm for the original. They should encourage students to imagine boldly, and develop their fine quality to continuously surmount conventions and discover new possibilities through the innovation of subject. Teachers should emphasize the experimental and open nature of the courses to encourage students to put forward different design ideas.

## VI. CONCLUSION

Under different social conditions and historical conditions, how can the "art" education be effectively unified with the "technology" education? Up to now, the educational methods and curriculum that can perfectly suit the development of modern art are far from formation. In today's information age, the drawbacks of basic course education

focusing on "three major construction" become increasingly prominent, so how to construct a more rational basic curriculum teaching system still need us to make deeper discussion. It is a long time since Bauhaus period, but the basic teaching system and teaching methods focusing on cultivation of creativity he initiated bring us important inspiration. Is assumption of digital Bauhaus also the case?

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