

Explore the Functional Beauty of Chinese Traditional Farm Tools

Yingdong Wu *

PhD candidate at GRADUATE UNIVERSITY OF MONGOLIA, Art studies, Ulan Bator, MONGOLIA

* Corresponding author Email: 94415907@qq.com

Abstract: As a traditional agricultural society in ancient China, farm tools and instruments have been an indispensable part of China's agricultural production since ancient times, and their production development is an important symbol of the development of social productive forces. Chinese traditional farm tools have typical characteristics of The Times and regional characteristics. Excavating and sorting out these historical elements and cultural characteristics and integrating them into modern industrial design can not only promote traditional culture, but also make these traditional elements relate to modern life and reflect The Times value of traditional culture. The simple functional aesthetics embodied in traditional farm tools is the technology and experience accumulated by working people in long-term production practice, and has the characteristics of "practical, simple, flexible and environmental protection". Starting from the development history of farm tools, this paper combs the significance of pragmatism in traditional farm tools, explores the functional beauty of Chinese traditional farm tools and the theoretical and practical value of functional beauty in traditional farm tools. Hope to provide some references for the protection and inheritance of Chinese traditional farm tools.

Keywords: Traditional Tools; Functional Beauty; Aesthetic Value; Practice.

1. Introduction

The appearance of farm tools marked the beginning of the process of agricultural production. The earliest farming tools were stone tools created by people using manual clearing of wasteland and planting crops. The farm tools in the Shang Dynasty were mainly made of stone and wood. By the Zhou Dynasty, copper farming tools began to appear; During the Spring and Autumn Period, iron production technology was improved, and iron farming tools gradually replaced bronze and wooden farming tools. During the Han Dynasty, a large number of iron farm tools were produced, such as plows, harrows, sickles, hoes, etc. In Tang and Song dynasties, agricultural production was further improved, and farm tools were gradually standardized and specialized. In Ming and Qing dynasties, the production of farm tools had formed a certain scale, and there were workshops and shops specializing in the production of farm tools.

Chinese traditional farming tools not only reflect the development level of ancient Chinese agricultural civilization, but also an important part of Chinese traditional culture. These tools have been baptized for thousands of years, carrying the historical memory of Chinese farmers' farming and production and the footprints of human civilization development. For example, the plow in farm tools, which began to appear in the late Neolithic Age, has undergone several improvements and evolution until modern times, and is one of the indispensable tools for rural laborers. There are also wood carving farm tools, which is widely spread in southern China, is regarded as a folk art form, its unique shape, smooth lines, rich in strong national cultural atmosphere, and has become an important part of traditional Chinese culture.

2. The Embodiment of Functional Beauty in Chinese Traditional Farm Tools

2.1. Functional Beauty Thought in Ancient China

In the Spring and Autumn Period of China, Wu Ju of the State of Chu once proposed that beauty not only lies in the pleasure of the senses and the feeling of visual forms, but also is subject to the utilitarian effect and ethical concepts of society. "Xunzi Zhengming" also has a statement, that is, "pay attention to the function of people and objects, the core of craft creation is to make things serve people and be used by people." In fact, the initial appearance of tools must be for practical purposes, and then through long-term development and progress, gradually add aesthetic consciousness. Taking stone design as an example, the stone tools of Beijing people seem to have not yet been shaped, but to the caveman, not only the stone tools have been very uniform and complete, but also there are polished, drilled, and even engraved vessels. In the material production activities, our ancestors first met the needs of daily use, that is, the appearance of stone tools is also the product of material production, but at the same time, a series of upgrades and transformations on the use of tools and regular physical feelings developed into grinding stone tools, which not only made the utensils more convenient and less labor. At the same time, it also produced a series of aesthetic and formal requirements. Therefore, the beauty of function is also the beauty of purport reflected by the suitable use of objects and the beauty of external form reflected by the function of objects.

Tiangong Kaiwu, written by Song Yingxing in the Ming Dynasty, recorded many achievements in ancient agriculture and handicraft technology. In the design of agricultural tools, such as the drum of water diversion, water truck, plow, etc.,

are based on the effect as the main design principle, to save labor, save time and labor as the standard, pay attention to efficiency and farmers' income. In the textile design and technology also recorded the structure of complex and precise flower floor machine. Song Yingxing pays attention to the reality of people's livelihood, and takes daily use as the starting point of creation activities, which is a simple functional aesthetic concept that pays attention to people's livelihood. Li Yu, a design thinker at the end of Ming Dynasty and the beginning of Qing Dynasty, also had a strong sense of practical aesthetics. In his masterpiece "Leisure Love I Mail", Li Yu repeatedly emphasized the importance of function and the appropriateness and use of daily necessities. "Where people make things, they can be prepared by others, and their families can use them." Like Mozi and Han Feizi, he used the Angle used by the people's day to make a difference, and opposed the use of elaborate but impractical artifacts.

2.2. Functional Beauty in Traditional Farm Tools

In the history of Western design, the 19th century architect Louis. Sullivan proposed "form follows function", that is, the "beauty" of a product needs the blessing of a specific environment and content, to fit the function. In short, functional beauty is a form of beauty based on the creation of product functions. Chinese traditional farm tools embody a simple functional aesthetics, its shape and characteristics reflect the technology and experience accumulated by Chinese farmers in long-term production practice, with simple, practical, flexible and other characteristics. The rich shapes, materials, techniques and methods of use of farm tools reflect the strong local cultural atmosphere, represent the local customs and customs, and have the local aesthetic orientation of the region. These farm implements are both practical tools and works of art. Their practicality and artistry blend with each other, reflecting the wisdom of ancient creation, and together constitute an important part of ancient Chinese agricultural culture.

The shape of traditional Chinese traditional farming tools is simple and practical, reflecting a simple aesthetic feeling of "form follows function". For example, the most common farm tool, the plough (As shown in Figure 1, the main function of the plow is to break soil, turn soil, and open trenches), with its curved plate and wooden or iron knife, precisely controls the depth and Angle of the soil, so that crops can be grown in the best conditions. At the same time, this shape also gives people a beautiful and smooth, simple and generous feeling, like a smart shark, leaving beautiful curves in the field.

The labor-saving design of Chinese traditional farm tools has always been pursued by craftsmen. For example, agricultural tools used in mountainous and hilly areas are more lightweight and easy to transfer compared with plain areas. Because the ground is uneven, the plow requires flexible rotation, so the structure of the plow is simple and small; In plain area, the terrain is flat and the stability is high, so the plow needs a larger rotation space during cultivation, so the structure of the plow is more complicated.

"Material beauty" is an important condition for the realization of the production process, and "dexterity" is a necessary condition for the perfection of the process. The ancients chose materials and processes to consider economy and practicality, and often selected relatively cheap materials on the spot, such as locally sourced wood, bamboo, stone, iron and so on. These materials have been processed and processed

by craftsmen, and gradually become practical and beautiful tools. Wooden farming tools have a unique beauty in color, texture and other aspects, while metal farming tools have more expressive force because of the brightness and plasticity of the material. Although these rustic farm tools do not have gorgeous decoration and precious materials, they show beauty from another Angle, which is the beauty of simple pragmatism.

3. The Theoretical Value of Functional Beauty in Chinese Traditional Farm Tools

Human design starts from satisfying people's basic needs. When the underlying needs are constantly satisfied, it will eventually rise to emotional needs, and the development of design begins to focus on the meaning of comfortable life. functional aesthetics embodies the material and spiritual needs of human and society, and is the unity of practicality and aesthetics. The simple functional aesthetics embodied by Chinese traditional agricultural implements embodies the aesthetic value and humanistic spirit of traditional Chinese culture, reflects the evolution of agricultural productivity level and social system in different periods, as well as the level of science and technology and scientific thought in ancient China. Although the ancient level of science and technology is relatively backward, but in the manufacturing of farm tools, ancient Chinese people have created many unique processes and methods, many farm tools design also contains certain scientific principles, such as the shape of the plow bottom design, the Angle of the hoe, etc., are the scientific and technological achievements summarized after long-term practice. Although modern agriculture and mechanized production have replaced the use of traditional farming tools, these tools are still an important part of Chinese agricultural culture, in a sense, these tools are a concrete expression of Chinese farmers' understanding of the natural world and respect for life. In addition, the traditional Chinese farm tools have typical regional characteristics and characteristics of The Times, and the design ideas and cultural elements contained in them will also provide creative inspiration for contemporary design.

3.1. Function First Design Concept

As a practical tool of traditional farm tools, the functional elements are always the first. The structural modeling of agricultural tools must first meet the function, and at the same time meet the practical requirements of convenient processing and convenient operation. For example, Drum cart (an animal drawn seed plough), Drum cart (as shown in Figure 2), the overall structure is compact, the structure and Angle of the columbine are carefully designed, and the size of the hole inside the columbine is also designed according to the size of the seeds that were often cultivated at that time. In the process of sowing Drum cart, the seeds flow out evenly through the drain pipe into the soil layer due to constant shaking. A successful farm tool design starts from the desire to survive, after repeated modification and improvement, and reaches a higher level under the material conditions at that time. The design of agricultural tools is to meet the basic needs of human design, although these designs may be very simple in technology, but the practical value is very high. For example, the material of the sickle handle is mostly rough wood to increase friction, and the wood has the effect of water

absorption, and the sickle handle is easier to be held when the palm sweats, fully realizing the practical needs.



Figure 1. Plough

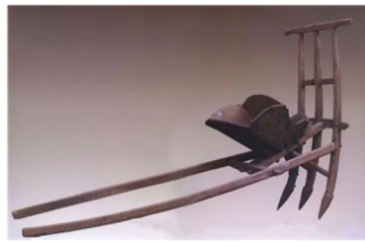


Figure 2. Drum cart

3.2. Principles of Local Sourcing

In the process of creation, human beings have never been free from the influence of nature, and it is impossible for people to live apart from the natural environment. Since ancient times, China has pursued the spiritual realm of "harmony between nature and man" and paid attention to conforming to nature and the harmony between man and nature. In the agriculture-oriented era, the importance of farm tools to farmers is self-evident, and the selection of farm tools materials generally takes into account the impact of the local environment. For example, depending on the wood grown locally, the wood used in farm tools will not be exactly the same everywhere.

3.3. Simple Human-oriented View of Creation

Xunzi, a Chinese Confucianist, advocated a positive attitude to deal with the relationship and contradiction between people and things. The people-oriented thought reflects the humanization of natural objects, according to the functional needs of people, the natural materials are processed manually to make agricultural tools that can be used. The production of farm tools should meet people's adaptation and needs to the greatest extent. For example, it is mentioned in the Book of Kaogong that the objects should be designed according to the size of "eight feet high" (eight feet high is about 160 cm). For example, the design of "plough", which takes the height of the person as the overall size measurement standard, meets the requirements of ergonomics we say today, so that people who work for a long time do not have to bend too much, reduce the fatigue of farmers when ploughing, and improve work efficiency; The handrail design of the plow has been polished and is more compatible with the human hand, which is an ancient humanized design. Another example is the design of the pole (a traditional human transportation tool), the length of the pole is designed according to the length of the human arm, when the two ends are equal in weight, the hands just grasp the weight at both ends, and the contact point between the person and the pole is in the middle of the pole.

4. The Practical Value of Functional Beauty in Chinese Traditional Farm Tools

Chinese traditional farm tools are the valuable experience of farmers in production practice, the object and result of their transforming nature and utilizing natural labor practice. As a form of beauty, the functional beauty of farm tools has a direct and close relationship with human production practice. For example, the hoe commonly used by farmers in farming, it uses the lever labor-saving principle, combined with the sharp edge and weight of the hoe, so that the work of loosening,

turning soil and weeding becomes more efficient and easy. Most users do not know the principle of leverage, but they will use this farm tool more skillfully according to their accumulated labor experience. Traditional farm implements generally have the characteristics of economic, environmental protection and strong adaptability. For example, the ancient Chinese farming tool, the persimmon hoe, uses a manual drive to penetrate deep into the soil, improve soil ventilation and water permeability, and is mainly used for weeding and loosening. Its shape is similar to that of a canoe, and the hoe is partially curved, allowing it to penetrate deep into the soil and avoid damaging the roots of crops. The persimmon hoe is characterized by simple operation, high flexibility and strong adaptability, and is widely used in Yunnan, Guangxi and other places, and is considered to be a very practical farming tool.

Traditional farm tools are summarized through the practice of many generations, through continuous improvement and improvement, and in line with the ecological environment and production requirements of the region, it has undergone a development process from simple and rough to complex and sophisticated, and finally formed a wide variety of agricultural tools with different functions, which played an important role in ancient agricultural production. For example, the design of the bellows, according to the different density of grains and impurities, the impurities are separated from the grain by the wind, such as the lightest shell out from the side, the slightly heavier shell slides out from the back of the bellows, and the obtained grain slides out from the front outlet. It seems to be a traditional farm tool, but it has learned to use the different density to design its structure. As well as the design principle of the stone mill, the stone mill grinds corn, soybeans and other grains through the upper and lower grinding disc and the grinding core, and the grinding disc has uneven teeth, which is conducive to the design effect of friction. All in all, although the production process of traditional agricultural tools is more traditional, but also on the basis of traditional friction, lever principle and according to the density of different design of agricultural tools, in the traditional agricultural tools present scientific at the same time, not only can save manpower and ensure quality and efficiency, highlighting human wisdom.

5. Conclusion

Chinese traditional farm tools contain rich design ideas, as a basic survival tool, its usability is the most important, while conveying a simple and unadorned beauty. This beauty is the true reflection and embodiment of the inner spirit of people, because these farm implements are part of the life of people at that time, and are the accumulation of the long-term life experience of the working people. Its production and design are firstly for practical purposes, and then gradually form aesthetic effects after long-term improvement and development. Nowadays, traditional farm tools are more of a cultural symbol. Applying the cultural elements of traditional farming tools to the design of modern cultural products, making them play a new role in modern design, can increase the cultural connotation and uniqueness of these products, and further enhance their market competitiveness and attractiveness. The actual function of traditional farming tools can also provide useful inspiration and reference for modern industrial design, and the redesign and innovation of Chinese traditional farming tools can promote the inheritance and development of traditional farming skills. At the same time, traditional farming tools pay attention to the ecological

environment and resource conservation, and can also bring new development ideas for modern industrial design. Re-examine the traditional design culture, the traditional farm tools people-oriented, the unity of heaven and man, harmony for the beauty of the design idea, is also an indispensable treasure of our design today, worthy of our inheritance and development.

References

- [1] Zhou Xin, History of Agricultural Tools Development in China, Shandong Science and Technology Press, 2005.
- [2] Zhang Boying, Analysis of Functional Beauty, Theory and Modernization, 1999.
- [3] Zhu Sanyi, on the Application of Philosophy in the Design of Traditional Chinese Agricultural Tools, Journal of Minnan Normal University, 2014.
- [4] Li Chaoyan, Qin Juying, Research on the design aesthetics of rice farming tools in Jiangnan Area -- A case study of tillage, Design, 2018.
- [5] Miao Qiyu, Qi Min Elements (M). Background: China International Broadcasting Press, 2011.
- [6] Yang Guobin, Application Research of Functional Beauty in Modern Design, Grand View, 2018.
- [7] (Yuan) by Wang Zhen; Wang Yuhu School, Wang Zhennongshu [M], Agriculture Publishing House.1981.
- [8] Ploughing and Sowing, a Brief compilation of the History of Ancient Agricultural Tools in China [M], Agriculture Press, 1981.
- [9] Wang Jian, An Exploration on the historical Evolution of farming culture of Ethnic minorities in Southwest China , Guizhou Ethnic Studies,2019(03).
- [10] Zeng Lei, LUO Jieru, YUAN Jinghan, Aesthetic Research in Design: Functional Beauty and Formal Beauty , Design, 2019 (17).
- [11] Liu Xiangbo, on the "Functionalism" in Pre-Qin craft creation Thought ,Art and Design (Theory),2008(01).
- [12] Hang Jian, History of Chinese Craft Aesthetics [M],People's Fine Arts Publishing House, 2007.
- [13] Xing Qinghua, Design Aesthetics [M], Southeast University Press, 2011.
- [14] Song Yingxing, Tiangong Kaiwu, Guangxi People's Publishing House, 1976.
- [15] Wen Renjun, Kao Gong Ji, Beijing. International Broadcasting Press, 2011.
- [16] Wang Xu, On the Beauty of Functions in Ancient Chinese Creation Activities, Literature and Art Observation, 2022.
- [17] Xu Guangqi, The First and Second volumes of Agricultural Administration, Zhonghua Book Company,1956.
- [18] Ministry of Agriculture of the People's Republic of China, Agricultural Tools Atlas, Vol. 1, 2, 3, 4, Popular Books Publishing House,1958.
- [19] Zhang Lijun , Hu Zexue, Illustration of Chinese Traditional Farm Tools, Academy Publishing House,2009.
- [20] Xu Guangqi, The First and Second volumes of Agricultural Administration, Zhonghua Book Company, 1956.20. Liu Yongli, Chinese Folklore -- Henan Folklore, Gansu People's Publishing House, 2004.
- [21] Reference Materials for Agricultural Production Tools, Shanghai People's Publishing House,1972.
- [22] Ploughing and Weaving Map of Ancient China, China Agriculture Museum, China Agriculture Press,1995.
- [23] Wang Hu, Research on Chinese Traditional Appliance Design (First volume) (Second volume). Nanjing, Jiangsu Fine Arts Publishing House, 2006.
- [24] Hu Fei, Exploration of Chinese Traditional Design Thinking Mode, Beijing, China Architecture and Building Press, 2007.
- [25] Wu Weijun, The Evolution and Enlightenment of the Hoe, Journal of Hunan City University, 2003.