

On the archaeology of traditional industry

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Abstract

The term “archaeology of traditional industry” refers to the archaeological researches on all of the processing, manufacturing and mining industries before the occurrence of the modern Industrial Revolution. The putting forward of this concept has profound backgrounds of theory and time. The traditional industry had very diversified specialties, which could be classified into 25 categories. The researches on the archaeology of traditional industry mainly include the materials, tools and apparatuses, techniques and operation sequences, products, the circulation and consumption of products, producers, methods of producing and managing, industrial distribution and structure, social economy and social culture, in total the contents of these ten aspects; the research methods mainly include basic archaeological methods, multi-disciplinary cooperative researches and multi-perspective researches, etc.

Keywords: Archaeology; handicraft–China; theories and methods; traditional industry

Introduction

The “traditional industry” is the general term referring to all of the processing, manufacturing and mining industries before the occurrence of the modern Industrial Revolution (or the “pre-industrial industries”). It was one of the two main social production divisions since the emergence of the mankind (the other is agriculture including animal husbandry). Because the studying objects of archaeology are physical materials and most of these physical materials are products of traditional industry and/or objects directly related to traditional industry (handicrafts), and many remains are also related to the handicraft activities, modern archaeology has had close relationship with the handicrafts especially their products when it was given birth. However, the products of handicrafts are only the results of the handicraft activities and the archaeological researches on them are not and never can be equal to the archaeological researches on the handicrafts at all. The so-called archaeology of handicrafts (Archaeology of Traditional Industry) refers to archaeological researches

on all of the processing, manufacturing and mining industries before the occurrence of the modern Industrial Revolution.

That we define the Archaeology of Traditional Industry as “archaeological researches on all of the processing, manufacturing and mining industries” before modern Industrial Revolution has two reasons. The first is that its research objects include not only the processing and manufacturing industries and other handicrafts, but also the industrial activities traditionally excluded from “handicrafts”, such as mining and so on, therefore, the “archaeology of handicrafts” is not a sufficient term. Moreover, before the modern Industrial Revolution, bronze metallurgy, iron industry, salt-making and some other industries had developed into large-scale workshop productions. The second is that in the 1960s, the concept of “Industrial Archaeology” was put forward in Europe, which is defined as “field of study concerned with investigating, surveying, recording, and in some cases, with preserving industrial monuments (Buchanan 1970)”. To distinguish our archaeological researches on the processing, manufacturing and mining industries before the Industrial Revolution from the “Industrial Archaeology” aiming at the industrial monuments (which are the remains of the modern industry) since the Industrial Revolution in the 18th century, we use the term “Archaeology of Traditional Industry”.

The backgrounds of theory and time for the concept of “archaeology of traditional industry”

The putting forward of the disciplinary concept of “archaeology of traditional industry” has profound backgrounds of theory and time.

The background of theory has two aspects. The first, the traditional industry is one of the two main divisions of social production and one of the three social economic divisions in the ancient times and also one of the oldest industries in the human history; it is not only the main producer of the means of production but also that of the means of consumption, so it can be seen as one of the most important economic divisions in the ancient societies. Therefore, the research on the traditional industry is unquestionably one of the basic contents of the researches on the social productions of ancient societies. According to the viewpoints of historic materialism, social production is the material foundation and basic motivation of the survival of the mankind and the development of the societies; the development of productive forces is firstly started from the development of tools of production which are all products of the traditional industry; the

scientific and technical progresses, inventions and creations all happened and achieved during the practices and developments of traditional industry; the progresses of techniques and productions of traditional industry directly or indirectly stimulated the development of the production and economy of the whole ancient society; traditional industry, moreover, constantly provided physical conditions for all of the fields of the social life. In general, no economic activities and social lives could develop without traditional industry and its products; the traditional industry and its products are not only the most important direct embodiment of the material civilization but also closely related to spiritual and political civilizations. Obviously, for archaeology whose tasks are the researches on the histories and their development rules of ancient human societies, neither the researches on the material cultures and spiritual cultures nor the researches on the economic lives and social lives can be done without the researches on the social production and, of course, the researches on the traditional industry.

The second, the archaeology has unique advantages on the researches on the traditional industries. The cultural relics are one of the basic components of the objects of archaeology and all of the cultural relics, from stone implements, bone, horn and shell objects and potteries to bronzes, iron implements and gold and silver wares, or from tools, weapons and utensils for daily use to ornaments and religious implements, are intentionally manufactured or processed by the human beings; in some senses, all of them are products of traditional industry. In the cultural remains, there are also rather large part are that of traditional industry, such as lithic workshops, pottery kilns, stopes, foundry workshops, salt-making workshops, paper mills, breweries and distilleries, and so on. Obviously, the modern archaeology won't work without the researches on the traditional industry and its products. The excavations and studies of the remains and relics of traditional industry are unquestionably the direct archaeology of traditional industry; even the researches and recognitions on the other cultural relics are going to trace back to their manufacturing and producing, or the traditional industry. Meanwhile, as the objects of archaeological researches, these remains and relics, no matter that of traditional industry or its products, all have definite spatial and temporal positions; through the systematic and synthetic archaeological researches, their productive techniques and operation sequences can be revealed and restored. Therefore, compared to the textual history, the archaeological researches on the traditional industry have unique disciplinary advantages.

The background of time has the following three aspects.

First, the background of the development of historiography. The historiography has long-standing history and tradition and the studies on the ancient history have splendid achievements. However, compared to the researches on the histories of politics, thoughts, historic figures and so on, the researches on the traditional

industry are insufficient, let alone the comprehensive researches on it as an industrial system, so the researches on the traditional industry need to be strengthened.

Second, the background of the development of archaeology. The products of traditional industry is always one of the main objects of the researches of modern archaeology, and many of the remains of the traditional industries are also discovered and studied, but the researches on the productions and economy of the traditional industry are insufficient yet, especially the systematic researches on the traditional industry as a whole or its categories and their relationships with the politics, economy and culture of their corresponding societies, all of which have not been paid enough attentions. Because of these situations, the position and functions of the archaeological researches on the traditional industry in the entire archaeology is severely weakened and this insufficiency has become an obstacle against the construction and development of archaeology as a discipline. Therefore, the putting forward of the concept of "archaeology of traditional industry" and the establishing and perfecting of its theories and methods as well as strengthening its practices, are necessary at present.

Third, the background of the development of cultural heritage cause. The cultural heritage cause focused on the preservation, research, display and utilization of the cultural heritages, especially the industrial heritages, is rapidly developing in the whole world. The industrial heritages are not merely that of the modern industries but also including that of the ancient industries or the categories of the traditional industry. The intangible cultural heritages included in the handicrafts and with properties and features of production are also closely related to the traditional industry. Therefore, the archaeology of traditional industry has positive promoting function to the cultural heritage cause.

The research subjects of the archaeology of traditional industry

Traditional industry is a complicated industrial system and the archaeology of traditional industry is also a complicated research system.

1. The main categories of the traditional industry

Archaeology of traditional industry is firstly the archaeological researches on the categories of the traditional industry and the traditional industry has many categories. Based on the archaeological discoveries and the textual records in the historic literatures, the traditional industry before the modern Industrial Revolution included the following 25 categories.

(1) Lithic industry; (2) woodworking; (3) bone, horn and shell processing; (4) ceramic baking; (5) bronze smelting and foundry; (6) iron industry; (7) coin minting; (8) gold and silver processing; (9) lacquering; (10) glassmaking; (11) textile industry; (12) leather industry; (13) costume industry; (14) salt making; (15) brewing

and distilling; (16) sugar industry; (17) tea industry; (18) oil industry; (19) vehicle and vessel manufacturing; (20) papermaking; (21) printing; (22) stationery industry; (23) gunpowder industry; (24) weaving industry and (25) mining.

What we must make clear here are: first, the categories mentioned above are neither absolute nor distinct; many categories had tight relationships, such as the bronze smelting and foundry and iron industry had direct relationship with mining, textile industry had direct relationship with costume industry, and so on; second, the categories of traditional industry had tight relationships with other social economic divisions; for example, the brewing and distilling industries, sugar industry, tea industry and weaving industry were directly related to agriculture, vehicle and vessel manufacturing industry had relationship with traffic and communication, coin minting had close relationship with commerce, and so on; third, besides of the above-mentioned industries, there were also many other processing and manufacturing activities in the ancient times, such as grain processing and food processing, etc., some of which even had rather large scale in some places and some periods, but they were either a part or a step of other categories or daily lives or have not developed into an independent category, so we did not list them as categories of traditional industry; fourth, the categories are varying by the research angles, such as the “weapon industry”, “farming tool industry”, “non-staple food processing industry”, etc.

2. The main subjects of archaeology of traditional industry

The traditional industry had diversified categories, the raw materials, production techniques and modes, products and their circulation and consumptions of which are also sharply different from each other. Therefore, the main subjects of the traditional industry would include the following contents:

(1) The research on the raw materials. Every category of traditional industry needs raw materials, even the mining needs the resources; therefore, the raw materials is one of the basic subjects of archaeology of traditional industry. The different categories had different raw materials; the different natural environments provided different materials for the categories. Therefore, the research on the raw materials is mainly exploring the types, origins and resources of the raw materials of various categories of traditional industry, by which we can understand and detect the emergence, development and distribution of a given category of traditional industry and the interrelationship among different categories.

(2) The researches on the tools and facilities for the productions. No category of traditional industry could run without some kinds of tools and/or facilities. The tools has very diversified types, which could be as simple as axes, adzes, saws, chisels and as complicated as looms, bellows, winches and other classical machines; the facilities for the productions are mainly referred to kilns, furnaces and other unmovable facilities, molds, models and other

movable accessories are also included. The researches on them are mainly aimed at the types, assemblages, structures, functions and using methods of the tools and the shapes, structures, building methods and functions of the facilities. The researches on the tools and facilities for the productions are directly meaningful for the techniques, operation sequences, production mode, development level and scale of a category of the traditional industry.

(3) The researches on the techniques and operation sequences. They are the foci of the traditional industry, because only through them could the raw materials become products. The techniques refer to the methods and means, including tools and facilities; operation sequences refer to the process of the production, which linked up the methods and means together into a whole. Different categories of traditional industry had different techniques and operation sequences; meanwhile, the techniques of different categories were influencing and promoting each other and some techniques could be referred and shared among different categories.

(4) The researches on the products. Products are the end of the operation sequence and the result of the production and goal of the traditional industry. The researches on the products are mainly that on their types, natures, qualities and quantities, which are helpful for understanding the development level and social significance of the categories of the traditional industry which produced them.

(5) The researches on the circulation and consumption of the products. These researches are mainly aimed at the approaches for the products to enter the society (exchanging, allocating, distributing, etc.), their using ways, consumption scopes and consumer groups, which are a kind of organic extension of the traditional industry. This is because that the consumption of the products is the final social intention of the traditional industry and the circulation is the approach and process, both of which changed with the times and regions as well as the categories of the traditional industry; the consumption and circulation of the products are tightly related to the nature of the traditional industry and reacting on the traditional industry itself, therefore they are important steps for understanding the relationships among different categories of the traditional industry and the position and roles of the traditional industry in the social productions and social lives.

(6) The research on the workers. This refers mainly to the researches on the craftsmen and labors but also includes the managers and attendants. The main research subjects are the statuses, origins, ages, genders, skills, living conditions of the workers and their interrelationships. Workers is the subject of the production relationship in the traditional industry, therefore, the researches on the development situation and nature of the traditional industry and even the whole structure of the social organization cannot be done without the researches on the workers of the traditional industry.

(7) The researches on the management of the

production. This refers to the modes of the operating and managing of the production, or the nature of the production of the traditional industry and its ownership, such as domestic handicrafts, individual handicrafts, private handicrafts, official handicrafts, or the issues on the production relations, such as family production, workshop production, factory production, and so on. These issues include the multiple operating and managing ways coexisting in the same category of the traditional industry as well as the differences among the operating and managing ways in different categories of the traditional industry. This is very important for understanding the development situation of the traditional industry and exploring the motivations of the development; meanwhile, these issues are important for understanding the significances and roles of the traditional industry in the social economy and even the social development, as well as observing the patterns of the social economy and the structures of the social organizations.

(8) The researches on the distribution and structure of the traditional industry. The former refers to the spatial distribution of a category of the traditional industry during a given historic period, and the latter refers to the composition of the categories of the traditional industry and their interrelationships during a given historic period and within a given spatial domain. The researches on the distribution and structure of the traditional industry based on the researches on the individual categories of the traditional industry are the basic approaches to understand and recognize the temporal and local features of the traditional industry and the interrelationships and influences on each other among the different categories.

(9) The researches on the social economy. This refers to the researches on the traditional industry against the whole background of the social economy, which are the interactions and interrelationships among the traditional industry and the agriculture and commerce. This is because the emergence and development of the traditional industry were directly related to the agricultural production and commercial activities and they were influencing, promoting and restricting each other. Only by researching the traditional industry as a part of the ancient social economy can we comprehensively understand the emergence and development of the traditional industry and their motivations and rules, and the position and role of the traditional industry in the entire social economy.

(10) The researches on the social cultures. This refers to the researches on the traditional industry against the backgrounds of the developments of the social history and the social culture, which are the relationships between the traditional industry and the structure of the social organizations, the social lives and the social culture. Only by this can we deeply understand the importance and role of the traditional industry in the development of the social history and observe the evolution of the society in the angle of the social production.

The application of the methods of modern archaeology on the researches on the traditional industry

The traditional industry has countless categories and the archaeological researches on the traditional industry include complicated contents and subjects; therefore, the basic methods of modern archaeology must be associated with that of other disciplines to fulfill the researches on the traditional industry, and the multi-disciplinary and multi-perspective research methods are specially important.

1. The basic archaeological researches. The methods include obtaining remains, relics and other materials of traditional industry by the archaeological fieldwork and analyzing, estimating and explaining these physical materials with stratigraphical and typological theories and cultural element analysis and other basic methods.

As for the fieldwork on the traditional industry, the most important tasks are the survey and excavation of the workshop and activity remains, including the remains related to the traditional industry in the city sites and settlements, which will not only discover and obtain the raw materials, tools and facilities, products, half-products and refuses, and some phenomena during the production processes, but also, and more important, accurately understand the interrelationships among the remains, relics and phenomena, based on which the original techniques and operation sequences could be restored and the nature of the traditional industry could be understood. Of course, the excavations of the remains related to the traditional industry are different from that of the common city sites, settlements or residential remains but have their own characteristics which should be noticed.

The archaeological research on the remains of traditional industry production mainly refers to the researches on the production facilities and the traces of production activities, including their types, structures, sizes, construction materials and techniques, functions, operating processes and abandoning processes, etc. To the categories of the traditional industry whose products will be consumed and difficult to be preserved to the present, such as the salt making, brewing and distilling, sugar industry, tea industry and so on, the production remains, traces of production activities and product residues are more important research objects.

The archaeological research on the products of traditional industry production mainly refers to the research aimed at deciphering the entire process of the production of the traditional industry through the researches on its products. One aspect of the process of the production is the origins, techniques and their development levels, places of production, distribution and structure of a given category of traditional industry reflected by the natures, types, structures, textures, traces of making and decorating, quantity relationships and spatial distributions of the remains and relics related to

this category; the other aspect is the circulation and use of the products and the administering and managing of the production of a given category of the traditional industry reflected by the preservation conditions and the inscriptions of the products.

It is mentionable that the textual and pictorial materials in the archaeological discoveries are very important for the archaeological researches of the traditional industry, such as the contents related to the producers, producing organizations, techniques, special features of the products and the circulation and use of the products of traditional industry seen in the oracle bone inscriptions, bronze inscriptions, pottery inscriptions, bamboo slips and wooden tablets, stone steles and inscriptions, manuscripts, etc. The motifs relevant to the working scenes of the traditional industry in the stone reliefs, molded brick reliefs and murals, although usually stylized or exaggerated, are irreplaceable pictorial materials for us to understand and restore the operation sequences and settings of traditional industry.

2. The multi-disciplinary researches. The archaeology of traditional industry involves disciplines of natural science, such as the raw materials and techniques and that of social economy, such as production and commodity exchange, as well as that of social organizations, the daily lives and spiritual lives of the people, and so on. All of these require the archaeological researches on the traditional industry to refer to other disciplines while holding on the archaeological excavations and researches as the basic methods.

The first is the cooperation with the historiography, which refers to the organic cross-reference of the archaeological materials and the historic literature.

The second is the cooperation with the modern science and technology, which refers to the application of the methods and means of modern science and technology in the archaeology.

The third is the cooperation with the history of science and technology, which refers to the application of the theories, methods and research results of the history of science and technology in the researches on the traditional industry.

The fourth is the cooperation with anthropology, which refers to the application of the theories of ethnography and its research results in the researches on the traditional industry.

The fifth and the last is the issue of simulation experiment. By simulation experiments, we can understand and restore the functions and using methods of the tools and facilities, the techniques and operation sequences and their effects and the natures of the products of the traditional industry, recover the production settings in the ancient times, and examine and revise the research conclusions.

3. The multi-perspective research methods. The special features of the archaeology of traditional industry determined that the research practices should not only strengthen the multi-disciplinary cooperation but also

broaden the research perspectives.

The first is the perspective of the environmental science. The raw materials of the traditional industry are all directly restricted by the natural environment; the given techniques and means also need some kinds of natural environment to be applied; the types, functions and demands of the products also tightly depend on the social productions and social lives in various natural environments. Therefore, the perspective of the environmental science is helpful for the observation and understanding of motivations of the emergence, development and evolution of the traditional industry from the natural environments and the interaction between the traditional industry and the natural environment.

The second is the perspective of the history of the science and technology. Many aspects of the ancient science and technology developed with the traditional industry as the carrier; therefore, the perspective of the history of the science and technology is helpful for the observation and understanding of the emergence and development of the techniques of the traditional industry and their interrelationships even the development and evolution of the entire traditional industry.

The third is the perspective of the social production. The traditional industry is a part of the whole social production, therefore, when we are observing and analyzing the interrelationships among the categories of the traditional industry, we must also pay attention to the interrelationships among the traditional industry and agriculture and other divisions of the social production.

The fourth is the perspective of the social economy. As a kind of economic activity, the traditional industry formed the ancient social economy together with agricultural economy and commercial economy, and these three divisions were associated with each other, restricting each other and promoting each other. Therefore, observing the traditional industry in the perspective of the whole social economy is helpful to understand the emergence and development of the traditional industry and its various categories as a part of the social economy, and the importance and role of the traditional industry in the development of the whole social economy.

The fifth is the perspective of the social civilization. As a production and economic activity, the traditional industry basically belongs to material civilization; meanwhile, it is also tightly related to the political civilization and spiritual civilization and all of the domains of the social lives. Therefore, only by starting from the perspective of the history of social civilization can we thoroughly understand the significance and functions of the traditional industry in the development of the material civilization and the interrelationship and interaction between the traditional industry and political civilization and spiritual civilization.

The sixth is the perspective of cultural

communication. The cultural communication played an important role in the process of the development of the human civilization, and the science, technology and inventions, which included many categories of the traditional industry and their techniques, were important contents of the cultural communication. Therefore, the perspective of cultural communication in the research practices is helpful for the understandings of the emergence, development and diffusion of the categories of the traditional industry and their techniques and, moreover, that of the roles of the diffusion of the traditional industry in the progress of the human civilization.

In general, to make the archaeology of traditional industry not be limited to the production of the traditional industry itself, but to research it as a “social existence”, an “industrial system” and a “cultural factor”, and more broadly and deeply explore the relationships between the traditional industry and the human beings, the traditional industry and natural environment, the traditional industry and science and technology, the traditional industry and social production and social economy, the traditional industry and the evolution of social patterns and the traditional industry and the ancient civilizations based on this, and furthermore to explore the positions and roles of the traditional industry and the laws in their development in the social history of the human beings, it is necessary to have broad research perspectives.

As the systematic archaeological research on the traditional industry, the archaeology of traditional industry is a branch of archaeology. Even some scholars whose specialties are not the archaeology of traditional industry, it is still favorable for them to have some ideas or awareness of the archaeology of traditional industry when they are doing researches on other issues especially the ones related to the cultural remains and relics.

References

- Bai, Yunxiang 白云翔. 2005. 先秦两汉铁器的考古学研究 (Archaeological researches on the iron industry in the pre-Qin Period and the Western and Eastern Han Dynasties). Beijing: Kexue Chubanshe.
- Bai, Yunxiang. 2007. 汉代临淄铜镜制造业的考古学研究 (Archaeological research on the industry of bronze mirrors in Linzi during the Han Period). In Archaeology Publications [ed]. *Tan gu qiu yuan* 探古求原 (Researching into antiquity and seeking after the original). Beijing: Kexue Chubanshe. p. 236.
- Buchanan, R. A. 1970. *Industrial archaeology: retrospect and prospect*. *Antiquity* 44 (176): 281.
- Liu, Jiashun 刘家顺 et al. 2006. 产业经济学 (Industrial economy). Beijing: Zhongguo Shehuikexue Chubanshe. p. 18.
- Shan, Jixiang 单霁翔. 2011. 工业遗产保护现状的分析与思考: 关注新型文化遗产保护 (The analyses and reflections on the status quo of the preservation of industrial heritage: the concern over the preservation of new types of cultural heritages). In Shui Tao, He Yun'ao and Wang Xiaoqi [ed]. 考古学与博物馆学研究导引 (Guide to the researches on archaeology and museology). Nanjing: Nanjing Daxue Chubanshe. p. 381.
- Xia, Nai 夏鼐 and Wang Zhongshu 王仲殊. *Kaoguxue* 考古学 (Archaeology). In the *Volume on Archaeology of Encyclopedia of China*. Beijing: Zhongguo Da Baikequanshu Chubanshe. p. 2.

Postscript

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