Paradigm of Historiography, Based on Historical Methodology of Information

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Abstract. Based on the analysis of the application of the paradigm in the study of history and the characteristics of information technology, this paper expounds the advantages of the paradigm in the study of history in information era. Using the methods of document analysis, content analysis and case study, this paper makes an in-depth analysis concerning the changes of historical research methods brought by information technology. It is believed that the use of information technology makes the framework of historical research more reasonable, the data analysis more accurate, and the protection and display of historical data more intuitive. In addition, the paper explores the promoting effect of the research method on historiography, and this new method is the supplement of the research paradigm of new historiography. paper also discusses the unique advantages of historical research methods such as historical digitization, film and television history, big data technology and quantitative database.

Keywords: Historical Research Paradigm, Advantages of Information Technology, Methodology of Historical Research

1. Research background

Scientific research methods never lack of new creations and insights. New research methods in different periods have profoundly changed researchers' perspectives and paths, and have made remarkable academic achievements. Paradigm theory comes from Thomas Kuhn. It is not only a modern theoretical system, but also a whole research activity composed by fundamental laws, theories, applications and related instruments. This kind of research idea with strong demonstration, we can regard it as the research method using the accepted model or way, that is to use the established way to engage in a certain research work. According to Riesel, this research mode is the basic intention of the
research object existed in the scientific field, which can be used to define the value of the research object and the choice of research methods. Thomas Kuhn sees paradigms as "examples of certain accepted practices in science -- examples of laws, theories, applications, and instruments -- that provides a model for the emergence of a certain tradition in scientific research." In the 20th century, with the continuous development of science and technology, research paradigm based on the information technology has been accepted by more and more researchers. They try to take advantage of the existing science and technology, through some means such as computer science, communication technology and application software, to set up a model. According with the characteristics of this subject research, for the problems in traditional disciplines, it provides a new train of thought to solve problems. It is in this context that the emergence of information technology also brings new opportunities for the study of history.

Different from the traditional way of historical research, the historical research paradigm based on information technology pays more attention to the changes brought by the development of modern science and technology to the traditional way of research. This change is not simply to reject the traditional research methods, but on its basis, with the advantage of information technology, to explore a new research path and establish a feasible new paradigm of historical research. For this problem, the scholars in China have different views, it can be divided into two kinds. One is those scholars, like Ge Jianxiong, from historical geography research center of Fudan University. He argues that in a prudent attitude toward the role of new technologies in historical studies, his book, The New Technology and The Historical Research, points out that the new technology in the study of history has made certain achievements, but this does not mean that the traditional research methods obsolete, for the use of new technology can't rush forward, and we should let it be tested by time. Another are from those experts, represented by Yang qingfeng's book, Digitization, Cognition and Memory of History, and Xiong Jinwu's book, Quantifying History: A New Paradigm of Economic History. Both books argue that the development of new technology brings new opportunities to history, and holds that it constitutes a paradigm innovation of historiography research and is a beneficial supplement to traditional historiography research methods. Although the two views are different, they all agree that the emergence of new technology will have a great impact on the traditional historical research methods.

Through in-depth analysis and comparison, this paper thinks that the development of information technology brought revolutionary role for historical research. In the past, most of traditional historiography research was based on historical documents and archaeology, and more focused on certain issues and problems which always caused information fragmentation. It is easy to let researchers ignore things or events in the internal relations. Therefore, after discussing whether to agree with the role of the historical research paradigm, this paper proposes a new view to make up for the shortcomings of the existing discussion. The research paradigm of information-based historiography utilizes the power of new technology to solve the problems existing in traditional historiography research in an interdisciplinary way, so that historiography research has a new perspective, the internal logic of information is more clearly explored, and the data is more convenient to sort out and use.

2. Historical research paradigm
The emergence of a new research paradigm is bound to have its space-time background and
development process, as the historical research paradigm. It is a process of gradually reaching consensus with many people and finally forming a relatively fixed and powerful research model with interpretation force. The premise of using paradigms to solve historical problems is that they adopt a consistent paradigm and promise to use the same standards and rules to do scientific practice. However, due to the uniqueness of historical research, there are different views on how to choose or reject historical issues in the process of using paradigm.

2.1. Historical research under the conflict between subjective world and objective existence
First of all, the advocates of abandoning paradigm believe that historical events have objectivity, and historical research has a strong subjectivity, and the paradigm generated on this basis is inevitably subjective, and thus cannot accurately grasp the true context of historical research. Just as when we select historical documents and others to prove our own views, we will be deeply influenced by our own inherent research paradigm. In the process of material selection and selection, we will inevitably become subjective, which will affect the reliability of historical research. Secondly, different research paradigms choose different entry points and theoretical systems, and the creativity of researchers is greatly limited if they only study problems with the inherent paradigm. Especially when there are problems in the research paradigm, the accuracy of the research is not high. Therefore, in the process of historical research, some scholars advocate the research method of uncertainty, get rid of the restrictions of research paradigm on research methods and ideas, and continue to take the traditional textual research and historical data analysis as the research path, so as to correct the impact of the subjective world on the objective research.

2.2. Historical research under the fixed paradigm
The use of fixed paradigms to study problems is not necessarily rigid and inflexible, and many of the emergence of fixed paradigms is from the accumulation of people's wisdom, on behalf of the user's recognition of the research ideas. In particular, some mature, reliable and historically proven paradigms, such as exploring the inner thoughts of research objects through external institutions, are enduring. When a mature paradigm is promoted and used, the research efficiency of researchers can be greatly improved, which is an example of the claim of the paradigm omnipotence. However, we can see that if we rigidly fit the vivid historical events into the fixed pattern, and try to seek the true meaning of the events, we will go in the opposite direction.

2.3. Historical research paradigm based on informationization
Through the analysis of the above two viewpoints, it can be found that the paradigm theory has its own advantages for historical research and can effectively improve the research efficiency of historical issues, but its disadvantages are also obvious, so there are totally different arguments such as abandoning the use of paradigm and advocating the use of paradigm. In recent years, with the rapid development of information technology, how to use information to construct a new paradigm of Chinese history research has become a hot topic. Because of this, the emergence of information technology effectively makes up for the deficiencies of the above two schools of scholars, making the research paradigm more reasonable, data analysis more accurate, and the protection and display of historical data more intuitive.
In addition, this new historical research paradigm is primarily based on information and communication technologies. It is a kind of bidirectional research process which uses scientific and technological means to store and consult. It materializes the historical facts and needs to clarify the problem with concrete data, thus getting rid of the subjectification of paradigm study. Secondly, it is not only a research method, but also a research thought. It advocates the use of information research means to reduce barriers between disciplines and get rid of the fact that the research results are inconsistent with the actual situation caused by the fixed paradigm research.

3. Historical research methodology based on information technology

The advantages of the historical research paradigm based on informationization are described in the preceding part.

3.1. Historical digitization

Historical datamation, which is based on the development of information technology, is a supplement to the methodology of historical research.[1] Its functions are first built on the basis of the development of external information technology. It has both external physical requirements of hardware equipment, and the development of internal software technology. Relying on them, historical researchers can use this new research tool to treat history as the objective existing knowledge and things, and solve the limitations of previous historical studies. For example, with the emergence of digital imaging technology, the number of images as an important source of historical facts gradually increases, which opens up a new way for the accumulation of historical materials. Secondly, as an information technology, historical digitization has been very popular in historical research.[2] For example, researchers use computer technology, scanning technology, cloud storage base, intelligent modeling and retrieval technology to process the data in historical researchers. For example, the traditional paper version of ancient books will be made into PDF format, which not only makes use of cultural relics protection and information dissemination, but also facilitates the retrieval and use of documents. When a large number of historical information resources are gathered together, researchers can establish a new retrieval mechanism based on this basis, according to the relevance of literature classification, and use the speed and convenience of computers to screen the documents with internal connections. [3]

3.2. Film and television history

The establishment of film and television history cannot be separated from the development of information technology, which is the product of the development of modern information technology. It was first translated and put forward by zhou liangkai, a scholar from Taiwan of China, who advocated the representation of history through visual materials as his understanding of relevant historical processes. In this process, he broke through Hayden white's definition of film and television history and expanded it from a single dynamic vision to a static vision. In addition, with the popularization of hardware and the improvement of software technology in information technology, the materialization limit of film and television history starts to reduce.[4] For historical researchers, they can no longer be satisfied with the textual writing of history, because they can also use new technologies to complete the previous research assumption of film and television history editing. In
particular, the focus of this historical research method can sink to the details of grassroots society, which makes up for the shortcomings of the traditional historical research paradigm. And, as a historical data with information technology, its conservation and management also need to use information technology to realize. History researchers, through the establishment of related digital archive, classification management, the existing film and television history information form, has general preservation system of traditional historiography, retain valuable social historical research data for the future and to present the realistic account of the historical truth and social memory.

3.3. Big data technology and quantitative database
As a historical research methodology based on information technology, the use of big data and quantitative database technology has made a lot of achievements in the existing historical research work. Compared with the traditional historical research paradigm, this research paradigm is more efficient and accurate. Its establishment needs to make a new judgment and recovery of historical events that need to be studied on the basis of traditional literature and archaeology, on the basis of the database established by computer, and on the basis of different analysis methods, such as word frequency analysis, GIS technology and visual and quantitative analysis. In terms of the use of big data, traditional historical research methods mainly focus on the textual research and discrimination of a certain point. For example, in the research work of the silk road, the traditional research can only outline the intention of the silk road in terms of the direction of the road and the sites along the road.[5] On the basis of gathering data, big data technology can study the problem from a holistic perspective, so as to make accurate positioning of the overall traffic route of silk road in an interdisciplinary and time-space limited way, avoid regional restrictions and avoid geographical restrictions.[6] Secondly, we can also conduct quantitative historical research on the research objects with the help of big data, design different modeling methods according to the research direction, and classify the massive data according to different perspectives such as age, culture, people, events, nationality, geography, and system.[7] In the use of quantitative database, it can reorganize scattered historical materials, quickly find the relevant place, and then through quantitative analysis to find the hidden value and significance of documents. Therefore, we can see that big data technology and quantitative database in use in the study of history, not only enriches the research methods and research paradigm, but also makes effective use of massive historical data written reality and realizes the connection between the different material, and promotes the process of historical research and makes a wide range of interdisciplinary cooperation become a reality. Therefore, the historical research method based on information technology not only plays the tool of information technology, but also is a new research paradigm in the sense of methodology.

4. Conclusion
After viewing the historical research paradigm, this paper finds that although the traditional paradigm theory is beneficial to the historical research and can effectively improve the standardization and accuracy of the historical research, its constraint on the creative thinking of the historical research is also obvious. The paper holds that the emergence of information technology, whether from the physical hardware support, or from the more open research thinking, has opened up a new research
path for the method of historical research, and then remedied the shortcomings of the traditional historical research paradigm.

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