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ACCESSING RESOURCES FOR CHINESE STUDIES
IN THE ELECTRONIC AGE*

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Introduction

Advances in computer technology in recent years have revolutionized the way information is stored and disseminated. Electronic information resources for many academic fields, especially for Chinese studies, have mushroomed. This has presented both an opportunity and a challenge to Sinological librarians and researchers. Digitization has greatly shrunk the space needed for information storage, and distance is no longer an important factor in information delivery. Digital collections are beginning to replace some print collections of the most traditional type. For example, the texts of ancient inscriptions on oracle bones are now stored on audio-video CD-ROMs. In the past five years, the Internet and the World Wide Web have created a digital extension of academic and research libraries for various materials. With the use of Chinese language processing devices, valuable collections of texts, images, and sounds are now increasingly available on the Internet. Actively providing access to the growing electronic information resources of various media existing beyond the walls of individual libraries has become essential for Sinological librarians who serve the needs of the research community.

This paper addresses two aspects of electronic resources for Chinese studies: first, developments in the field, and second, what libraries can do to provide access to these increasingly rich electronic resources.

The Development of Electronic Information Resources for Chinese Studies

The process of library automation for Chinese language materials in the United States can be traced back to September 1983 when the Library of Congress started to input machine readable cataloging (MARC) records in vernacular script into the Research Library Information Network (RLIN) database. This also evidenced the beginning of electronic resource sharing for East Asian collections in the United States. In the following decade, numerous East Asian collections joined RLIN and later the Online Computer Library Center (OCLC) for shared cataloging. Thus with the Chinese language processing capacity provided by the RLIN and OCLC bibliographic

*This paper is a shortened version of a paper prepared for a general audience and presented at the panel "Stretching Library Walls: East Asian Collections in the Electronic Age," during the meeting of the Western Conference of the Association for Asian Studies in Boulder, Colorado on October 25, 1997. The research was inspired by the recent studies on Chinese electronic resources published in the Journal of East Asian Libraries.
utilities, library materials can be cataloged and retrieved electronically in vernacular languages and scripts. Services developed from RLIN and OCLC databases, such as OCLC's First Search, have expanded from shared cataloging to document delivery and other public service functions. In 1996, a pilot project was completed that extended OCLC CJK vernacular searching to public end-users. RLIN and OCLC have expanded from national bibliographic utilities to become electronic information giants providing access to monographs and journal articles as well as full text databases, document delivery, and electronic archiving services. Over the past decade, these bibliographic utilities have become international with memberships across the world: OCLC as of 1996 had 946 member institutions in the Asian Pacific region. Thousands of cataloging records of libraries in the Asian Pacific area are regularly entered into OCLC database every year.

Processes similar to those that have occurred in the United States are also taking place in China and the Asian Pacific area. Led by the academic and research libraries, libraries in China have quickly taken initiatives to digitize their library catalogs. Near the end of the 1980s, the National Library of China (NLC) completed the project that developed the Chinese MARC (CNMARC) system, and in 1990 it officially published the first edition of the Chinese MARC Format. A Chinese MARC center, established in 1991 by the New Technology Development Company of the NLC, issues Chinese MARC records on a regular basis. This center also publishes a catalog of current Chinese serials and, among many other databases, the Chinese Bibliography Authorities Database that contains personal authors, family authors, group authors, conferences, geographical names, uniform titles, series titles, and subjects. The Authority File of Ancient Chinese Authors has also been compiled, providing over 40,000 personal and group authors from ancient times to 1911. CNMARC data are now being exported to other countries.²

Integrated library automation systems with Chinese language capacity have been adopted by many libraries world-wide. Among them the system developed by Innovative Interfaces, Inc. is the most widely used. In the United States, many university libraries such as the University of Washington at Seattle, the University of California at San Diego, and the University of Oregon, to name just a few, have adopted the III CJK module. The University of Colorado East Asian Library is in the process of implementing this module. The III CJK libraries are becoming an active user group as more East Asian collections install the system.

Networked integrated library automation systems, which to Chinese libraries was something "unreal" only a few years ago, have also become commonplace in China as well as in other Asian Pacific areas. The Shenlian Online Cataloging Project in Shanghai and the Jinxintu Online Cataloging Center in Beijing are two of the largest such systems developed in China in the early 1990s using the newly-adopted national standard China MARC format. These systems are suitable for large academic libraries. For smaller academic and public libraries, there is the Shenzhen Integrated Library Automation System and the General Integrated Library Automation System developed by the joint efforts of Xi'an Jiaotong University and Zhengzhou University.² Many leading research libraries in China, Taiwan, and Hong Kong have adopted the U.S.-made III CJK system. Their catalogs can be accessed via the Internet. Searching the catalogs of these libraries is as familiar to U.S. users as searching their own library catalogs at home.
Along with the networked library online catalogs, full-text digital collections in various formats have also become more popular. CD-ROM is one form of electronic media that early challenged the printed media. A survey conducted by the Subcommittee for Chinese Materials of the Council for East Asian Libraries in 1994/95 produced a long list of CD-ROM databases available to U.S. researchers. In the last two years, this list has grown much longer with numerous new products published, especially in Asian Pacific countries. Many large-scale projects to digitize classical documents have been carried out in Taiwan, Hong Kong, and mainland China. These have resulted in numerous full-text electronic databases, such as the Chinese Local Gazetteers published before 1949 on disc, the thirteen classics with commentary, the Twenty-five Dynastic Histories, and many other titles. The most valuable work done alongside digitizing such classics was to add contemporary commentary and annotations to the texts. The National Library of China has produced a CD-ROM edition of the Chinese National Bibliography, 1988 to date, and a CD-ROM edition of the retrospective Chinese National Bibliography, 1949-1987. The Shanghai Library has published the Index to Chinese Newspaper and Periodical Literature (Quanguo baokan suoyin) on CD-ROM. Qinghua University's national research center for CD-ROM products is engaged in producing a monthly-updated full-text database on CD-ROM of 3,000 academic periodicals published in China in Chinese and English languages. Another project of this sort is the CD-ROM version of People's University Reprinted Newspaper and Periodical Literature (Fuyin baokan ziliao), a full-text database of selected Chinese newspaper and journal articles.

The Internet and the World Wide Web have opened up more opportunities for the transmission of Sinological research materials world-wide. In China there are more than twenty national networks, such as CHINAPAC, CHINADDN, and CERNET, which also connect to networks in other parts of the world. Through these networks the exchange of documents and correspondence between cities in China and in the U.S. has become a matter of minutes. Software that handle Chinese venacular scripts enable users to input, display, and access venacular information. U.S. researchers can search the online catalogs available in cities in China via the Internet using various web browsers. In Taiwan, the Taiwan Academic Network (TAN) now provides World Wide Web access to the Academia Sinica, the National Central Library, and a variety of other web servers netted for information dissemination. The situation is similar in other Chinese language speaking communities and research institutions all over the world.

**Accessing Increasingly Rich Electronic Resources Through Balancing the Concepts of "Place" And "Service"**

In view of the fast-rising ocean of electronic resources for Chinese studies (to say nothing of other academic fields), how to provide access becomes a critical question that we as information specialists must answer. Some people even argue that access has become so crucial that libraries should choose access over ownership. At the conference of the Canadian Library Association (CLA) in June 1997, author Heather Menzies, the keynote speaker, warned her library colleagues of the "danger that without reinventing, libraries as we now know them will be relegated to a minor, support role in the brave new world of cyberspace."
She called for today's librarians to change libraries from a place to a service. At the same conference, such ideas typical of the digital age were challenged by Paul Whitney, the incoming CLA president, in his inaugural address, which represented a more traditional view. He saw danger in "a mind set created in key decision makers that the library as a place, and books as the key component in information and cultural exchange, are redundant" and supported the argument that "complex ideas are best left to print.\(^5\)

As the world enters the twenty-first century, librarians and information specialists will constantly confront such questions. Instead of choosing between the two, I suggest that we balance them. The explosion of information in all formats makes it more necessary than ever for libraries to cooperate in collection development and all other kinds of resource-sharing. No one library can own all the information needed by its clientele, but every library has the responsibility to preserve the world's knowledge. In this sense, ownership is a means of access--owning for the sake of accessing. We must actively engage in developing both the infrastructure for electronic resources and also the substance of these resources to provide users the access needed for their research. The library as a place will continue to exist for sometime; however, the sector of virtual collections in our libraries will grow. For collections of Chinese language materials, it is even more urgent to open up all channels, especially those provided by the Internet, to access the world's research materials. Given the sky-rocketing prices of Chinese printed materials and the explosion of publishing in the geographical areas where many of the scholarly works and resources are produced, access through both place and service is essential.

To balance the library both as a place and as a service, we must continue to own materials that other libraries do not have while vigorously seeking access to resources that others own. Both ownership and access are justifiable, rewarding, and necessary to libraries of the electronic age. In other words, we must have something to offer when we are so ready to take. We must own a collection to provide on-site access to materials so needed, i.e., a core collection including electronic formats, which has the basic materials and subscriptions needed for teaching and research on campus. These could be CD-ROMs, subscriptions to online services, and maintenance of an updated and effective web-page. Among other possibilities, I would like to stress the potential in Chinese information services of the World Wide Web.

The World Wide Web has created the potential for a global information village where collections are connected into one virtual library accessible to the whole world. Library collections and services for Chinese studies must take advantage of the Internet and become active members of the global information village. The World Wide Web has become an extremely large pool of information that grows at an astounding speed. According to an OCLC report in December 1996, the World Wide Web had one trillion bytes of data--a terabyte. By February 1997, the size had doubled to two terabytes.\(^6\) It is frequently difficult for scholars to find effectively pertinent items for their research. Many search engines, such as Yahoo and Infoseek, automatically index every resource on the web but provide no descriptions beyond a file-name that may not necessarily carry semantic content. The lack of specialized indexing prohibits any effective and systematic search on the web. One thing
Librarians could do to help is to develop mechanisms to organize the web. OCLC has attempted a solution by developing the "metadata for networked images" and "the Dublin Metadata Core Element Set" to catalog resources on the web. OCLC envisions that in the near future its WorldCat database may contain metadata about all of the world's information.⁷

At the same time it provides enormous opportunities, the Internet also poses challenges, and one of these is preservation of information. As pointed out by Phyllis B. Spies, vice president for OCLC Sales and International, "There has been a growing tendency to assume that networks and databases—the access model—will replace the ownership model in libraries. The access model at first glance is attractive to academic administrators because it looks like a convenient way to cut costs. But if we all shift to the access model, who manages and maintains the knowledge base?" To confront this challenge, OCLC has taken the initiative in creating and maintaining electronic archiving by creating archival depositories of electronic materials, with credible guarantees of long-term access.

As Chinese studies librarians, what can we do to help researchers use the rich resources on the web besides joining such efforts as that of OCLC in initiating cooperative projects with other libraries to develop and maintain quality bibliographic databases? At this stage, at least one thing we can do is to use Hyper Text Markup Language (HTML) to develop a web-based virtual collection for Chinese studies. Through such a virtual collection, we can help researchers navigate the web to find needed research materials. Such a virtual collection, or, in a more common expression, web page, has the advantage of integrating sound, graphics, and images as well as the capability to link various resources. A Chinese studies virtual collection on the web can be tailored to serve the teaching and research profiles of the faculty and student population on an individual campus. Cathy Chiu's experimental "one-stop research station" at the University of California at Santa Barbara Library illustrates what such a virtual collection has to offer.⁹

By developing such a virtual collection, librarians can integrate this growing global network of information into our library services. We can use our subject expertise to screen the Web for resources pertinent to the teaching and research programs of our user community. These resources can include full text documents such as newspapers, reference tools such as dictionaries and yearbooks, and library catalogs such as those of libraries in the Asian Pacific areas. These materials can be grouped by subject, research projects, course names, or faculty names. Of course, virtual collections do not have to be limited to Chinese studies materials; they can cover materials from all areas in East Asian studies.

As Chinese studies librarians, while entertaining ourselves with this splendid idea of a virtual global collection, we must also assume the responsibilities of developing the knowledge base and participating in the preservation of the electronic resources for web-based virtual libraries. Many Chinese studies librarians have already undertaken constructive projects in this direction. For example, the online "Center of the Cultural Revolution Studies" has recently been developed by some of the Chinese librarians at the University of Pittsburgh and Ohio State University to serve as an information clearinghouse for all types of research on the Cultural
Revolution. Such projects enable us to make significant contributions by organizing existing knowledge and making it available electronically.

Conclusion

The digital age presents both an opportunity and a challenge to Chinese studies librarians and researchers. The increasingly rich electronic resources for Chinese studies are waiting for us information specialists to develop, organize, preserve, and access. Among the many electronic opportunities, the World Wide Web has opened up a most exciting arena for Chinese information transmission and retrieval. The web will be the central trend in library science research and will play a crucial part in transforming the role of our libraries. Librarians must take the initiative to explore and use the web in gathering, organizing, and disseminating information to our library users.

NOTES


7. OCLC Newsletter, No. 228, July/August 1997, pp. 7-10.

8. OCLC Newsletter, No. 228, July/August 1997, pp. 7-10.