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Chinese e-resources in North American East Asian libraries : a field survey

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CHINESE E-RESOURCES IN NORTH AMERICAN EAST ASIAN LIBRARIES
A FIELD SURVEY

A Thesis

Presented to

The Faculty of the School of Library and Information Science

San Jose State University

In Partial Fulfillment

of the Requirements for the Degree

Master of Library and Information Science

by

Dongfang Shao

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ABSTRACT

CHINESE E-RESOURCES IN NORTH AMERICAN EAST ASIAN LIBRARIES A FIELD SURVEY

by Dongfang Shao

East Asian libraries in North America with a Chinese collection face a unique challenge today in accessing and managing Chinese electronic resources. This thesis reports on a survey of Chinese electronic resources in these libraries, with a focus on digital content providers, major databases, electronic materials, management and services in terms of scope, content, and technical standards. It examines the way special language expertise, special platforms, different coding systems, software standards, loading and servicing requirements are involved in management of Chinese databases. Chinese copyright issues of Chinese electronic resources are extensively discussed. Special attention is also given to data loading, preservation, archiving, and system upgrades. This study may be a useful resource for those East Asian libraries wanting to incorporate Chinese electronic resources to their Chinese collections.

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CHAPTER 1

Introduction

Digital technologies are dramatically changing the processes of the creation, distribution, use, and preservation of Chinese information resources. The advent and advance of electronic resources (e-resources) in the Chinese language have changed the way Chinese Studies scholars in North America search for research materials. Generally, electronic databases (e-databases) are used heavily and the availability of electronic format (e-format) greatly enhances the total use of library materials. Nevertheless, although some scholars have written about Chinese electronic resources, the scarcity of research on their application to Western academic libraries, especially East Asian libraries in North America, has created a hodgepodge of studies on the topic. This thesis presents an introduction, survey, and analysis of Chinese electronic resources based on their application, functions, business models, and development affected by digital technologies in the context of East Asian libraries and collections in North America. This research also discusses the practices in developing a digital library infrastructure and service for Chinese Studies. These practices and strategies include the acquisition, management, content development, and preservation of Chinese electronic resources for East Asian libraries in North America.

The Growth of Chinese Internet Access

By June 2006, the Internet user population in the People's Republic of China (thereafter "China") reached 0.137 billion, ranking the second largest in the world (China Internet Network Information Center, 2006). In the meantime, Taiwan's Internet user

population reached 13.8 million, and Hong Kong 4.9 million (X. Zhou, 2005). The number of Internet users in China continues to increase by 800,000 per week. Chinese speaking Internet users make up the second largest user community in the world, after the English speaking population. Moreover, according to a report in *Forbes* (Pace, 2007), taken together, Chinese Internet users spend nearly 2 billion hours online each week, while Internet users in the United States spend 129 million hours per week.

The Internet has been a challenge to the book publishing industry. It is an electronic playground where copyrighted material can be exchanged among anonymous readers, destroying the profit-motive for writing and publishing. File-sharing has already eaten into the market of music and film sales, and book publishing is likely the next victim. But, oddly enough, that is not how things are working out (W. Sun, 2006, p. 24).

Although digital publication in China got off to a late start, it is developing at an amazing speed. It has become clear that the demand from the Internet user community for networked Chinese digital content will keep growing. The growth of Chinese digital resources has been exceptionally fast since the late 1990s, and the Chinese government has implemented a series of policies to promote digitization projects (Y. Sun, Shen, Chen, T. Sun, & Mao, 2006). Some digitizing technology firms not affiliated with the government have congregated into large corporations that produce several hundred million pages of digitized materials. Chinese digital manufacturers make constant efforts for developing innovations in emerging digital libraries. Hundreds of digital projects are underway across the country, aiming to meet a variety of needs: sharing cultural resources, supporting learning and research, and integrating digital libraries into

conventional library services. The national, academic, private, and local digital library projects in China have put much emphasis on their digital content and services. Today, Chinese e-resources have become one of the largest repositories of digital content in the world. In addition, the level of Chinese digital technology has moved up rapidly, with its ranking jumping from the 15th in 1989 to the 5th in 2005. China's future impact on global digital resources can no longer be ignored. The growth of Chinese language electronic resources has been exponential, producing a wealth of digital products and services of variable scopes, content, and technical standards (Lyon, 2002).

Literature Review

Although the issue of digital libraries is a hot topic, the application and development of Chinese e-resources in East Asian libraries in North America has been largely ignored by most researchers in the field of library science. Much of their research work is focused on electronic resources in English and how English language readers can benefit from the use of digital libraries. There is little discussion about this subject, at least not as much as discussion of English e-resources in other western languages. As a result, throughout the 1990s, the study of this issue remained mostly trivial.

An exhaustive search of major bibliographic and full text databases located only a few articles in English and a dozen in Chinese that were of interest. Fravel (2000) was probably the first Chinese Studies scholar to summarize the development of e-resources for academic research in China. He pointed out that with the development of information technology, Chinese Studies scholars around the world can now have direct access to an extraordinary range of digital information from and about China. After analyzing the

source accessibility and categories of digital sources, Fravel grouped the Chinese e-resources into six categories and describes them in detail: (a) news sources; (b) government sources; (c) research resources; (d) data sources; and (e) reference materials. The author speculated that Chinese language portals not only offer a great variety of information in Chinese and coming from Chinese-language Web sites based in China, but also offer free email, categorize Web sites, and maintain channels on various topics such as news, finance, and entertainment (Fravel, 2000, p. 839).

In their article "The Development of the China Digital Library," G. Yang and T. Zhang (2002) reported one of the first comprehensive surveys in English on the development of digital libraries in China and presented a succinct summary of their findings. At the time the article was written, China operated five large-scale national networks dedicated to the sectors of science and technology, business, and education. More than 200 Chinese universities were connected to those networks, and approximately 17 million computers across the country were connected (G. Yang & T. Zhang, 2002, ¶ 3). All of these were precursors to the development of Chinese digital libraries. In the wake of Internet use, China launched an experimental digital library project with six major public libraries participating. After that, research, study, and construction work on digital libraries had proceeded in full swing. G. Yang and T. Zhang pointed out both technical and nontechnical factors that may inhibit the development of a real digital library. Technical factors include a large amount of information that need to be digitized, the lack of unified agreements, specifications, and standards, the construction of a

network infrastructure, security problems of a digital library, and copyright issues.

Nontechnical factors include issues of cost, management, and personnel.

As compared with G. Yang and T. Zhang (2002), J. Liu (2003) provided a more detailed analysis of how Chinese digital libraries have developed, and focused on their digital contents and services. The Experimental Digital Library Project was completed at the end of 1999 and all the participating libraries in China set up digital libraries of their own, where some of their resources have been digitized and can be read and retrieved online. With this success, the Chinese government started the larger scale Digital Library Project. The project included digital resource construction, system development, standards and specifications, and personnel training (J. Liu, 2003, p. 11). J. Liu (2003) provided readers with a general view of China's development of digital information, in a scope that extends from the preparation work to the current situation to the prospects for the future. She also examined China's advantages and hurdles in building digital libraries and provides many statistics, which helped paint a general picture of the development of information technology and digital libraries in China.

Previous articles dealt mainly with development Chinese digital libraries in the 1990s, with sparse coverage of the more recent period, the key period of the development. Whereas these articles are useful, the fast growth and development of Chinese digital contents compelled me to rely mostly on recent conference papers and presentations as well as a plethora of database manuals and digital vendors' pamphlets and Web site information in both English and Chinese. It is the goal of this thesis research to bridge this gap by conducting a systematic survey of China's recent progress in this area, based

on existing literature and statistics published by scholars as well as by the Chinese government.

In recent years, several nationwide and international meetings and seminars about Chinese digital information have been held in China and Taiwan and have provided detailed information about these e-resources. In discussing the current status and situation of Chinese e-resources, conference presentations have some potentially newsworthy findings and analysis on the continued evolution of these digital materials. Such continued evolution is necessary to keep up with the massive demands from Chinese Studies faculty, students and librarians when they have been applied to the North American market.

In 2004 the National Central Library in Taiwan gathered more than 20 papers pertaining to the historical and contemporary status and advancement of Chinese e-resources overseas for an international conference on Sinological resources in the digital era. For instance, P. Zhou (2004) reported a focus group study aimed to find out what libraries and users in North America needed and wanted from Chinese digital content providers. He traced the various sources of Chinese digital content providers with their supplies, managements and services. Sharing of Chinese e-resources among North American academic libraries is addressed in Cheng's (2004) case study of those strong Chinese collections in the United States. He concluded by reminding us how seriously digitization projects can be taken and how their products can be made available through collaboration among these libraries.

An increasing number of papers published in both Chinese and English highlight the growth of the academic medium for e-resources. Fan (2004) gave an overview of various types of Chinese electronic databases related to traditional Chinese texts. This article surveyed how new digital databases offered various revolutionized approaches that promoted Sinological studies. In parallel, Egan (2001) examined an electronic version of the *Siku qianshu*. The *Siku qianshu* is one of the great canons of Chinese literary and historical texts compiled between 1773-1782 under an edict from Emperor Qianlong of the Qing dynasty. The *Siku qianshu*, literally meaning "complete books of the four [imperial] repositories", and translated as "Emperor's Four Treasuries", is the largest collection of books in Chinese history, including 3,460 titles, and presumably the most ambitious editorial enterprise in the history of mankind. And it is now available in electronic format. As a scholar in the field of Chinese Studies, Egan showed that this digital version has not yet to be matched by any other electronic databases of Chinese texts and the advent of this powerful corpus has changed scholars' way of doing research on traditional China.

Chen and Chiu (2006) pioneered research into questions about Chinese copyright issues and how Chinese publications in North American academic libraries could be closely integrated into western copyright issues and vice versa. The authors highlighted legal cases, in which this had already occurred and suggest avenues for further solution. But it is particularly difficult to frame this kind of solution in China as complied with world copyright standards, partly because Chinese publications lack terms for collective

agents that are agreed to be useful across cultural and political lines. Thus, developing such a vocabulary remains necessary (Chen & Chiu, 2006).

On the theme of the application of Chinese e-resources outside of China, Luk (2003) provided a variety of insightful case studies on North American academic libraries based on their use of Chinese e-resources, and discussed several reasons for the complex relationship between Chinese digital content providers and their academic library clients. He contended that the increasing interest among Chinese Studies scholars in extending the scope and the base of their research through using Chinese electronic resources provided new opportunities for interaction between faculty and librarians.

To help address the existing problems of Chinese digital materials, some writings also reveal some defects contained in recent acquired Chinese databases. X. Zhou (2005) argued that one of these shortcomings was the missing record items in Chinese electronic journal (e-journal) databases, such as abstracts, ISSNs, English title translations, and reference links. He also discussed how East Asian libraries in North America have been actively using various Chinese electronic databases and how they are troubled by the lack of good services from these digital content providers after they purchased their products.

It is clear that Chinese digital resources played a significant role in North American East Asian libraries' collection development. It is hoped that the following discussion will help to redress this and spur further dialogue in the future.

CHAPTER 2

Developing Digital Collections for Chinese Studies

East Asian Studies in North America

East Asian Studies in North America is as much about the United States as it is about East Asia. East Asian Studies is profoundly affected by political, economic, social, and intellectual currents in North America, especially within the United States, and is the largest and most diverse component of many North American universities' extensive programs in international studies. The quality of the faculty, the variety of courses and research projects, the richness of the libraries' East Asian collections, and the general political and academic environment of universities with East Asian Studies communities make these North America universities one of the world's most outstanding centers for the study of China, Japan and Korea. The range of academic interests in East Asia covers nearly every discipline and historical period: from early Chinese armor to nuclear disarmament policy on the Korean Peninsula; from Taiwanese kinship systems to modern Chinese literary thought; from Japanese premodern legal codes to post-Maoist reform of economy; and from ancient Korean art to Japanese industrialization (Suleski, 2005).

Chinese Studies as a recognized academic enterprise is primarily a postwar phenomenon in the United States. Chinese Studies in and of itself is an interdisciplinary field, spanning many areas of specialization within the humanities and the social sciences: religious studies, history, literature, art history, musicology, philosophy, linguistics, area studies, international relations, sociology, political science, anthropology, folklore, and gender studies, among others. The following geographic areas are covered by the field of

Chinese Studies: Mainland China, Taiwan, Hong Kong, and Macau. Also covered are materials produced by their émigrés that relate to the region of origin or to their émigré community and materials about Chinese ethnic groups separated from their brethren by a political border, for example, the Chinese living in Southeast Asia (Tsien, 1977; P. Zhou, 2004).

East Asian Libraries and Collections in North America

As we know, the most basic resource for scholars in East Asian Studies has been East Asian libraries. The growth of East Asian Studies in North America has been largely dependent on its library collections of East Asian materials. In North American universities, East Asian libraries and collections are unique resources for conducting research in the field of East Asian Studies (Kamada, 2002). Materials for East Asian libraries and collections are mainly taken from Chinese, Japanese, and Korean language sources. In 1869, the Library of Congress received its first Chinese language holdings as a gift from the imperial court of the Qing Dynasty, symbolizing the start of the collecting of Chinese, Japanese and Korean language publications in North America. By the end of the 19th century, Harvard, Yale, Columbia, and the University of California had all begun collecting materials in East Asian languages (Hu, 1954; Gee & Tan, 2003).

Currently over 80 of North America's prestigious universities have established East Asian libraries or collections (Cheng, 2004, p. 1). Materials collected by the East Asian libraries are in Chinese, Japanese and Korean, with their Chinese collections being the largest of the three East Asian languages. Some institutions have been in the process of building their collections for over a hundred years, and their combined holdings

number in excess of 17 million print items and one million nonprint items, with 350,000 items added annually. The largest Chinese collection in North America is the Library of Congress, with over a million volumes, while the largest university collection of Chinese materials is at the Harvard-Yenching Library, with over 500,000 volumes (Cheng, 2004; see also Ch'iu, 1955; H.-W. Lee, 2004).

The mission of Chinese collections in North American universities is to support, enhance and collaborate with the instructional, research, and service activities of East Asian Studies programs by collecting, organizing, preserving, communicating, and sharing materials on East Asia, so as to foster knowledge and understanding of the peoples and cultures of East Asia. It also serves many faculty members, students, and visiting researchers in all parts of universities whose native language is Chinese. East Asian libraries and collections emphasize their research value and uniqueness not only because of the universities' reputation in research and teaching, but also for the purpose of attracting researchers from around the world. This can only be accomplished, of course, by developing, preserving, and providing access to relevant materials in Chinese (Perushek, 1993).

East Asian libraries seek to serve the needs of East Asian Studies faculty and graduate students by building an advanced, research level library collection. Particular emphasis is given to acquiring materials in the areas of current East Asian Studies faculty specializations, adding to existing strengths within the East Asian collections, and enhancing the libraries' profiles in the international research library community by acquiring rare or unique items as opportunities arise. In addition, the libraries acquire

research materials that fall outside the specific areas of current East Asian Studies faculty but are considered essential for a core collection in the field. Most East Asian libraries collect materials in following formats: books, monographs, reports, journals, atlases, newspapers, government documents, pamphlets, microforms, CD-ROMs, tapes, videos and electronic resources. Dissertations, catalogs of exhibitions, maps, graphs, and illustrative materials such as picture albums or photographic collections (with the exception of the fine arts) are collected selectively. Musical records, CDs and tapes, music scores, ephemeral material, posters, and artifacts are also collected (Cheng, 1979). Modern manuscripts and archival collections are acquired on demand, and some commercially available videos are acquired, preferably with English subtitles if not already in English. Mainstream newspapers are acquired in hard copy, microfilm, and electronic format, although rarely in all three formats for the same title. Electronic resources have become the main stream of all acquired materials, often in consultation with faculty and in view of the relevant collections. Microform and photocopies are acceptable when originals are not available or are in poor condition (T. H. Lee, 1992).

In 2005, Asian and Asian American students made up more than 10% of undergraduate students in the United States (Y. Zhou, 2006, p. 10). For the past several years, East Asian libraries have had a commitment to enhancing the diversity of their user groups, due to an increasingly diverse student and faculty population. This commitment is based first and foremost on the belief that a more diverse user group enhances the breadth, depth, and quality of East Asian libraries' services by increasing the variety of experiences, perspectives, and scholarly interests among the users. People have also

realized that many faculty, students, and visiting researchers in all parts of American universities are native speakers of either Chinese, Japanese, or Korean languages. East Asia libraries, which serve East Asian Studies faculty and students as well as the East Asian community at large, take great pride in their commitment to serving the needs of East Asian related students and faculty within universities and their parent libraries. The East Asian population in the university community has doubled in size in the past decade and has become the second largest ethnic group after Caucasians on many campuses (Y. Zhou, 2006, p.14). Therefore, East Asian libraries' collections must reflect this reality by diversifying their collections in new ways and making the library a more inviting place for its patrons. Because of the changing demographics on campus, East Asian libraries have also become the learning center of the East Asian community and the place Chinese, Japanese and Korean faculty and students turn to for the discovery of ideas, the joy of reading, and the power of information from their home countries. The needs of the Chinese, Japanese and Korean communities partially drive East Asian libraries' services (T. H. Lee, 1992).

While Chinese collections continue to be an indispensable resource center for East Asian Studies programs on campuses, surrounding environments have greatly changed. One significant change that has occurred is the library's user population. As the Chinese and Chinese American populations have substantially increased on and around campuses, Chinese collections have been found to serve more overseas Chinese users than their intended "core clientele." In bringing this often unstated mission to light,

East Asian libraries have been supporting the needs of this user group while continuing to fulfill their primary mission (Shen, L. Zhou, & Wei, 2004).

In many North American towns and cities, a growing number of public libraries also serve local Chinese readerships. Although quite dispersed geographically, these libraries constituted a substantial user community and a strong market outside of China for Chinese electronic contents--a market that Chinese electronic content providers intended to reach but did not quite know how to tap into, and a user community crying out for and deserving better access to these electronic Chinese texts but that has thus far not been adequately served.

Electronic Resource Needs of East Asian Libraries

Researchers in Chinese Studies face a number of challenges unlike those in other fields. One of these challenges is the enormous body of literature accumulated over the millennia that form the basis of modern Chinese Studies; only a small portion of such literature can be explored in the lifetime of any scholar. In recent years, advances in computing technology have made available resources largely taken for granted in other Western language based fields of research. The development of information technology has made it possible for Chinese Studies scholars around the world to directly access an extraordinary range of information within and about China.

As the literature of Chinese Studies moves to digital formats, East Asian libraries in North America are envisioned as an increasingly "bookless" facility. Thus, it was imperative that East Asian libraries in North America subscribe to these digital products and remain competitive as research institutions for Chinese Studies. With many classical

and modern Chinese texts published in digital media, East Asian library users are consequently more in need of electronic resources for research and learning than ever. Indeed, these advances have revolutionized Chinese Studies on topics related to both traditional and modern China.

The high costs charged by commercial publishers in recent years for subscribing to printed Chinese journals are unsustainable, and the ability to distribute Chinese articles electronically has fundamentally changed academic research and publishing. Emerging technologies and the world of electronic publications (e-publications), digital libraries, electronic records, search systems, and remote access have brought profound changes to research and scholarship. Prior to the mid-1990s, East Asian libraries and collections outside of China had only limited access to Chinese digital resources, despite the fact that these resources were readily available to the Chinese domestic market. This was partly due to the fact that Chinese digital content providers, while trying to enter the international market, did not yet have the infrastructure or tools to do so effectively.

It was in the mid-1990s that Chinese collections in North America began to focus on the issue of Chinese e-resources, and there was a rapid increase in the availability of Chinese digital content for the next several years. Almost all of their Chinese e-resources are now available through the libraries' web portals, and some are available from the publishers' home servers in China. Chinese e-resources allow East Asian libraries to provide greater access to large holdings of unique Chinese materials and collections.

Not unexpectedly, the knowledge and skills required for collection development of Chinese language materials are expanding. For example, in selecting electronic

resources, one must not only know the contents, but also understand both current hardware and software and be prepared to address issues such as screen display, response time, postprocessing activities such as downloading, leasing and pricing arrangements, and vendor evaluation. Challenges such as copyright issues, harvesting data, and developing a repository for Chinese e-journals have to be explored, which lead to the coordination with other interested parties, organizations, and vendors to allow free flow of Chinese digital information, and to preserve and provide an important gateway to the treasure of published materials in China so as to service the academic communities in particular and the general public at large.

The Impact of Chinese E-Resources

Although many definitions have arisen, the e-resource concept is, in its origins, quite simple. It is basically the twin brother of the print copy, the difference being that it can be accessed through a computer. With the arrival of new technologies in the publishing world, the concept became better known as well as more complex. For example, Chinese e-resources now benefit from search tools and active referencing that in many ways mirror the functionality of online databases.

Collection development of East Asian libraries has undergone dynamic changes within the past few decades. Traditionally, East Asian libraries' collections have consisted of physical items provided by vendors, publishers, or producers of books, A/V, or serials in East Asia. Collection development involved the selection and acquisition of materials through these publishers and vendors. As East Asian libraries move rapidly into a digital environment, there has been an increase in requests for electronic resources

for teaching and research in the area of East Asian Studies. The digital version of Chinese language materials offers significant enhancements to the traditional print materials by allowing greater use of color graphics and illustrations, hypertext linking to videos and music files, downloadable articles and citations, etc. While a few may be accessed free of charge, Chinese e-resources are increasingly only available through the East Asian libraries' paid subscription to these databases and online availability definitely increased total use of East Asian library resources. Through the development and construction of home pages with many embedded hot links to available Chinese Studies and research resources on the web, users can gain access to information that in the past has not been accessible in print or within physical reach.

Nonetheless, before the 1990s, all East Asian libraries had devoted very few resources to collecting Chinese materials in electronic formats, or to the purchase of access rights to them, comparing unfavorably to peer Western language collections in other areas. In the late 1990s, collection gaps identified in East Asian libraries were the lack of Chinese electronic resources. The new electronic information technology is reshaping user perception of the role of East Asian libraries as they move from print-based to electronic-based information sources. Improved access to the intellectual content of texts and other publications in Chinese language due to digitization has allowed researchers to deepen their understanding of Chinese sources and improve their ability to search for relevant information about China.

One of the advantages of Chinese e-resources is that with proper licensing more than one person can access them simultaneously. These resources can be used remotely

24 hours a day. Moreover, digital contents have led to a renewed life for the monograph, besides cataloging data the full text is also searchable with keyword entry. The enhanced search function allows readers to find the needle in a haystack. To East Asian libraries, the use of e-resources has reduced the barriers of space, time, service, and shipping costs. Incidentally, these resources save a huge amount of shelf space and do not get defaced or stolen, a factor perhaps more important to Chinese Studies librarians than some of them would admit.

We have found that Chinese Studies scholars who had experience using an e-journal were extremely complimentary about the quality and style of its presentation. Especially when they were asked specifically about possible improvements, many answered that they could think of little that could be done better, given the limitations of the current technology. Several reports show that the digital version of the *Siku Quanshu* database was the best electronic database in all of Chinese e-resources and that it was a trailblazer in creating standards that other Chinese e-resources are only now trying to emulate (Luk, 2003). Its keyword search was used by Chinese Studies faculty and graduate students to track the historical use of a particular Chinese term, something impossible in the printed text of the *Siku quanshu*.

In general, all Chinese e-journals and e-books feature easy navigation, generous hyperlinking within a title to Medline and related metadata sources, superb rendition of graphics and half-tones in varying degrees of resolution, access to information not available in the printed editions, feedback and communications possibilities to connect readers to editors and authors, and superior design. All these contribute to the realization

that the publication in digital form is intuitive and easy to read and use in scholarship. Readers of these Chinese e-resources are delighted also with the availability of articles in both HTML and PDF forms. The combination of forms satisfies those who wish to scan an article online and then print it in page form as well as those who wish to print the page form and read it.

Fravel (2000) suggested that “the development of online sources will greatly enhance the study of contemporary China and contribute to the development of the field” (p.837). He drew this conclusion from three observations. First, Internet use in China would increase the efficiency of the research process. Second, the range of Chinese information sources available would enrich the quality of Sinological research. Third, the Internet would facilitate the establishment of transnational communities of scholars, bringing together scholars who conduct research on similar topics from around the world (p. 839).

We must also see the limitations of Chinese e-resources. First, the dispersion of online sources across research topics and time is uneven. At the present, much of the content focuses on reforming related topics and is biased towards the present political situation. Second, the authenticity of electronic information may be problematic. It requires scholars to judge and check online sources to verify data authenticity and accuracy. Third, it is difficult to gain bibliographic control over online information sources (Fravel, 2000, p. 838).

The Changing Roles of the Chinese Studies Librarians

Chinese Studies librarians in North America have been experiencing a paradigm shift of collection emphasis, from collection based to connection based. This could only be accomplished, of course, by developing, preserving, and providing access to digital materials in Chinese. As a tremendous amount of information in Chinese language related to Chinese Studies is being made available electronically, the environment is changing so rapidly that one simply cannot continue business as usual. Staff with experience in a wide range of technologies and digital materials must be maintained. It is likely that a good part of Chinese Studies librarian's functions has been reshaped by rapidly changing information technologies, especially the tremendous increase of Chinese e-resources found outside the East Asia libraries themselves.

East Asian libraries, particularly Chinese Studies librarians, are pressured to provide access to electronic resources in addition to print materials. The amount of information in Chinese language available electronically has increased in leaps and bounds over the past decade. Some Chinese electronic information is being made available free of charge on Internet worldwide. The skill set for East Asian librarians is evolving in response to the needs and expectations of an increased emphasis on digitizing collections, preserving digital archives, and improving methods of data storage and retrieval (Spence & Hammond, 2004, p. 3). The Chinese Studies librarians' ability to link their users to important e-resources is critical. They have to find ways to help Chinese digital content providers understand the potential market for their content as well as the needs and challenges regarding their products outside of China. Through the

development and construction of home pages with many embedded hot links to available Chinese Studies resources on the Web, users could gain access to information that has in the past neither been obtainable in print nor within physical reach.

The growth of electronic information technologies has challenged the role of East Asian librarianship and resulted in considerable instability and uncertainty among librarians. Chinese Studies librarians have been forced to redefine and restructure their library's collection development. New technologies have revolutionized information access by reducing the distinction between the physical library collection and the information stored beyond its walls. Some observers in the IT world foresee that the emergence of such technologies would lead to the emergence of a "virtual library", where information is accessed remotely without the need for a physical library at all. Issues that are addressed in acquiring and using digital information include determining the selection criteria for acquiring e-books, e-journals, CD-ROMs, training staff as new digital resources are developed, developing rules and regulations for the use of e-resources, arranging the physical placement of electronic equipment, providing security, and overseeing copyright issues. The new role of Chinese Studies librarians is to facilitate access to scholarly research materials, primarily by using digital technology to share and deliver information resources in a timely and effective manner (A. Wang, 2007).

There is no doubt that the concept of "library" is changing--it is in transition from the traditional collection to the electronic connection. East Asian libraries of the future will be looking for new skills and abilities among their employees and will be continually emphasizing retraining and continued education as new technologies are introduced. The

new technological environment is one in which professional and support staffs in East Asian libraries need advanced skills to provide digital information services.

CHAPTER 3

An Overview of Chinese E-Resources and Their Providers

While still centered in China, Chinese digital information providers have active business *across* North America. The Chinese digital publishing business has experienced a sharp growth in the past decade, and these e-content providers have produced thousands of new databases and are quickly developing digital collections covering materials in humanities, social sciences, scientific, technology and medical fields, all of which were never disseminated outside of China before. These digital collections contain articles originally written in Chinese, as well as articles translated from Chinese into English. Most of these information providers, ranging from SuperStar to Green Apple, operate in a style of market economy instead of state-run business.

Given that Chinese language titles comprise 15% of the universe of print titles acquired by major research libraries in North America, the availability of Chinese language e-resource titles greatly increased the overall percentage of electronic availability to 10% (P. Zhou, 2004). China has become the fifth leading nation in terms of its share of the world's scientific publications. The citation rate of papers with a Chinese address for the corresponding author also exhibits exponential growth (P. Zhou & Leydesdorff, 2006). Thus the major Chinese electronic databases have included Scripta Sinica from the Academia Sinica in Taiwan; the Chinese Ancient Texts Database (CHANT) from the Chinese University of Hong Kong; the *Siku qianshu*, and the *People's Daily* newspaper from Green Apple. These resources go far in adding search

capacity to traditional texts and current scholarship can be accessed through these databases.

SuperStar Digital Library

SuperStar, an IT company based in Beijing, was the first one to introduce Web based digital libraries in China in 1996. By the end of 2005 SuperStar had digitized 1,800,000 Chinese books with a daily addition of 200,000 pages, and made over 800,000 of them available to its registered readers online. To date, over 90% of publications in the People's Republic of China since 1949 have been digitized and classified by this company. SuperStar has accumulated over 600 million digitized pages, totaling six Terabytes of data, which is the largest and most comprehensive e-book collection in Chinese in the world. It is the ultimate source for any library in need of contemporary Chinese materials as well as those having to work within resource and space constraints (J. Liu, 2003). The SuperStar Digital Library is the most frequently visited Web site by online users in China. The average page viewing is 230,000,000 pages per day. Its digitized resources are strong in textbooks, reference books, and historical resources, with 60% of them in the humanities and social sciences. Its online sources are used by more than 1,000 university libraries, public libraries, and government agency libraries, such as Guangdong Provincial Library, Liaoning Provincial Library, Tsinghua University Library, the Chinese Academy of Social Sciences Library, the University of Science and Technology Library, and the Fudan University Library.

Being the largest digital library in Chinese language, SuperStar's database bears the characteristic of substantial coverage across all academic subjects augmenting

collections in the social sciences, history, and medicine. The SuperStar database is designed to provide academic library users with organized and adequate information in support of their research process across diverse disciplines. Their extensive resources enrich and complement library collections while serving as an alternative solution when serving niche readers becomes a difficult but imperative issue. In recognition of the company's outstanding contribution to the development of Chinese digital resources, in August 2000, the Chinese Government nominated SuperStar for the Pilot Model in Project 863 (high tech program). SuperStar also won the prize of "Web site of Excellence" the following year.

With the advance of SuperStar Digital Library, subscribing libraries can have access to scanned images of some 800,000 titles of Chinese print books on various subjects, regardless of location, circulation policy, interlibrary loan or ordering process. The digital library is open 24 hours a day, 7 days a week. Also, depending on the type of licenses negotiated, users can download full texts and create their own personal collections. They can even create favorites, bookmarks, citations, notes, and reviews, on or off line. Thus, SuperStar has become an excellent resource for libraries to increase a large scale of holdings at an affordable price to decrease labor time and human resources, to serve more end users with unlimited concurrent users, to advance the role libraries play in teaching assistance as well as in scholarly research, and to save cataloging time by providing a USMARC format of each item to integrate with library WebPAC.

SSReader, a customized e-book reader developed by the same company, allows one to create a personal library so that chosen titles are securely stored and ready for

review at any time. SSReader offers all reading related functions imaginable and accommodates the most commonly used file formats. SSReader provides a digital resource platform for collecting, supplying, managing, manipulating, publishing and communicating, which help enhance the research and writing process.

The resources of the SuperStar Digital Library have come from various libraries in China. There is a joint venture with the Chinese Academy of Social Sciences to establish a Chinese history and local gazetteer digital library, with the National Academy of Music to establish an oriental music digital library, with Peking University to digitize its rare book collection, and with the National Archives of China to establish a national archival database. While SuperStar has cooperated with more than 140 libraries in China to digitize their collections, it also provides a platform for all the member institutes to share their digital resources and work jointly to offer better digital reference services.

SuperStar has attracted more online readers than other digital libraries in China by offering large scale digital collections, reader online interaction, and reference services. Searching features have been developed to make title, table of contents, and even fulltext searchable. SuperStar has 642 highly trained technicians and librarians working in seven digitization centers throughout China. These centers produce 500,000 pages of digitized material daily.

ChinaMaxx, a database provided by SuperStar for North American East Asian libraries, at present contains the contents of 710,000 e-books published in China since 1949. Some 15% in new titles (approximately 100,000) are planned to be added annually. It is possible to access material by title, author, and topic. The full texts of each item can

be searched through the tables of contents, and the relevant passages then downloaded. The titles are arranged under 23 different categories, and there are further subdivisions within each category. For example, under “philosophy and religion,” there are 13 headings such as “philosophical theories,” “world philosophies,” “scientific thought,” “aesthetics,” “psychology,” and “religion.” In effect, this program is doing in China what Google proposes to do for Western materials. SuperStar provides by a considerable margin the greatest match to an East Asian collection sample, at 56% for Chinese language titles.

According to author’s observation, SuperStar has developed PDG text and image identification used in digital processing. PDCT2 technology developed by Superstar’s technical team has improved the compression rate manifold, saving storage space and cutting vendor costs. In terms of searchability, SuperStar offers user friendly displays by keeping hand tools always in sight. The intelligent table of contents search and fulltext search go beyond traditional methods of searching by title, author or publisher. It synchronizes and lists hidden content by delving further into texts and chapters where traditional searches cannot reach. SSReader is a practical and useful tool for e-resource management, web page collection, e-book creation and much more. As for operating platforms, it offers the comprehensive solution for digital libraries by empowering users with tools to search, read, collect, manage, create, publish, and communicate (Shi, 2001).

In order to better meet the requirement by East Asian libraries in North America, the work to convert the latest titles into PDF format by SuperStar began 2 years ago so that American readers would not have to download the SSReader viewer, bringing North

American users unparalleled reading quality. MARC data is an invaluable tool for helping libraries in their day-to-day collection management. Full text search sorts and returns items of the highest relevancy and gives readers a comprehensive view of original content that includes citation references, figures and tables. This, in turn, warrants a continuous supply of the latest titles to libraries and keeps East Asian libraries always at the forefront in meeting their service obligations (Han, 2006).

Tsinghua Tongfang Optical Disc Company

As a division of Tsinghua University, Tsinghua Tongfang Optical Disc Company (TTOD) hosts one of the largest digital repositories of full-text, peer-reviewed Chinese digital content, offering over one million full-text journal articles online with an annual processing capacity of 240,000 titles of printed materials. TTOD was founded on the basis of the China National Knowledge Infrastructure (CNKI) Project. Launched in 1998, CNKI is a national key project to construct Chinese digital resource system. Its main goal is to digitize all significant Chinese knowledge-based information resources and to create multiple channels for their application. It has built an interactive environment of information collection, integration, spread and utilization for scholars and students, researchers and engineers, professionals and trainees, so as to closely connect information providers and users and to facilitate efficient knowledge sharing. The construction of the CNKI project has made lasting contributions to the development of the Chinese information industry (Z. Zhang, 2005).

Established with the approval of the Chinese government and sponsored by Tsinghua University, TTOD is a comprehensive database and information service

provider, devoted to developing and integrating Chinese knowledge resources. It has constructed a large-scale base for database production, information service, and technical innovation of network and CD, which significantly influences the information industry in China (Z. Zhang, 2005).

CNKI is a systematic project of China's national information industry. With its comprehensive, precise, and multidisciplinary databases, CNKI provides high quality information in all academic fields to researchers and scholars around the world. TTOD devotes itself to the research and development of Chinese information technology and service in information industry. It takes the lead in constructing and developing the network of information collection, integration, dissemination and utilization in China. Moreover, TTOD produces and provides other relative products, and it also develops and transforms optical disc techniques. Its core products have won a great reputation and high popularity at home and abroad. The main digital products include China Academic Journals (CAJ) databases, China Doctor/Master's Dissertation Databases, China Core Newspaper Databases, China Proceedings of Conference Databases, and China Hospital Knowledge Databases (Luk, 2003).

China Academic Journals Database is part of the CNKI project. East View Information Services, an American information company located in Minnesota, caught this wave in January 1999 when it began producing the online version of *China Academic Journal* for North American East Asian libraries. CAJ Databases cover over 5,300 Chinese academic journals currently published in China. Full-text articles of CAJ

number 6.2 million in total since 1994, with 0.8 million added annually. It is a full-text periodical database covering over 3,500 major periodicals (P. Zhou, 2004).

The CAJ Database is comprised of 9 series covering 126 special subjects. The series subjects are grouped by related fields of interest, available for outright purchase or annual subscription, which would enhance the user's experience of any library and complement the rest of its online publishing program. Collections are accessible online from anywhere with web access. Outright purchase provides one-time use by one single user and annual subscription allows up to five simultaneous users to access each title. Subscriptions may be arranged by individual or multiple series, or subjects, and its groupings of subjects are listed below:

1. Science-Engineering (Series A): astronomy, biology, geography, geophysics, hydrology, mathematics, mechanics, meteorology, natural resources, oceanography, physics, and topography.
2. Science-Engineering (Series B): chemicals industry/materials (organic and inorganic), fuels, light industry/handicraft, labor protection, metallurgy/techniques, oil/gas industry, and resource use.
3. Science-Engineering (Series C): machinery, instrumentation, metallurgy, electrical engineering, motive power, architecture, communication and transportation, weaponry, aviation, space technology, atomic energy.
4. Agriculture (Series D): agronomy, forestry, livestock, fishing, aquaculture and aquatic products, plant protection, horticulture, irrigation works, ecology, agricultural machine, biology.
5. Medicine/Hygiene (Series E): traditional Chinese medicine and pharmacology, dentistry, disease treatment and prevention, medical specialties, and surgery.
6. Literature/History/Philosophy (Series F): also includes archaeology, arts, culture, drama, language, music, psychology, religion, and sports.
7. Economics/Politics/Law (Series G): economics, commerce and trade, finance, insurance, politics, foreign affairs, military affairs, law.
8. Education/Social Science (Series H): education, society, psychology, nation, religion, population, talent, books, information, college journal (social science edition).
9. Electronics/Information Science (Series I): also includes books and publishing, communications, lasers, mass media and press, and radio engineering.

Of the 15 institutions in the North East Research Libraries (NERL) consortium in North America subscribing to China Academic Journals, all have purchased the China Academic Journals archives for 1994-2005. Since the NERL license is designed to cover each library's existing or contemplated CNKI purchases, there is no need for additional paperwork. On the question of data ownership and perpetual access, Section XIII of the NERL license contains provisions for perpetual access by NERL institutions, including this clause:

In the event of subscription cancellation for any reason, Licensee may continue to access the Licensor's server to retrieve that portion of the License Materials that it has paid for earlier, subject to an annual maintenance fee not to exceed ten (10) percent of the prevailing annual subscription cost. (See Appendix A)

Also, an appendix to the NERL license stipulates that:

Upon request, the Owner hereby agrees in advance to provide the Licensee with one residual set of the License Materials on CD/DVD-ROM disc (including retrieval software) in the unlikely event the Licensee is unable to continue accessing the Licensed Materials on the Internet through no fault of the Licensee. The Owner will provide the discs at no extra cost beyond international shipping/handling charges prevailing at the time of shipment. (See Appendix A)

Beyond these safeguards, if an East Asian library still desires to acquire backup for any CAJ content purchased as Web access, DVD-ROM discs are available for an additional 20% of list CAJ prices, exclusive of the NERL discounts.

Several technical improvements have been implemented to CAJ since East Asian libraries began to subscribe, most notably the replacement of the proprietary CAJ Viewer with Adobe Acrobat PDF Reader for downloading and viewing articles. This represents a dramatic step forward for CAJ and CCND users, because using the PDF format

dramatically reduces difficulties with correct display of Chinese character fonts, makes CAJ Mac compatible, and results in faster article download time.

Another important advent in 2006 has been the release for Web access of approximately 700 Chinese titles previously embargoed by scholarly publishers in China. The embargo was out of concern for piracy and copyright infringement practices. These titles are available on the Web only from East View, and not from any of the other CNKI host sites, a striking testament to Western copyright protection.

In 2006, the Tsinghua Tongfang company also began producing a full text electronic version of retrospective journals. There are approximately 5,300 journals collected in China Academic Journals Databases, of which 1,565 titles of all academic Chinese core journals are available. Based on the electronic resource of CAJ full-text, the Century Journal Project launched a program in October 2000 to digitize 4,000 journals starting from their first issues, to establish a complete CAJ full-text database. By the end of 2007 this project is expected to be completed, by which time the entire CAJ full-text database will have 18 million full-text articles in storage. It is expected to grow to become the foremost Chinese library resource, reflecting changes and the latest developments in science and technology, politics, economics, culture, military affairs, education, medicine, and other fields for over 100 years in China (Luk, 2003; Z. Zhang, 2006).

Founder Apabi

Founder Apabi is owned by Beijing Founder Apabi Technology Limited, which is hosted by Founder Group of Peking University founded in 1986. Based on Founder word

processing technology that has accumulated for thirty years, Founder Apabi has developed two self-innovating core technologies: CEB (Chinese e-book format) and DRM (Digital Rights Management) technology. Apabi's major business is to help Chinese publishers do online publishing and provide digital library system, online e-bookstore system, mobile reading system and Chinese e-books for customers. Apabi's web platform is a portal for book information and e-book online browsing (S. He, 2006).

Apabi began its e-book business in 2000, and in that year, there were only 16 publishing houses partnering with Founder Apabi to publish e-books and only 49 titles were issued. Recent data shows that through 5 years of development the Apabi e-books have increased dramatically between 2002 and 2005 to 210,000 titles, by 5,000 new titles each month. As of 2005, its business included 450 contracted publishers, 23 e-book retailers, and 1,300 library subscribers, of which 40 were overseas libraries and 600 were college and university libraries.

Apabi also realized the importance of online publishing. In China, there are 565 publishers in total. Almost all publishers in China use Founder's technology to publish books, and 450 of these publishers are publishing e-books with Apabi technology. Apabi is able to convert all different formats into e-book format in multiple languages. For each party in the book industry, Apabi has provided different software to facilitate the workflow. For example, for publisher, Apabi provides e-book Maker and Writer software to convert and create e-books. For distributors, Apabi provides Rights Server software to encrypt, manage and authenticate e-books' content. For libraries, Apabi provides Digital Library Server software to use e-books. For e-book stores, Apabi

provides Retail Server software to sell e-books online. For e-book Reader device manufacturers and Mobile phone manufacturers, Apabi provides mobile reading system software that is embedded in the devices. Consumers can use and read e-books by Apabi Reader software (S. He, 2007).

Unlike other search engines based on the UCS-2 system, the Apabi search engine can manage over 70,000 characters on a universal platform. The natural language search engine can search for a string of characters within milliseconds from 30 Gigabytes of UCS-4 full text materials. Apabi's e-books retain the information in the original format, including characters, graphs, images, arithmetic formula, and tables, while offering the function of full text search (Luk, 2003; S. He, 2006).

Today, more than 1,960 libraries are using the Apabi Digital Library system and Apabi e-books, including over 50 overseas customers such as the Hong Kong CDC alliance. In reviewing its existing 300 university clients in China, Apabi found that there was a high level of congruence with their needs to expand its market to overseas, particularly to East Asian libraries and collections in North America, and to discuss a licensing agreement with them to make these Chinese e-books readily available from the post side of China (S. He, 2006).

The Founder Apabi Digital Library System adapts itself to the development trend of this Internet era, which can be used to instantly build a digital library system with a multiple stack room structure with the least input, to provide users with the latest e-books. As a result, readers will enjoy the ease and delight of online reading from now on.

The following is a list of the core technology of the Apabi Digital Library System.

The Founder Apabi Digital Library System carries over Founder's leading technical advantage in traditional publishing and further adopts multiple up-to-date technologies:

1. DRM (Digital Rights Management). This technology employs encryption and secure information transfer technologies to prevent digital information from being illegally copied, printed, or disseminated, which is up to the international digital library development standards.
2. E-book data conversion technology. The world's first-rate Chinese character processing technology is adopted by Apabi to maintain the original format and appearance of the resources, including complicated chart and formula, etc, for which technical compression is carried out so as to minimize requirements for storage space.
3. E-book curve display technology. The world's leading curve display technology is adopted by Apabi for hi-fi display, with enlargement to produce higher resolution.
4. Unique half-page turning technology. It is more suitable for screen reading. A patent application has been filed at the State Patent Rights Bureau for this innovation.
5. Widely compatible reading software. It can be used to read digital resources in multiple formats, such as CEB, PDF, TXT, and HTML. (S. He, 2006)

In addition to all the above, Apabi also has a powerful platform supporting the following

functionalities:

1. Books classification according to the *China Library Classification System* and in support of full text query.
2. Powerful library system management, which allows for comprehensive research, batch operation, recommended books, IP control and reader ID registration among other functions.
3. Authorization of readers to download and read the books.
4. User friendly reader interface through readers can highlight, circle, mark, bookmark, and partially extract the contents; readers can also listen to the e-books.
5. Diverse statistical and analytical functions, including time analysis, category analysis, single book analysis and reader analysis.
6. Full integration with DESi database creation and secure publishing software group.
7. Standard ports through that dual directional connection with the various kinds of OPAC system are possible. (S. He, 2006)

All e-books have to be read through a reading software Apabi Reader. With the e-book browser, readers can read the e-books offline, order books online and download books in addition to individual book management. Other features include format operation (font enlargement, reduction, change of background color), interface rotation, on-page note-making function (highlight, circle, bookmark and annotate, etc.), page turn function (back and forth page turns, skip to specified page, skip to the first/last page, half-page turn), and book closet management (book classification, sequencing, research and management, etc). Additionally, the system supports full text search, content abstract, full text reading aloud, and a compatible electronic dictionary that can grab words from screen for translation.

The uniqueness of the Apabi e-book can be summarized as follows. The company is cooperating with over 45 publishers in China to realize network publishing by using the Founder Apabi integrated solutions, which are issued simultaneously with paper books. The hi-fi display quality of Apabi e-books allows for reading in their original print format. Network publishing rights of all Apabi e-books have been granted by the publisher, solving the copyright problem. Also, advanced file compression technology results in minimum storage space, greatly saving hardware costs without the need of expensive disk array; because of low requirement on network bandwidth, books can be downloaded even with dial-up connection, suitable for use by off-campus users. Apabi also permits subscribers to build their own digital libraries, with the contents becoming permanent resources of the library (S. He, 2007).

Dragonsource

Based in Beijing and Toronto, Dragonsource is a prominent digital content provider that offers popular Chinese journals and magazines published in China. Dragonsource is devoted to collecting scholarly periodicals, digitizing them and making them available on the Internet. The company has also taken a leadership role in the preservation of Chinese classical materials. A user-friendly browsing system allows users to go through citations and detail contents of the e-journals at their fingertips. At present, Dragonsource is one of the largest Chinese electronic resource suppliers in North America. It has up to 1,300 titles of Chinese periodicals published in China, and over 50 East Asian libraries use the digital library technology and resources developed by Dragonsource. The company's mission is to let more people read more books and to advance the development of Chinese culture and education with new technology (W. Xu, 2005, p. 13).

The Dragonsource company has formed partnerships with Netlibrary, OCLC and IGROUP of Taiwan for worldwide distribution, and it has also set up an external database from NetLibrary. East Asian libraries in North America can access the e-content via their NetLibrary page. Since its founding in 1998, Dragonsource has been one of the three non-state-owned enterprises in China that have been granted online publishing rights to Chinese domestic publications, alleviating the otherwise daunting task of obtaining clearance for every publication from China's General Administration of Press and Publication.

From a technical point of view, Dragonsource provides a few options of service. The most market oriented method is to set up a mirror site administered by North American universities. This, while providing the best service in terms of speed for universities, is not the only option (Tang, 2006).

UniHan

Located in Beijing, the UniHan Digital Technology Co. Ltd. was found in 1997, providing digital contents of databases based on the CJK Unified Ideographs, which are part of the Unicode Standard. In the past decade the company has completed several important projects on digitizing Chinese classical texts. In addition to the famous *Siku quanshu*, UniHan's major digital content products include the *Sibu congkan* [Collections in four categories], *Lidai shike shiliao xinbian* [Compendium of Chinese stone inscriptions over the dynasties], *Shi tong* [The ten general series], *Hanyu da cidian* [Dictionary of Chinese language], and *Kangxi zidian* [Dictionary compiled in the reign of Kangxi], to name a few (J. Liu, 2003, p. 13; see also Fan, 2004). Its digital library software provides essential functions for the company's digital products. Such functions include (a) basic search, for which users search various terms in such fields as title, keyword, abstract, full text, organization, reference, fund, ISSN, journal title, year and volume/issue; (b) search in results, for which users narrow their search within the records already found; (c) advance search, for which library professionals use to conduct combined searches; (d) knowledge interlink, for which users explore related ideas; and (e) cross-database search, for which users search across multi databases. All search results can be sorted by update time or relevance. Moreover, full-text editing enables users to

view, download, print, select text, select image, and convert scanned text into plain text using OCR (Optical Character Recognition) technology (J. Liu, 2003).

Electronic SKQS (e-SKQS) is one of projects UniHan has in collaboration with Digital Heritage, a vendor of digital books in Hong Kong. Accessing this database requires vendor supplied client software. Currently, most North American East Asian libraries are licensed and have successfully accessed this database. The electronic version of the *Siku quanshu* contains full-text and scanned images of some 3,500 titles, containing over 36,000 texts. This gigantic electronic database of approximately 800 million characters, with full-text retrieval function, is an important tool for Chinese Studies. This first-ever complete web-based version of the classic compendium is distinctive from printed editions in a number of ways: (a) supports multiple simultaneous users; (b) supports online citation, note-taking, highlighting; (c) impressive presentation of OCR'd texts, which include the option of displaying full text in classic calligraphic style as original full image or in side-by-side comparison with search term highlighting; and (d) fast searching of vast amount of content (Luk, 2003). This first-ever complete web-based version of the classic compendium is distinct from preceding editions in the following ways:

1. Simplified User Access: Users of the Intranet Version can access the *Siku quanshu* database in the secure local network through a web browser instead of installing a client program on each computer as required by the Network Version.
2. Effective Control of User Right: IP lock control and individual user account enable institutions and libraries to effectively control user access to the database. That means that the IP addresses of authorized users would be locked into their accounts and any unauthorized access to the database would be denied. The selective option of "Guest Account" or "Personal Account" for setting up user accounts can also better suit the campus and library network environment.

3. Supported with Usage Report: The Statistical Tool enables institutions to master the usage information of the Intranet Version such as the usage frequency, duration, and unsuccessful login records.

4. Enhanced Personalized Research Tool: “Personal Bookmark,” “Search Criteria History,” and “Administration Tool” further enrich the product functionality and personalization feature.

This massive contribution also resulted in the inclusion of these 12,000 characters in the forthcoming update of the UNICODE character set. However, because these 12,000 archaic characters are not yet resident on Windows-based PCs worldwide, the content is accessible via its own special browser. The functionality of this browser has a look and feel similar to standard web browsers, with some significant advantages:

1. SKQS (Server Program, Intranet Program and Data Disks as described before) is installed and set up on a server machine located within the campus network of the Licensee.

2. Authorized users can browse SKQS Intranet available through the Licensee’s Secure Network through a web browser either from a computer or terminal on the Licensee’s Secure Network, or from a remote client machine with connections to a valid IP address on the Licensee’s Secure Network.

3. All access is under the administrative control of the host institution and should be bound by the license agreement (J. Liu, 2003).

China Data Online

Based in University of Michigan, China Data Online stands out as the best worldwide source for Chinese government statistics. The company collects, indexes, and broadcasts Chinese business economic information in a timely manner to satisfy requirements from different business sectors. The National Bureau of Statistics of China (NBSC) authorizes China Data Online as an exclusive agent to redistribute unclassified data collected by NBSC, and this authorization is valid from January 1, 2005 to December 31, 2010. With over 7 years of experience, China Data Online is the ultimate

expert in providing online information. Through its Beijing data centre, it collects and processes countless amounts of data to build up a well established business database.

The coverage of this database includes monthly and yearly reports on China's macroeconomic development, statistical data about China's population and economy at the county and city levels, and financial indicators of more than 568 industrial branches. It also includes statistical yearbooks, census data, industrial and marketing surveys, and an atlas of China. Census data is available through a separate subscription, covering the period from 1949 to the present, specifically dealing with China Annual Macroeconomy Statistics (1949-), China Monthly Macroeconomic Statistics (1998-), Monthly Reports on Economic Development (2002-), China City Statistics (1996-), China County Statistics (1997-), China Industrial Data (1998-), Main Indicators of China's Economy (1952-2000), and various statistical yearbooks (1999-) (Bao, 2007).

The strengths of this database are as follows: (a) data is collected from statistical agencies in China, (b) sites are authorized by the National Bureau of Statistics of PRC, and (c) users can search selected data tables by topic, year, and locality, with one-stop searches across many yearbooks as a possible option (Bao, 2007). However, major weaknesses include the following. First, the default URL can be set to search and display in either English or Chinese, but apparently not both at the same time. Second, it is unclear how to select data for viewing. A user has to click on "add," and then when a pop-up window opens up, he or she has to click on "select." Screen displays for census data do not indicate the source. Pop-ups sometimes obscure tables and cannot be removed unless clicking on another data item. Third, the homepage includes modules

(e.g. census by province and city) that one may not have subscribed to; only when clicking on data items screen by screen does one get rude messages indicating that access is not allowed. As for Excel downloads, only some tables allow clicking on "require download." And then the table can be saved as Excel. In other cases, one has to use the "save as" option, but only if the login password is entered can one save it as an Excel document.

Section headings give date ranges that differ from a particular indicator's date range. For GNP, the range of years to select was 1952-2000 although the heading was Main Indicators of China's Economy, 1949-2000. It is unclear how to get back to previous pages or to the homepage. The pricing for a back-up DVD of the census module is prohibitive (\$28,000). The clutter of its homepage is made more confusing by the list of items from China Data Center on some pages even though this source is not accessible to subscribers of China Data Online. "Custom Data" (import/export data) and "Business Directory" are not accessible to subscribers of China Data Online, but links to these sources remain on the homepage anyway.

Green Apple and the People's Daily

Headquartered in Changsha, Hunan Province, Green Apple Data Center was established in 1989, when the advancement of the digital market began to grow in China. In the past 17 years, Green Apple has taken part in and completed dozens of huge digitization projects in China, transforming from a solo product manufacturer to an enterprise of a diversified digital content provider, making it a major e-resource manufacturer in China.

At the beginning, for the purpose of raising money to jointly develop a software platform, a group of young teachers from 4 universities in Hunan Province became involved in the digital data processing business that formed the basis of Green Apple. In 1992 Green Apple registered as an independent corporate enterprise and created its developing environment. Several years later, with little initial capital but by undertaking dozens of processing projects, Green Apple ceaselessly accumulated capital and talent and promoted the development of the enterprise's scale and manufacturing techniques, with its number of employees growing from just dozens to hundreds (Green Apple Data Center, 2006).

In 1995 Green Apple made a strategic decision to adopt Adobe's PDF technology as its major platform, which had a major influence on its continuous development. Green Apple put out first the Chinese PDF conversion technique and used this technique to finish dozens of projects, establishing its leading role in the same industry of the Chinese domestic market. In 1997, to meet the format requirements of newspaper, Green Apple began to develop the manufacturing techniques of files in complex PDF format and put out the first electronic version of *World Cup Bulletin*, a newspaper in China. Since then, Green Apple has cooperated with the department of electronic engineering of Tsinghua University to develop "Tsinghua OCR-2000" and gradually matured the restoration technique of journals. Furthermore, it successfully finished two huge projects: the electronic version of the *Shenzhen Special Zone Daily* and the *People's Daily*.

The diversified business of digital products greatly enhanced Green Apple's energy in the market. Since 1999, Green Apple has developed over 50 kinds of digital

products, including e-newspapers, e-journals, e-books, and a computer corpus that is rich in content and diversified in format. The market responded excellently and Green Apple e-books have been recognized as the mainstream products in China's domestic market.

With dozens of years of accumulated experience, Green Apple has finally entered the markets of North America. It is expected that in the next 10 years, Green Apple will dash toward its goal of branching out of China, expanding abroad, and becoming one of major e-content providers in North America.

Green Apple deals mainly with the manufacturing, processing, investing, publishing, and distributing of digital products, including web pages, databases and e-publications (mostly the e-books, e-journals), and text corpus. Green Apple now has over 200 employees, of which 150 are computer operators and the rest managers and professionals trained in computer science.

One of the distinguished digital products of Green Apple is the *People's Daily* database, where its complete run of 1949–2006 was produced by Green Apple. The database, which is accessible both in full text via a powerful full-text search engine and in PDF facsimiles of the source material, comes preloaded on the 120GB hard drive of a computer and is shipped together with a set of backup DVDs, all included in the purchase bundle. All requisite software, including Windows XP Professional, for which the program is optimized, is supplied. Software packages are based on standard (English) Windows and standard Adobe Acrobat Reader, for which all required Chinese fonts are downloadable gratis from Adobe's Web site; all fonts come preloaded on the hard drive (Green Apple Data Center, 2006).

Both the hardware and the software would become North American universities' property (of course, the owning libraries have to abide by the normal copyright restrictions) regardless of any future relationship with Green Apple Publishing. Apart from the benefit of ubiquitous access, libraries save considerable resources in space, materials, cost of archival microfilm, and staff time for boxing, bar-coding, retrieval, etc.

The *People's Daily* database is both easy to use and powerful. The interface is straightforward, intuitive and user-friendly. More importantly, the *People's Daily* database CAJ search engine is quite robust. Unlike ChinaMaxx and other Chinese databases, the *People's Daily* database can be searched by full-text. For non-native Chinese speakers, this is a real plus because it allows easy identification of relevant articles. Also unlike Apabi, it is possible to search by an author's work place and the institution that publishes the journal as well as the title of the journal itself, which facilitates research about Chinese political institutions because it is possible to track with the *People's Daily* database what different institutions research. With these features, it is possible to search most of the relevant Chinese academic journals, especially in the social sciences (Green Apple Data Center, 2006, p. 6).

East Asian libraries have not encountered any significant problems in using the *People's Daily* database. Now that it is available through computer servers in the United States, access to the database is faster than before, and one no longer has to rely upon servers in China. Users have downloaded hundreds of articles from this database and have only encountered one that was formatted improperly. The software required to read

these files is also simple to use, provided that the computer is equipped to display Chinese fonts, which is a no-brainer for the Windows XP operating system.

CHANT

In 1989, the Institute of Chinese Studies (ICS) at the Chinese University of Hong Kong began a project on electronic databases of hundreds of Chinese texts before the Tang dynasty with funding support from the Research Grant Council in Hong Kong and the Chiang Ching-kuo Foundation. Because the project title is Chinese Ancient Texts, its acronym CHANT (CHinese ANcient Texts) is known among Sinological research circles. The editors of the project are two Hong Kong scholars, D.C. Lau and F.C. Chan. The first phase of the project was to issue a series of printed concordances of pre-Han and Han texts entitled *ICS Ancient Chinese Texts Concordance Series*. These 65 volumes were published and distributed by the Commercial Press of Hong Kong. The next step was to extend the time period to the Six Dynasties and to convert the whole to an electronic database (Luk, 2003).

The database at present consists of five series of digital texts, including oracle bones, bronze inscriptions, writings on bamboo and silk recovered from archaeological excavations, pre-Han and Han texts, and Six Dynasties texts. A sixth series of traditional encyclopedias is not yet available. Each of these series provides a valuable research tool with search capabilities (Z. He, 2004).

The oracle bone database is based on seven mainland China and overseas collections with some additional material comprising all 53,834 pieces of tortoise shells and bones, with over a million graphs. The original graphs are accompanied with modern

versions, and there is a complete list of all the graphs, frequency counts, and search functions for single words, phrases, and sentences.

The bamboo and silk material is based on texts recovered in archaeological excavations that often provide valuable early versions of received texts as well as those previously unknown. The original texts have been scanned in with an accompanying transcription in modern characters. Punctuation and textual notes have been added, and emendations are clearly marked. So far some 1.4 million characters have been entered.

The computerized database of bronze inscriptions is based on the *Yin Zhou jinwen jicheng* (complete collection of bronze inscriptions during the Shang and Zhou periods) published by the Institute of Archaeology, Chinese Academy of Social Sciences, Beijing, in 1999. It includes inscriptions from 12,021 vessels as well as another 18,000 or so inscriptions taken from rubbings. The corpus consists of 140,000 characters from the inscriptions and a million words of explanation. Detailed information of individual vessels is also supplied, and a list of word frequencies has been added (Z. He, 2004).

The pre-Han and Han series is comprehensive, and the best editions, usually drawn from the *Sibu congkan* collections, are used. The texts include those in literature, history, linguistics, and philosophy. Textual comparisons with variant readings and punctuations add to the usefulness of this corpus. Phrases of up to 6 characters can be searched, and the whole set of the texts can also be accessed. The list of titles is enormously long because fragments of lost texts that were cited in later works have been included under the original title.

The fifth series is a database of traditional texts of the Six Dynasties period (Wei-Jin and Northern and Southern Dynasties, 220-589 CE). The format is similar to that of the pre-Han and Han series, again with textual comparisons, notes, punctuation available on request, and search capability for phrases up to 6 characters in length. The list of titles is 150 print pages in length, an indication of its comprehensiveness (Z. He, 2004).

The CHANT electronic database is a valuable research tool that cuts through the tedious and time-consuming searches in now outmoded reference works. In the words of its editors: “Scholars of diverse interests can make use of the database for inductive, analytical, statistical, comparative studies, and the like. By saving time on the data retrieval and preparation, they can focus on high-level creative studies” (Luk, 2003, p. 4).

Scripta Sinica

The pioneering effort that opened the doorway to digitization of Chinese books in the early 1990s was Scripta Sinica compiled by the Academia Sinica in Taipei. Initially, in the 1990s an MS-DOS-supported full-text searchable database of the Twenty-Five Dynastic Histories of China was put on the scene. Subsequently Academic Sinica placed the database on the web, making it publicly accessible in an unrestricted manner. As part of repositories of digitalized Chinese traditional texts, Scripta Sinica has since grown richer in content, as other collections of Chinese books, including local histories of Taiwan, have been put online one after the other. The Institute of History and Philology of the Academia Sinica has put together an enormous corpus of pre-modern textual materials. It is a very large-scale textual database and totals 224,554,148 graphs

/characters, totaling 274 titles/sets that can be searched by graph and phrase. It is an extremely useful site for scholars but the access to the corpus is restricted (Luk, 2003).

Currently, Scripta Sinica is the largest database for the study of pre-modern China with detailed original texts of nearly 300 multi-volume sets containing thousands of titles from first-hand sources. Scripta Sinica contains data from a broad range of primary sources that can be searched via the Internet. It is a fully retrievable electronic database, indexed by authors, subject headings, dates, and keywords. The user-friendliness of this database provides an innovative method of searching the vast volumes of the original Chinese texts. Moreover, the database requires virtually no space at all and the savings in square footage alone would justify the retrospective purchase of pre-modern Chinese materials (Wu, 2004).

Stanford University is one of the leading centers in the world for the study of pre-modern China. However, the main weaknesses of its Chinese collection used to be in pre-modern society, history, religion, linguistics, literature, philosophy, archaeology, art and art history, lacking depth and breadth in most areas of the humanities and social sciences for the period before 1840 (Pisani & Shao, 2006). Among several East Asian libraries in North American universities, Stanford's was the first to purchase the license that made it possible for its users to search those texts. In addition, Stanford University recently finished loading three database lists to the Stanford Web site, allowing Stanford users with a SUNet ID to search the entire database. The acquisition of this database has covered many of the Stanford collection's weaknesses and has made the Chinese collection stronger and more balanced. This database has facilitated research and

graduate teaching in the departments of Anthropological Sciences, Asian Languages, Comparative Literature, History, and Religious Studies, furthering the reputation of Stanford as the place to go for pre-modern Chinese Studies (Shao, 2006).

Wanfang Data

Wanfang Data is China's leading multiple-media provider for e-journals, e-journal packages and print subscriptions, a suite of e-resource management tools, full-text and secondary databases and related services for libraries and research organizations. It also provides scientific, technical and health information products and services and is China's premier information resource for science and technology.

Wanfang Data has been part of the Institute of Scientific and Technical Information of China (ISTIC), an influential division of the Ministry of Science and Technology. As a general rule, the director of ISTIC also acts as the CEO of Wanfang Data. As a government affiliate, Wanfang Data has to take prudent measures in its businesses since any serious wrong doings at Wanfang Data would damage the political careers of officials in the higher bureaucratic levels and would bring about calamity to the Chinese Ministry of Science and Technology. This political environment predicates Wanfang's guarded strategy and lays the foundation for Wanfang Data to deal with copyright issues. Unlike Wanfang Data, other Chinese e-publishing companies such as those affiliated with universities (such as Apabi with Peking University, and Tsinghua Tongfang with Tsinghua University), which are much less politically oriented, do not see much need to take such vigilant measures the way as Wanfang Data does.

Wanfang is a global company, with headquarters in Beijing and offices in Toronto and New York. More than half of the company's international business activities are in North America; it is also a market leader in Europe and Japan. Wanfang maintains relationships with over 9,000 journal publishers in China, and maintains a database of more than 5,400 journal titles, 700,000 theses/dissertations from Chinese universities and colleges, 617,000 conference papers held in China, and 133,000 laws and regulations of the PRC (D. Liu & D. Xu, 2006).

CHAPTER 4

Selection and Acquisition of Chinese E-Resources

Nowadays, the selection and acquisition of Chinese digital resources have become part of the collection development work Chinese Studies librarians in North American East Asian libraries are doing on a day-to-day basis. This chapter will discuss some of these processes, including how to select Chinese digital resources, acquisition procedures, the copyright issues of Chinese e-resources, and accessibility problems of these resources.

Selection of Chinese E-Resources

Like other library materials, Chinese electronic resources are evaluated based on their relevancy to the mission and collection of East Asian libraries. The selection procedure of Chinese e-resources is based on the decision of key library staff including East Asian libraries' head librarians, Chinese Studies librarians, and main library digital program officers with expertise and delegated responsibility. All acquisitions of Chinese e-resources are made on the unanimous agreement of these three parties. Because intricate negotiations are frequently required in this process, the legal offices of universities are consulted for legal advice. The primary policy emphasis for the selection procedure is that Chinese e-resources identified for acquisition have to pass peer review by library collection development committee members. Usually associate university librarians who are in charge of collection development have the final responsibility of ensuring the scholarly quality of Chinese digital materials acquired. For relevant Chinese databases that have not been acquired by the library, cooperative liaisons are sought with other holding institutions, especially those in the related consortiums (L. Wang, 2007).

Purchase of Chinese e-resources, mainly newly created Chinese digital databases in East Asian libraries, is made after reviewing authoritative evaluation published in scholarly journals and other sources aimed at newly released Chinese materials. The responsible parties mentioned above make decisions to purchase Chinese electronic resources subscriptions only after they have requested to use the Chinese e-resources on a trial basis and have judged it to be useful to the users of the East Asian libraries. Additional purchases of Chinese e-resources for retrospective collection development are made after reviewing the Chinese Studies bibliographies and notes of other new purchases of Chinese digital materials (A. Wang, 2007). Additionally, as a significant portion of funds for East Asian libraries comes from East Asian Studies programs, Chinese Studies faculty's requests are also taken into consideration. It is important to note that the needs of East Asian Studies programs are always in direct alignment with the East Asian Library's collection development policy. Every effort is made to add needed Chinese digital resources to a Chinese collection that fall within the range and scope of the annual budget of East Asian libraries. For this reason, free materials downloaded from the Internet are not included in the formalized selection procedure policy.

A number of selection tools are used by Chinese Studies librarians to select appropriate Chinese e-resources for East Asian libraries. The selectors rely mainly on catalogs published by reliable e-book vendors in mainland China, Taiwan and Hong Kong, but other review sources such as scholarly journals, publications in online media, and bibliographies are also consulted. Advertisements in professional journals are also

an important source of information about newly released Chinese digital databases. Some of these sources contain bibliographic information of the titles within the range of Chinese Studies librarians' collecting plan for e-resources. Chinese Studies librarians also select Chinese e-journals through users' surveys in their universities, by the journal's influence as measured by core-journal factors and by reviews in the Chinese equivalent of *Magazines for Libraries*. The relevance of subject areas to the institution and usage by Chinese Studies faculty are two factors that have the most impact in buying decisions (L. Wang, 2007).

Over the last 10 years, the East Asian libraries' strategic approach to development of Chinese e-resources has emphasized multi-campus collaboration. In this case East Asian libraries could negotiate a purchase at a major discount for a large number of Chinese e-resources, which are delivered via various vendors. Chinese Studies librarians usually have initial assessment of the content and review the content of offered e-books to determine if they are sufficiently relevant and appropriate for East Asian libraries' needs and whether it is justified to pursue possible purchase of all or major portions of them. After assessing Chinese Studies librarians' initial reaction to this possibility, East Asian libraries begin negotiating with Chinese e-resources vendors. Vendors also offer subscriptions and sales of pre-selected electronic collections, often listed in enclosed brochures along with the number of titles in each collection. Their brochures listing those collections and the number of titles in each are often attached. The basic process of purchasing Chinese e-resources is as follows:

1. One East Asian library chooses, analyzes, and evaluates the e-titles proposed to buy, and then decides whether to subscribe to the e-journal for trial. The publishing body or agent should provide the overall information of their e-resources.
2. The duration of trial must be no less than 2 months, and the range of institutions participating in the trial as well as the trial mode (IP control, user and password mode, IP control plus user and password mode, etc.) should be decided based on consultation between the East Asian library and the agent. The East Asian library distributes a trial notice to all participating institutions.
3. After the trial period, e-content providers provide trial statistics data to the East Asian library, including volume(s) in full text usage, abstract, searching full text usage, abstract usage, searching, page browsing, Web site log on volume, etc., and at the same time provide the quoted price.
4. All other institutions participating in the trial must submit their trial evaluation results and purchase suggestions to the East Asian library.
5. According to trial results, the East Asian library writes a report on the trial result analysis and evaluation, and then makes the purchasing decision.
6. The East Asian library carries on negotiations with agents over agreement clauses, price, etc.
7. Once coming to an agreement, the East Asian library cosigns the e-resources purchasing agreement with a member institute that has legal person qualification. The purchasing agreement must be prepared in both the Chinese and English, and both versions must be equally legally valid.

Having a free trial period for assessment of an online journal by faculty appears to be an essential part of the acquisition process.

Accessibility to Acquired Chinese E-Resources

Since the 1990s, East Asian libraries in North America have made impressive advances in their access to Chinese digital resources. Many users were very excited about reading books and journals online, but most of the commercially distributed Chinese e-book and e-journal collections were licensed for non-profit, educational use in the East Asian libraries, and access to them was restricted. Thus, the use of these collections is governed by copyright laws and individual license agreements. Therefore, systematically downloading, distributing, or retaining substantial portions of licensed information is prohibited.

In the past several years, East Asian libraries and collections in North America have collaborated with a diverse group of librarians, e-content providers, professional programmers, and systems integrators to define and simplify access to vast contents of Chinese digital information. Among them, Chinese e-resources providers have been playing an active role in providing better access to Chinese digital information and ensuring the choice and integrity of these resources. Most Chinese digital content providers have developed the technology of one touch switch between traditional and simplified Chinese characters, and Chinese language contents are organized by issue, with full texts searchable by author, title and keyword. All searches are initiated and fulfilled in Chinese characters. Most electronic versions are published simultaneously with the print versions, allowing East Asian library users to access the updated content sooner. For example, 60% of Dragonsource's titles are published simultaneously in a printed version, 20% within 2 weeks of time frame, and 20% even before the printed version is published. The majority of e-titles contains back issues, which are included with the subscription when available. Chinese e-resources are more cost effective than paper resources, with shipping costs from China being the largest part of the cost. Moreover, because patrons can easily switch between traditional and simplified Chinese characters, there is no need to carry print versions in two styles. Therefore, East Asian libraries can potentially increase the number of users they serve by presenting the content in both character formats.

However, one of the drawbacks to an increase in the number of Chinese digital collections in the East Asian libraries is that it is not very easy to make the technical

configuration simple enough for the average users to access effortlessly (X. Zhou, 2005). For example, in October 2004, the Stanford East Asia Library acquired a Dell Precision 380 with a capacity of 700 GB to be used for delivering access to these CD-ROM collections of the *Siku quanshu* via Virtual Drive software that allows for multiple CDs to be loaded, yet accessed as if the discs were being loaded one at a time. The main library's tech support staff cherished with the expectation that the East Asia Library's Chinese Studies librarians would be responsible for the setup and maintenance of the computer. The timely acquisition of a computer server with this capacity and performance not only allowed the East Asia Library to use it to deploy information from CDs limited to the library's computer clusters, but also provided significant amounts of data for the Stanford campus community at large.

Problems abounded when East Asian library staff tried to install software produced in China and elsewhere because the system was not compatible with the ones already in use at North American universities. The technical ability of East Asian librarians was severely limited in terms of detecting and solving system problems of these electronic resources. Even main library IT staff were often unable to provide sufficient help due to their insufficient knowledge about Chinese language. For instance, several years ago, many East Asian collections were pursuing an electronic version of the *Siku quanshu*. Both East Asian libraries and main libraries were perplexed about the administrative tools. The so-called "Professional Network Version" was completed with the 183 CD-ROMs. Nevertheless, since East Asian libraries, as the licensee, have to

provide their own servers, and have to set up their local installation for this intranet version until they received a web-based version of this database.

Currently, many computer servers in every East Asian library or collection are set up for serving Chinese e-resources to the library's public terminals, but Chinese Studies librarians need to look into the possibility of using these systems to provide more resources online. The scope of materials to be put on the server would be limited to stand alone databases (e.g., the *Sibu Congkan*, Chinese Cultural Revolution collection). Thus the Chinese Studies librarians are in dilemma between choosing digital copies of East Asian libraries resources and creating of East Asian libraries' databases. East Asian libraries usually are an ideal location for such a server due to the ability to handle Chinese language issues such as software documentation, on-screen instructions, online help, communications with vendors, etc., and assisting library staff and patrons with accessing materials on the server from a public terminal (X. Zhou, 2005).

Implementing a server for Chinese e-resources in an East Asian library would entail several conditions. First, location requirements include the issue of security. The server must be kept in a secured location, locked and inaccessible to unauthorized persons. Second, staff support is needed. Implementing a server in EAL also requires staff resources to plan, configure, maintain, and monitor the server. Besides technical skills, the staff is required to have knowledge about Chinese computing environments and the Chinese language, about current library trends and needs for deciding what and how to deploy Chinese e-resources, about pertinent copyright issues in Chinese materials. They also need to know the Windows computing environment, the main libraries'

network environment, and the university computing environment. The staff should have the ability to configure and maintain server-side software and applications: Apache, PHP, and MySQL. Server monitoring and maintenance includes tasks such as keeping the current versions of system software and modules updated and backing up the system in case of disk crash/failure. Due to constant threats of hacking, constant monitoring of the server is necessary. Server security has to be part of the planning, maintenance, and monitoring of the server. East Asian libraries' staff would have to be available (on call, depending on need) to respond to server needs such as systems that are down, computer crashes, hacking, application failure, etc.

Often some Chinese digital content providers use their own systems to allow North American users worldwide access while enjoying a level of privacy, which is not possible in the present client-server architecture or library system. They are not using the Web to connect to their servers, but require a Web browser to access the local installation. Curiously, their technical requirements for the server said nothing about large hard disks, connections to CD-towers, etc. They either chose to leave it out or decided that it was not really a "networked" situation as described in those requirements. If Chinese collections were really going to network a CD-tower, it would be a big installation with potentially troublesome CD issues. If they did not network it would become a stand-alone product, with the user having to select whichever of the discs he needs at the moment, and popping it into the machine.

In the coming age of an abundance of digital imagery, access to Chinese language script through searching will become even more dissatisfying than it is today if steps are

not taken to remedy the situation. For example, Chinese e-resources providers need to consider how the mix of traditional and simplified Chinese characters would be handled in a local database of Chinese language materials. Although there are about 3,000-5,000 commonly used Chinese characters, the total in use since ancient times is more than 80,000, including many variants (Lan, 2006). The Chinese government requires that all language-related products marketed in China support the GB18030 Standard, and many characters in ancient Chinese texts and aged manuscripts cannot be found in the current GB standard fonts during the digitization process. Searching for specific Chinese characters in databases is fraught with dissatisfaction. The Web browser needs to be configured to display Chinese fonts in order to access Chinese-language Web sites and view Chinese-encoded web pages. Also, Asian language support and Chinese IME are required for entering Chinese text into conduct searches (J. Yang, 2007).

More and more Chinese-language software programs have begun to provide support to displaying Chinese encoded digital information. There are 71,000 Chinese characters that can be represented interchangeably in Unicode and the China National Standard's GB Code. It can be used in any platform and system, and it is applicable to both English and Chinese editions. The Super Large-Scale Network Chinese Character International Application Platform, a worldwide initiative for browsing, retrieving, and connecting to the Internet globally, is going to be released soon (Lan, 2006).

As for converting Chinese texts into electronic form, the bottleneck is data indexing. The OCR technique is expected to accelerate this process, with the latest OCR technique showing great performance with modern printed materials. However, its

success with classical Chinese materials is rather limited. An advanced OCR for recognizing handwritten characters of traditional Chinese is crucial to humanities' researchers, and it remains a challenge for software developers in studying Chinese character recognition (J. Yang, 2007). One of the primary difficulties in recognizing handwritten characters of traditional Chinese is that they are often cursive. Many East Asian libraries per se do not have a publicly accessible way to OCR non-Roman texts. There are a couple of caveats to this, however. Some commercial OCR packages may claim or even actually have some degree of Cyrillic, but there are no programmatic "official" places to find them in East Asian libraries. Some Chinese commercial OCR packages may eventually have some degree of Cyrillic ability, but East Asian libraries would most likely get what they pay for. The principal OCR package now used in East Asian libraries' Chinese e-resources is called Aabby FineReader, which was partially developed in Russia, and is rumored to have the best Cyrillic OCR available. However, it is quite expensive, strictly licensed by usage and by language modules. Even if it did possess, or would consider licensing, the Cyrillic or other modules, there would be a need for something more official than a drop-in-and-scan-a-few-books operation.

Another problem is that some Chinese e-resources are not compatible with the current method of off-campus authentication. This is a moving target, and it is possible that soon-to-come changes in their own software would work with these e-resources, making it best to warn users that they need to access this particular database on campus for it to work properly. Many users focus on the off-campus authentication issue, insisting that if East Asian libraries just had the right software, electronic books and

journals would be perfectly accessible from anywhere. What they are ignorant about though, is the fact that the way of accessing information is complex at today's technology world. It is not the library service that drives the change, but rather the network to which those screens are hooked up to. For example, CHANT is registered on many libraries' proxy servers, which means that, in theory, one should be able to access it from off campus. With some off-campus testing, Chinese Studies librarians might be able to isolate the problem either in the libraries' network configuration or in peculiarities of this particular database. Off-campus access to restricted resources depends on the interaction of a number of variables such as the computer operating system, the particular web browser, the library proxy configuration of the school, and more or less the same set of variables on the data provider's side, all of which East Asian libraries do not have control over.

Chinese Studies librarians often encounter problems dealing with counting titles in large databases. For ChinaMaxx, a Chinese e-book was counted as available regardless of whether or not East Asian collections currently provided access to it. A Chinese title was also counted as available regardless of limitations on usability and functionality imposed by the providers due to licensing and technical considerations. Often such restrictions mean that an "available" e-book in fact does not have the functionality Chinese Studies users need. Chinese Studies librarians also describe some of the major cost issues, such as the variable subscription costs and the typically high (e.g., 1.5 times list price) purchase prices. Both the functionality and cost issues are very

much in flux among Chinese publishers and Chinese e-book providers, but it appears that no service currently addresses all of the issues satisfactorily.

Let's take ChinaMaxx's search function as an example. It includes a special section search feature that allows the users to find the subset of a special section file and identify all related articles, an exclusive search feature that eliminates unwanted search results by running an exclusive search feature that eliminates unwanted search results by running exclusive keywords, improving efficiency and accuracy of the search engine, and a combined search feature that mixes the above search commands in any configuration. ChinaMaxx's limits on simultaneous uses are Web session based, and thus can be circumvented by an alert reader. Such circumvention, though, may violate the terms of use and result in subsequent investigation and possible withdrawal of access. Furthermore, public service and customer support issues are raised, as neither East Asian libraries nor ChinaMaxx customer support is allowed to tell the user how to start another session. These providers have yet to realize that attempting to restrict access to the content or the ability to copy and print, after a subscription takes effect, is counter-productive to their primary goal of facilitating scholarly communication (Han, 2006).

Different from most Western business models for electronic resources, all Chinese digital content providers play the role of a vendor of e-contents, even though they are not co-publishers of printed books and journals with Internet editions. The terms "providers" and "collections" have quite different connotations, and they should be used with careful distinction. Both terms are more specific and accurate than the term "digital libraries," which can mean either a collection or an institution (in the same way that

"traditional library" can refer both to the books and to the people who work with them). In this case, the terms and conditions of subscription to online versions are declared not by the originating publishers, but by these digital content providers. Furthermore, each provider has a set of different technical requirements from the others, forcing the local browser to use a different reader to access each provider's databases.

This issue hints at another very interesting question: is it the content/collection that actually requires a special plug-in, or is it the provider? In the case of special non-browser-related functionality, it is the content or the collection; in the case of pure control of usage or intellectual property, commonly called "Digital Rights Management" (DRM), it is the provider. In most cases, it is some combination of both. Most Chinese e-book providers require some sort of plug-in, allowing them to control printing and offer new and different functions. ChinaMaxx offers full-text search and retrieval of over 710,000 titles in various disciplines, but requires a browser plug-in. Some plug-ins are nearly automatic, and the process is transparent to the user. However, with most plug-ins, there is at least one potential risk of incompatibility for the browser or operating system, or there may be a problem of inaccessible use at a public computer with authorized plug-in installation. Users can print some of the items from ChinaMaxx's database, depending on its arrangements by each publisher or author.

Browser plug-ins can be required for many different reasons, most commonly to provide more functionality than what a simple browser can offer (as in ChinaMaxx). They are also employed to impose control over content (as with Apabi whose plug-in offers more functionality while it also "locks down" content). Another example of

content "lock down" by a plug-in is streaming databases. Other digital collections like CHANT and Scripta Sinica do not require any special browser plug-ins. The main reason they do not require plug-ins is because they are compatible with the functions of modern built-in browsers in limiting the content display each time so there is less worry about the issue of intellectual property control.

In many cases, Chinese e-resources providers allow limited printing, but do not explicitly state what those limits are, while others do not permit printing at all. During the first few years of ChinaMaxx's operations, all charges for printing as well as micro-charges for copying small portions of text were paid by East Asian library users. Now users have a library-paid printing option, but with the same publisher-imposed limitations. East Asian libraries' subscription allows printing and copying from many Chinese e-resources at no charge, although some titles have restrictions on the number of pages that may be printed or copied.

One of the most effective ways to provide perpetual access to Chinese e-resources is to have mirror sites built in North America. These sites allow East Asian libraries to store their digital collections in their own electronic facilities in order to guarantee future access. It is similar to traditional libraries collect and store various printed resources in their stack rooms. Mirror sites could be a particularly helpful way to disseminate, preserve, and ensure accessibility to Chinese digital information in the long run. Through these mirror sites, fast connections to the Internet could be ensured, and the information flow through the Internet would become permanent property of the libraries. Chinese digital suppliers' mirror sites have been designed and created to realize the following

functions: First, to increase reliable access and response speed for the users, thereby facilitating the dissemination of Chinese e-resources for research, study, and other uses; second, to ensure faculty, students, and staff with highly reliable sources (not dependent on systems outside of a particular university); third, to serve as a secure backup location for libraries and institutes; and fourth, to turn online information into the perpetual property of libraries and institutes. Some digital content providers adopt an archival storage strategy of diversification worldwide. For instance, both SuperStar and Wanfang have already set up their mirror sites in San Diego and Toronto respectively, each site sufficiently able to serve the purpose of safe storage and permanent access. In this respect, prestigious East Asian libraries have been highly considered for mirror site installation. As of April 2006, Wanfang Data has set up 445 full mirror sites around the world for local hosting of its full-text databases, including China Online Journals (COJ), Dissertations of China (DOC), Conference Proceedings of China (CPC), and Policies and Laws of China (PLOC). Among the mirror site users are prestigious libraries and research organizations, such as Stanford University, University of California at Berkeley, and Yale University (D. Liu, 2007).

Copyright Issues of Chinese E-Resources

As we know, copyright is a set of exclusive rights regulating the use of a particular expression of idea or information, and it is becoming increasingly difficult to enforce with digital technology and the Internet. Copyright is based on a fundamental balancing of the interests of owners and users. Specifically, copyright assigns the owner to a work control or a set of exclusive rights that prohibit others from using it in specific

ways without permission, and to profit from its sale or performance for a fixed period of time. The exclusive rights include distribution, adaptation, and public display. However, these rights have exceptions such as fair use, where libraries have traditionally used the fair use principle to loan library materials to patrons. This section gives a basic idea as to how Chinese e-content providers try to reduce the potential liability of copyright infringement, and how it has complied with national laws, regulations, and policies and has taken necessary measures in protecting intellectual property (Mo, 2004).

Since enacting its first copyright law in 1990, China has been engaged in the development of a copyright regime that accords with international practice. The Chinese government has promulgated a series of copyright laws and regulations, among which are *Copyright Law of the People's Republic of China*, *Enforcement Regulations of Copyright Law of the People's Republic of China*, *Regulations on Computer Software Protection*, *Resolution on Punishment of Infringing Copyrights*, and *Provisions of the Supreme Court about Several Issues Concerning the Trial of Computer internet Cases for Applying Laws*, etc. These legal documents have greatly improved the protection of intellectual property in China. China has also joined the three leading international copyright conventions--the *Bern Convention*, the *Universal Copyright Convention*, and the *Convention for Recording Products* (Chen & Chiu, 2006).

Chinese copyright issues have been treated in multiple methods, such as lobbying the Chinese government to allocate the copyright costs for resources needed by the National Library of China's Digital Library; seeking authors' free authorization for digitizing their works; participating actively in drafting the *Regulations on Protection of*

the Right of Communication through Information Network organized by the National Copyright Administration, P.R.C.; and aiming to make public libraries immune from copyright liabilities for using online resources; working with various trade associations and learning societies on related copyright issues; lobbying with law makers and policy makers to extend libraries' "fair use" from print materials to online resources in the amendment of the *Copyright Law*; and lobbying the Standing Committee of National People's Congress to make favorable legal explanations as well as continuing the legislative effort to push a Library Bill in hope to solve all or major part of the copyright issues in developing digital library recourses at National Library of China (Zhan, 2006).

However, the Chinese legal system has yet to address Internet transmission and Internet related copyright issues. The Chinese government is trying to improve its copyright legislation situation and strengthen the judicial and law enforcement systems in this regard, administrative measures have been taken by the government from time to time to block legal loopholes of copyright infringement and to protect the legal rights of copyright holders.

Copyright protection of e-books has been a big issue in China since the beginning, having a spillover effect on East Asia libraries' dissemination of Chinese digital resources through their own systems in North America. Chinese digital resources providers are confronted with extensive new laws and legal cases, increased licensing of information, and new technological controls, all together making it increasingly difficult for them to serve their North American clients. Furthermore, under the guise of protecting copyrighted works from network piracy and digital abuse, well-financed and

well-organized copyright owners like government affiliated agencies are undermining the copyright system that has served the library community and public interests effectively. Accordingly, many Chinese digital resources providers have found that current copyright law is becoming increasingly inefficient and have tried to provide an alternative mechanism for financing creative and artistic work. The ability of Chinese digital information suppliers to provide their clients (East Asian libraries) with digital information is being severely jeopardized by those who own a work's copyright. Ultimately, it is East Asian library users who suffer since they would have access to less information.

In China, e-content providers usually contact the proper copyright holder, either the author or the publisher, to request copyright permission for digitizing the materials. For instance, copyrights of CNKI Databases are approved by the General Administration of the Press and Publications in China. CNKI has signed license agreements with over 6,100 publishers, acquired authors' license through Chinese publishing institutions, and is authorized by the cooperative publishing houses to digitize their materials. The licensing agreements describe terms, accessibility, limitations and other miscellaneous items mutually agreed upon. Granted permission includes non-exclusive rights to use in all world languages. Future publications (including future editions and revisions) by the copyright holder or others authorized by the copyright holder are not restricted. In most cases, Chinese digital content providers have compiled standard copyright agreements after studying related laws and regulations and consulting IP lawyers and researchers. For Chinese publishers or institutes who are the original copyright holders, the

agreements covered the following basic clauses in *Copyright Law of the People's*

Republic of China:

- (1) the category of the right to exploit the work covered by the license;
- (2) the exclusive or non-exclusive nature of the right to exploit the work covered by the license;
- (3) the territory and the term covered by the license;
- (4) the rate of remuneration and the means of payment;
- (5) the liability in the case of breach of the contract; and
- (6) other matters that the parties consider it necessary to agree upon. (p. 44)

For publishers that obtain copyrights from authors, the copyright agreements require publishers to confirm that the titles they provide have proper electronic rights authorized by authors.

As more and more Chinese materials have been delivered through digital means and in digital form to the East Asian collections in North America, Chinese Studies librarians have the awesome responsibilities of informing patrons, faculty, and staff about the proper use of digital content through campus network [plural or singular?]. They have also been working [could use "have also worked" if you prefer] with Chinese digital content providers on policy and legal issues as well as potential solutions to issues that need to be considered. In addition, Chinese Studies librarians have to meet the various challenges posed by the network campus. At present, Chinese Studies librarians in North American East Asian libraries are grappling with these copyright issues as they are commonly handled in today's digital environment, by the local courts, and in the legislative process.

Legal issues are called the "bottle neck" of further development of digital libraries in China (J. Liu, 2003, p. 15). According to the Chinese Copyright Law, only

publications that are over 50 years old are exempt from copyright restriction (Chen & Kui, 2006). As such, Chinese Studies librarians are faced with several fundamental questions and must adapt accordingly. Specifically, is information a commodity to be sold and purchased, or is information a public good? Is copyright a source of economic endeavor, a problem of public welfare, or a model of public access? What is the fundamental interest of the library community? The answers to these questions will profoundly affect the way libraries operate in the digital age. East Asian libraries' policy and decision makers should devise a scheme for intellectual property management that enables broad and easy distribution of Chinese e-resources for East Asian library patrons to use, while also fostering a competitive and supportive environment for learning, scholarly innovation, and creative work. By adopting such policies, East Asian libraries will be able to thrive with Chinese digital information.

When the East Asian collections' selectors deal with Chinese digital content providers, basic concepts of copyright law for both sides should be first clarified. Chinese Studies librarians should request clarification of copyright ownership and avoid ambiguity, especially about fair use and licensing. Copyright of Chinese e-resources consists of two parts--one is royalty for authors and the other is copyright for publishers. Beginning in 2001, Chinese digital providers have started to include clauses on the networking information or content promulgation right in their agreement with authors for their writings. Some part of the revenue from selling each Chinese e-book should be paid to the author as royalty. Sometimes, the wording of the English translation of a Chinese license appears ambiguous regarding whether remote and proxy access is acceptable,

even if it is clearly stipulated in the Chinese original. For instance, one may find in the English translation statements such as “apart from a remote computer,” in which in regard to proxy access, a proxy server or other server or network that can be accessed by unauthorized users is not a secure network. It is rather difficult, if not impossible, for a Chinese Studies librarian to tell exactly what is meant by such wording. This presumption could be quite easily resolved with a clear statement from the party of content providers which indicate proper usage regarding remote access via a secure proxy server.

Chinese e-resource providers handle copyright issues differently. Some companies allow publishers to authorize inclusion of books in their e-book program without the authors’ consent, while others get the books from publishers who do not own the unencumbered rights to e-book distribution. Furthermore, some companies rely on authors’ self-representation of their electronic rights, instead of granting each unidentified individual as a copyright holder who wants a share of inclusion in distribution program or continuous profits (Mo, 2004). For example, Dragonsource signs copyright agreements with publishers and keeps a database on all authors who have not released their web publishing rights to their publishers. Royalties are paid out on an annual basis. Dragonsource partners with its publishers to make sure that web publishing rights are included when the publishers take on any new works. Thus, all new content from the publishers should comply with international copyright standards (Tang, 2006).

In cases where some Chinese publishers may not succeed in obtaining copyrights from authors for their past publications, or publishers may not be able to obtain

copyrights from authors at all, Chinese digital companies have developed practices to gain copyright release directly from diversified copyright holders. The companies take multiple measures, such as online authorization for individuals and written transfer agreements, to approach copyright holders (Chen & Chiu, 2006).

The legal assertion at the core of Chinese digital content providers' business plan is its purported right to scan millions of copyrighted books without permission or payment to the copyright owners. A small portion of all Chinese books are in the public domain, including books that have never been copyrighted, such as government publications and works whose copyrights have expired. Some companies have simply copied such books and made them available on the Web. Many of these books are covered by the vendors' arrangement with their authors, allowing the company to scan and display parts of the works. The vast majority of books is still protected by copyright, or is of uncertain status, and out of print, and are at the center of conflicts between digital content suppliers and the publishers. Many Chinese e-resources companies are scanning these books in full but making only a few pages (in SuperStar case, up to 17 pages) available on the Internet. The key legal question is whether these companies should be allowed to continue to scan copyrighted material without permission (Shi, 2001).

A few Chinese digital companies, without authorization, have copied and compiled copyrighted works for purposes of commercialization, which has seriously infringed both the authors' and editors' rights in the edited works and the typographic arrangements. Several lawsuits against the VIP Information Services Company in Chongqing have shown the copyright issue of Internet dissemination in need of reform

and raises a question: are Chinese e-resources vendors using their portfolios to stifle innovation? Plaintiffs claim that the VIP component of the project violates the copyright law (Lin, Xiao, & Deng, 2002). The Chongqing VIP Information Service Company was ordered by the Beijing High People's Court to pay US\$ 63,000.00 for violation of the publishers' copyrights. The court of appeals ordered the company in Chongqing, China to cease such infringing activity and pay compensation for violating the copyrights of scores of periodical publishers. Material was apparently illegally copied from more than 8,000 magazines and journals. Under the Chinese copyright law enacted in 1991, the ownership of intellectual property for articles published in journals and magazines belongs to the publishers and authors (Y. Wang, 2003).

Like most Chinese lawsuits, copyright cases appear likely to be settled before they go to trial, and the terms of such deals will shape the future of digital books (Lin, Xiao, & Deng, 2003). SuperStar, in an effort to put the lawsuits behind, may agree to pay plaintiffs more than the court would require; and by doing so, the company would discourage potential competitors. Being taken to court and charged with copyright infringement on a large scale might be the best thing to ever happens to SuperStar's foray into the printed world. The SuperStar Digital Library has already begun to make e-books with a number of universities' libraries. If this trend continues, copyright issues might become controversial, as compared to the possible collapse of such systems (Mo, 2004).

In China, once a publisher gives a digital company permission to digitize a book or article, the publisher cannot take back the content. This is analogous to the library's buying of a paper journal and putting it on the shelf. The publisher can, however, prevent

further and future digitization activity by not putting online new publisher manifest pages and/or by removing manifest pages for back content. For this reason, SuperStar Digital Library has dispatched more than 300 field staff across the country to work directly on the negotiation of rights agreements. More than 250,000 exclusive authorization agreements have been filed since 1999 (Han, 2006). In the same year, SuperStar hosted in Beijing the first copyrights conference concerning digital libraries and e-publishing in China. SuperStar has forged a corporate relationship with the China Central Copyright Protection Committee, authorizing the committee to honor license payment to authors on the company's behalf. The strategy of direct authorization has paved the way for a broad readership and knowledge dissemination, and has become the company's real asset (Mo, 2004).

In another case, Apabi helps publishers to publish e-book sales and also helps to sell e-books all around the world. Some revenue of e-books sales would be paid as copyright compensation to the publishers and royalty to the authors. Publishers can audit selling records at any time from an online platform (S. He, 2006). In contrast, as the leading China electronic contents provider and with affiliation to the Chinese Ministry of Science and Technology, Wanfang Data has been taking precautionary measures in dealing with copyright issues. Over the years, it has set up its own strategies and a special system for this purpose. For example, as of December 2006, Wanfang Data has signed 5,436 copyright agreements with journal publishers, 542 copyright agreements with dissertations/theses publishers, and an ever increasing number of copyright agreements with individual copyright holders on a daily basis (D. Liu, 2007). Wanfang

Data sought authorization from authors through offering recognition of the author's contribution, monetary compensation, and free reader membership cards that allow them to access Wanfang Data's resources in return.

Chinese e-resources providers have to be at the forefront in the fight against the deterioration of copyright laws, particularly when these laws are extended to the digital realm. These copyright laws are not only more restrictive, but also contrary to what libraries are about, providing access to information to the public, regardless of income level. In the meanwhile, Chinese Studies librarians need to ensure that equal access is provided to all East Asian library users, not just to those who can afford to pay for information. Although Chinese copyright owners are often well-financed and well-organized, e-resources providers and librarians can organize and kick off a campaign to inform the public with information regarding the selective access, especially in the digital format where more restrictive copyright measures are put in place.

Today, many East Asian libraries have centralized license signing in order to avoid troubles. Usually the general legal council at the university level is directly involved in reading license agreements and making suggestions on modifying terms etc. However, it is a big challenge for Chinese Studies librarians to communicate Chinese copyright issues and concerns to the digital program officer, and then to the general legal council. Through a series of reviews, most Chinese materials are owned by, held at, or licensed to East Asian libraries and are provided solely for the purpose of teaching or individual research.

Due to the political concerns mentioned above, some Chinese e-content providers have recognized the importance and the decisive role copyright issues play in disseminating Chinese e-content to East Asian libraries. This prompts the management of many Chinese digital companies to be extra cautious in online publishing and transmission. Based on the current Chinese laws, government policies, and regulations, Chinese e-resource providers have developed their own system to deal with copyright issues. Standard copyright agreements with publishers and individual copyright holders have been compiled and the copyright team in charge of copyright protection has seen a nearly tenfold growth over the past 5 years (H. Wang, 2003).

As a general practice, many Chinese digital companies negotiate the rights from the original publishers and/or authors for online distribution. They then either turn the print publications into electronic format after digitization or distribute the original electronic format of the journals. Involved in this intellectual copyright transfer are the legal relationships between the author and the original publisher, the author and the online distributor, and the publisher and the online distributor. They handle these relationships accordingly in compliance with Chinese laws and regulations. To deal with the problem of a massive number of individual authors, these companies delegate the copyright transfer task with authors to publishers who obtain permission from the author when a paper is submitted (Mo, 2004). For example, Chapter II, Section 1, Article 10 of the *Copyright Law of the People's Republic of China* states that the copyright includes the following personality rights and property rights:

(12) the right of communication of information on networks, that is, the right to communicate to the public a work, by wire or wireless means in such a way that

members of the public may access these works from a place and at a time individually chosen by them. (p. 33)

According to this statement, the right of information distribution on networks is also included in copyright, and that copyright can be transferred. The same section states,

Copyright owners may authorize other's exercising of the rights provided for in Subparagraph (5) through Subparagraph (17) of the proceeding paragraph and receive remuneration in accordance with the terms of contracts or the relevant provisions in this law. Copyright owners may transfer, wholly or in part, the rights provided for in Subparagraph (5) through Subparagraph (17) of the first paragraph in this Article and receive fees in accordance with the terms of contracts or the relevant provisions in this law. (Guojia banquanju banquansi, 2003, p. 34)

Chinese digital companies interpret these legal terms as requiring publishers to secure copyrights from individuals for online publishing. Thus, publishers are licensed with online copyright by the authors, and they can produce online publishing after reaching an agreement with publishers.

According to *Regulations on Protection of the Right of Communication through Information Network*, promulgated on April 30, 2005 by the National Copyright Administration effective as of July 1, 2005, in some cases copyrighted products may be distributed without permission of the Right Owner or exclusive licensee without bearing legal liabilities:

(1) the work may not be made available if its author has declared in advance that the making available of the work is not permitted, except in the cases provided for in subparagraphs (1) to (6) of Article 6 and in Article 7 of these Regulations ;

(2) the title of the work and the name of its author shall be indicated;

(3) remuneration shall be paid in accordance with the provisions of these Regulations;

(4) technological measures shall be adopted to prevent any person other than the service recipients referred to in Articles 7, 8 and 9 of these Regulations from accessing the work of the copyright owner, and to prevent any act of reproduction of the service

recipients referred to in Article 7 of these Regulations from substantially impairing the interests of the copyright owner; and

(5) the other rights enjoyed by the copyright owner in accordance with law shall not be infringed. (Guowuyuan, 2006, p. 4)

Many Chinese digital content providers have realized the high probability of negligence in reaching out to every possible copyright holder for copyright transfer, and thus have implemented a recognition and alert mechanism so as to take immediate action when such negligence occurs. At the same time, copyright owners may inform Internet service providers when infringements occur and request them to delete the link in question (Guowuyuan, 2006, p. 36). Upon receiving such a notification, these providers would remove the concerned content and then endeavor to reach an agreement with the copyright holder to get the content online again.

For instance, Wanfang Data has a virtual monopoly on the publication of all dissertations in China, but it is vulnerable to lawsuits over copyright infringement if a dissertation contains any copyrighted images without permission from the copyright holder. Such permission can be difficult and essentially impossible for someone living on student loans to obtain. Wanfang, accordingly, does not include any such material in the PDF or paper versions of the dissertations it sells. As a result, the available copies of dissertations are often incomplete either because Wanfang omitted copyright protected material or because the dissertation author himself gave up on including such material. Fortunately, over the past five years, most Chinese digital content providers have not encountered many lawsuits or serious copyright disputes, and are trying to take responsibility for protecting its valued users (institutes of electronic collections in particular) from getting involved in copyright breaches (D. Liu, 2007).

Although copyright solutions are still far from perfect in China, the current cautious approach to copyright issues taken by these Chinese digital companies helps in several ways. Politically it saves faces for the Chinese government officials in different hierarchies. Their law abiding approach greatly boosts their reputation among East Asian libraries in North America. In addition, it serves as a mechanism to prevent monetary loss from copyright infringement since, as indicated in several cases that occurred with their competitors in China, companies would be forced to pay large sums of compensation for breaching the intellectual copyright protection laws. These digital companies are exploring innovative solutions to deal with copyright issues at a time when Chinese copyright laws are endeavoring to cover all aspects of Internet transmission. Internet co-publishing with publishers and authors is one of the solutions they have come up with. For instance, Wanfang Data is working with publishers to set up a platform for authors to submit their papers and articles and to have them published online. Wanfang Data has taken up an inventive business model in accordance to Article 22 in the *Regulations on Protection of the Right of Communication through Information Network* (Guowuyuan, 2006).

In summary, the majority of Chinese digital information providers have adopted a cautious copyright strategy and have taken every measure possible under the current Chinese copyright legal structure to prevent copyright violation and thus to protect themselves as well as their customers from legal disputes.

Purchase Models of Chinese E-Resources

Most East Asian libraries face greater budgetary challenges than do their peers (X. Zhou, 2005). As the cost of journal subscriptions continues to soar, East Asian libraries' purchasing power based on university funds continues to shrink. The following are some rationales for the allotment of funds to East Asian libraries in North America. Typically, an East Asian library keeps a running balance of funds expended and funds encumbered through the fiscal year. In the past, within the material budgets for each collection, monographs are given the highest priority, and serials given the second largest budget. But in the recent years, electronic databases have become the largest budget item. Many East Asian libraries are now struggling for financial security, and the decline in fiscal support often leads to cuts in expenditures. It is an especially unfortunate time because East Asia libraries are experiencing a strong need to develop electronic resources. Greater budgetary resources are needed to broaden the collecting of e-resources for Chinese collections. In a general sense, East Asian libraries are often not as cost-efficient as are mainstream libraries in operation. By the same token, the same quality in internal processes for acquiring Chinese e-resources in mainstream libraries is not always applicable to East Asian libraries. But East Asian libraries can no longer run their business unchecked. They need to assess and demonstrate the effectiveness and efficiency of acquired Chinese digital content in order to be accountable for expended financial resources and to obtain better understanding of their operation.

There is no doubt that the increasingly critical need for Chinese e-resources has produced competitors and alternatives to traditional East Asian library practice.

Electronic information technologies stimulate and promote intense competition in the information marketplace, and as such, Chinese Studies librarians have to understand their abilities and limitations. The appealing goal of making Chinese resources an affordable and available resource is also a financial issue. Expenditures on Chinese digital resources should be decreasing rather than increasing, since East Asian libraries' subscription to Chinese digital contents should have eliminated the necessity, and thus the cost, of e-journal subscriptions. However, many Chinese digital content vendors' pricing is neither simple nor transparent, and they offer both subscriptions and outright perpetual purchase models. Annual subscriptions are available for 12 consecutive months on a per library or collection basis, with the option to start anytime. The subscription can be either a pre-assembled subject package or alternatively a mix of titles chosen from more than 100,000 published Chinese titles (X. Zhou, 2005). For outright purchase, Chinese e-book prices are based upon the hardback retail price of the print edition, and again selectors of East Asian libraries can choose a mix of chosen titles or a pre-assembled package. The purchase price is simple and clear and is not based upon the numbers. With the outright purchase model, there is a small maintenance fee involved but is waived each year if new e-books have been purchased in value that is equal to or greater than the maintenance fee. As a consequence, Chinese Studies librarians find it difficult to acquire all major electronic databases the vendors provide.

Price Models of Chinese E-Resources

The dramatic increase of Chinese e-resource prices has definitely taken a toll on Chinese collection development and has significantly reduced East Asian libraries'

purchasing power. For the last 5 years, the average budget increase for Chinese collections has been well below the industry average of price increase for electronic resources. As a point of reference, the average price increase in 2006 across all digital providers in China was 30% (X. Zhou, 2005).

Electronic resources are usually more expensive to acquire, and those in Chinese languages are even more complicated to use. The ability of Chinese Studies librarians to convince their parent libraries to provide additional funding for purchase and maintenance of these materials and for their periodic updates is often through a persuasive testament to how well they have built their Chinese digital collections. Provision of security for the acquisition of Chinese electronic resources would be a separate fund for e-resources, so that the acquisition of Chinese e-resources would not be at the expense of current spending on monographic materials and serials that need to be maintained to be up to par with other major Chinese Studies programs.

In general, Chinese digital resource suppliers prefer subscription purchases, while all subscriptions are in 12-month terms and renewal dates can be determined by the library (pro-rate first year to get preferred renewal date). For some companies, 24-month subscriptions are also acceptable. All subscriptions begin on the first day of the month after the order is accepted. Pricing is based on the number of simultaneous users as well as the number of titles (X. Zhou, 2005).

Some Chinese e-content providers have kept prices high by using a variable pricing structure, charging large libraries with the ability to pay more, and by grouping leading titles together with less valuable ones and offering all-or-nothing deals for a large

Chinese journal "bundle" (X. Zhou, 2005). Consequently, libraries are forced to purchase the most expensive and least cited journals if they want access to leading titles. For instance, Dragonsource offers e-resources in bundles of 100, 150, 200 or 300 titles, and East Asian libraries are told that they may increase their bundle size at any time. The increased rate would go into effect the following month and the difference in subscription rates would be billed at that time. However, decreases in bundle size can only be made with renewal at the end of the year. East Asian libraries are extremely budget-conscious, so many Chinese Studies librarians have expressed a strong desire to have unbundled print and electronic subscription choices. They expressed frustration with the rising prices of e-resources, especially the escalated pricing after an introductory period of low pricing.

Whether to subscribe or purchase, and when available, what level of access to purchase are key issues to consider for many East Asian libraries. Until recently, most Chinese e-book providers have offered primarily subscription plans, either for large collections (e.g., SuperStar's ChinaMaxx) or for title by title selections (e.g., Founder's Apabi). In a January 2006 review of the prices of e-book subscription at the Stanford East Asian Library, ChinaMaxx was the lowest at \$0.14 per title per year, while Apabi was the highest, at \$4 per title per year (Shao, 2006).

Increasingly, Chinese digital content vendors are providing purchase/perpetual access options, although some currently only offer the purchase option. Apabi has added that option for some titles (essentially providing "insurance" that the title will remain available to the customer even if withdrawn from the subscription collection). Apabi

offers only the access-by-purchase option, in addition to access fees on each title.

Apabi's e-book price is a standard price set by publishers, and is normally cheaper than the print version. The company does not impose surcharges for simultaneous accesses that exceed the limit of licensing, but charges a 50% service fee. Apabi also allows unlimited concurrent users for each e-title that the library purchases. These multi-reader versions typically cost around 1.5 times the list price, although Apabi requires payment of full price for each additional reader (but no additional access fee). There are many variations as well; for example, ChinaMaxx allows unlimited concurrent users for each e-title purchased.

While Chinese e-resources have the potential to be less expensive than print copies, some Chinese vendors have adopted pricing models that protect revenue streams, regardless of what format is purchased. With regard to some Chinese e-resource vendors, there are two pricing models. One model is generally a flat fee for regional distribution. This option is potentially limiting to the vendors since one big deal or package might end up being their only deal in North America. Another pricing model is a per institution model, generally with deep discounts. This is limiting in another way to the vendors--in spite of hundreds of universities in North America, only a small number of them tend to participate, which would mean a low return for the vendors' business. Many East Asian libraries in fact are doing a hybrid deal of both models. They believe that this hybrid model would provide the widest dissemination of Chinese digital information with the lowest funds and would also allow room for growth as more Chinese e-resources become available.

The above examples are a reminder of the range of issues associated with the pricing of Chinese e-resources. Continued monitoring and assessment on availability and pricing is not only necessary but also mandatory to ensure proper selection of Chinese e-resources.

Benefits of Chinese E-Resources

Controlling millions of e-books and journals published in China, these Chinese e-resource providers have become the ultimate source for North American East Asian libraries in need of Chinese materials but lacking budget and space. Now almost all East Asian libraries provide Internet-based full-text access to a range of Chinese e-resources, which includes an increasing number of specialized full text databases of journals, with an array of online resources available at the campus level. While the printing of a large chunk of these Chinese resources from databases is not open to the public, a limited amount of printing is permissible for faculty and graduate students.

With acquisitions of Chinese e-resources, there is no need for East Asian libraries to process received issues of periodicals and distribute them among branches, which saves resources while at the same time eliminating prolonged delay of access. These databases do not take storage space, and no shelving of print magazines is necessary. Often, back issues are provided as part of the subscription, providing an instant wealth of Chinese content. This is ideal for academic libraries where East Asian Studies is part of the curriculum or there is a large population of Chinese speaking users.

With the advance of Chinese digital contents, subscribing East Asian libraries have access to many e-collections regardless of location, circulation policy, interlibrary

loan, and ordering process. These Chinese digital collections are available 24 hours a day, 7 days a week. Also, East Asian library users can download full texts and make their own personal collections. They can even create favorites, bookmarks, citations, notes, and reviews online or offline. Thus, benefits from these Chinese e-resources include (a) an increased scale of holdings at affordable prices; (b) a decrease in time and human resources; (c) the ability to serve more users with unlimited concurrent access; (d) the advancement of the library's role in teaching as well as in research; and (e) the saving of cataloging time by providing an ISO2709 format of each item to integrate with East Asian libraries' WebPAC.

Recently, a professor in Chinese history at Stanford University conducted an experiment of Chinese e-resources. He wanted to write a Chinese Studies review article without going to the East Asia Library to look up papers or references, and he succeeded. Such a task would have been unfeasible several years ago, but it has now become a reality in many East Asian libraries, due in large part to the availability of Chinese digital resources. Another example is that, as mentioned above, the *Siku quanshu* is now available in electronic format. The keyword searching feature is used by faculty and graduate students to track the historical use of a particular Chinese term, something impossible in the printed text of the *Siku quanshu*. As Egan (2001) pointed out:

Used responsibly, the e-SKQS will enhance our ability to probe the richness of a significant portion of the written record from pre-modern China ... the venerable scholarly methods are no match, in some respects for the speed and thoroughness now possible with e-SKQS. (p. 113)

More importantly, Chinese e-resources also offer greater functionality. For example, users of ChinaMaxx may print up to 15% of each e-book or a whole chapter,

whichever is greater. In addition, by using their own usernames and passwords when accessing an e-book, users are able to highlight and color code words and paragraphs to mark different aspects of a topic they are studying. They can also bookmark pages and add annotations in their own words. Their markings and notes will be kept for 30 days by the system from their very first access to the e-book and cannot be viewed by any other user. In most cases Chinese Studies librarians allow users an initial access time of 2 hours, and they are able to implement a reservations system for booking should a book already be in use. In most East Asian libraries' experience, turn-aways are very rare, but can be verified in the statistics Chinese e-content providers provide, and there is always the simple option of purchasing a second copy of a particular title.

Reducing the barriers of space, time, and shipping costs is very important to an East Asian library's operation. Users are very excited about the library's effort to put books online, which allows them to read books at a very low cost (for SuperStar, the individual subscription fee is \$100 per year, while the institutional fee is \$10,000). Thus, East Asian libraries should take advantage of this cost-effective approach to provide lower-cost, alternative forms of distributing information resources.

CHAPTER 5

Management and Preservation of Collected Chinese E-Resources

While much work goes into the selection and acquisition of Chinese digital resources by Chinese Studies librarians, more and more consideration has been given to the management and preservation of these digital collections. Managing electronic resources is a complex task, and the challenges of successfully tracking, comparing and analyzing usage are multi-faceted. For instance, the issue of e-journal archiving is receiving a lot of attention these days because digital information is extremely fragile; its preservation must start from the moment it is put into circulation.

Services Provided by Chinese E-Resource Providers

As subscribers, all East Asian libraries anticipate uninterrupted access to licensed materials supplied by Chinese e-resource providers. Even though service interruptions should be minimal and announced in advance, they are unavoidable with the exception of announced downtime for service or update purposes. However, only a few among Chinese e-resource providers offer truly satisfactory services for East Asian libraries. For example, SuperStar claims to possess over 710,000 e-books in its collection (scoring a 10% availability rate for Chinese titles in Chinese collections in North America), but access is obtained only through accounts set up by IP range and paid for by individual libraries. Some providers prohibit the concurrent use of e-books, unless East Asian libraries choose to buy multiple copies. A relevant example of such restrictions is Apabi. An Apabi purchase provides the right for only one reader at any given time. If somebody else is already reading the e-book, the next reader is locked out until the book is

“returned”. Another example of simultaneous reader restrictions is Green Apple’s *People’s Daily*, which is highly popular among the information technology community due to its exclusive offering of this important newspaper in China. This largely defeats a major advantage of e-resources. To allow for more than one reader, East Asian libraries would have to purchase additional copies of the e-book, usually at the full list price of the book.

Most Chinese e-book services place restrictions on printing, and in some cases on viewing significant portions of books. Consequently, Chinese e-resources users also may encounter viewing restrictions, either because a particular book has added restrictions, or because the vendor has automated procedures in place to guard against systematic copying of books. This usually reflects vendors’ techniques to discourage unauthorized use and to satisfy requirements placed on the vendors by publishers, but it also creates frustrations and uncertainties among users.

It is quite often the case that Chinese digital information vendors do not disclose the exact parameters of these restrictions, and the reader bumps into them unexpectedly. For example, in testing access to Apabi, East Asian library staff found themselves locked out of the service because they had turned the pages too quickly. Apabi, while not revealing the full details, stated that page turning that was considered too regular and too fast would result in being locked out. In addition, readers cannot download a Chinese e-book for later use offline in most cases. A partial exception to this case is the database of Chinese Academic Journals, which offers about 90% of its titles for downloading as PDF files. In terms of printing restrictions, for example, ChinaMaxx offers unlimited

simultaneous readers for over 710,000 titles without charges to individuals for printing. But a reader can print only 17 pages per command (negotiated after an original limit of 5, and later 10 pages), or what amounts to a total of 5% of any one book (Shi, 2001). However, Chinese Studies librarians have found that some restrictions might be eased through negotiations, and that some restrictions can be at least partially addressed between East Asian libraries and Chinese e-resources vendors. Nevertheless, it remains the case that in many situations the promise of obtaining a full digital copy are curtailed and will remain so because of Chinese publishers' or vendors' restrictions that supposedly attempt to guard against misuse.

Evaluation of Chinese E-Resources

A timely evaluation of all major Chinese e-resources continues to prove its usefulness and effectiveness. In this way, Chinese Studies librarians can identify both the strengths and the weaknesses of these e-resources by knowing the history of the product and the provider, providing an excellent starting point for improving any collection's scope and depth. An evaluation of East Asia libraries' digital collections should be performed on a regular basis, preferably every 6 months. In order to provide adequate data on the actual status of a Chinese digital collection, experts from the fields should be employed as reviewers. These experts should include librarians, digital experts, and professional providers. All possible methodologies and evaluation techniques should be used in order to obtain the most comprehensive and precise report of the status of any Chinese digital collection. Vendors should also be able to provide accurate subscription reports for the purpose of license verification along with accurate, timely usage and

invoice information. The evaluation of East Asian libraries' Chinese digital collections provides useful data for the library's administrators, Chinese materials selectors, users, and visitors to East Asian libraries in terms of what is available for research, what should be purchased, and how the budget should be allocated.

Probably less valuable, but still important, is the input received from the East Asian Studies faculty and library users who offer their own evaluations of the Chinese digital collection. A survey distributed to East Asian library clients in person or on-line, including questions about the scope of the digital collection as well as the usefulness and accessibility of Chinese e-resources, would provide data on the perception of East Asian libraries and collections by students, faculty, and researchers using these digital materials.

In the future, evaluation standards for Chinese e-resources should include access to and ownership of these digital contents. Evaluation techniques of future developments in Chinese digital information should look at the ability of East Asian libraries to deliver electronic materials that are not under its immediate control. These methods could incorporate measures not usually thought to be part of the evaluation of traditional collections. If access to electronic material is involved, the adequacy of equipment, its maintenance, and bibliographic instruction in its use may need to be part of these evaluations.

Archiving and Perpetual Access

Rapid growth in the creation and dissemination of Chinese digital resources has focused on the speed and ease of short-term dissemination, with little attention paid to the long-term preservation of digital information. However, digital resources are fragile in

ways that differ from traditional materials, such as those consisting of paper or microfilm, because they can be more easily corrupted or altered without readers' recognition. Therefore, digital storage media have shorter life spans, and digital information requires access technologies that are changing at an ever-increasing pace. Because of the speed of technological advances, the time frame in which East Asian libraries must consider archiving becomes much shorter. Although more than 10 million pages of unique Chinese texts are digitalized every year, still only a tiny fraction of them are preserved for future reference, and only a fraction of these preserved Chinese texts are publicly accessible (Shi, 2001). Most texts are simply lost forever, even though some archivists have been working to preserve selected texts for longer time.

Therefore, perpetual access to digital archives is one of the prevailing issues concerning electronic preservation for East Asian libraries. Damage wreaked by any natural and human disasters can destroy valuable data of cherished digital materials in any library's collection. Chinese Studies librarians already know by various experiences that no East Asian library is exempt from this potential disaster. Digital resources are much more susceptible to distortion, and may be affected in ways that are unpredictable. Those Chinese digital collections must plan and be prepared for any kind of catastrophes in the future. Many supervising Chinese e-content providers have also tried to implement stricter measures to protect the digital archives in East Asian libraries in North America, enabling their users to have permanent access to the Chinese digital resources to which these libraries have been subscribing.

Recent reductions in the cost for storage of Chinese digital data could allow for its preservation as a small fraction of the East Asian library budget; improvements in the distribution of the online library could also enable much greater collaboration between archival institutions. Now that there is the possibility that the Library of Congress will archive some Chinese electronic databases such as China Academic Journals, most East Asian libraries are concerned about insuring as much as possible that the Chinese e-content, for which they have perpetual access rights, be safeguarded. Chinese publishers currently still produce many CD-ROM products and As a consequence, acquisition of these CDs is still of interest. As archiving systems and the data they manage evolve from paper-based to predominantly electronic-based materials, a process of the archival collection, already well underway in some East Asian libraries, has begun to be re-conceptualized. In this case, archival descriptions of Chinese e-resources must provide the means to contextualize and decontextualize (if necessary), as well as to describe, manage, and preserve records. In these ways the libraries can ensure that the description supports and demonstrates continued authenticity of archived materials.

There are also a number of issues affecting long-term access to digital resources that need to be addressed. Should an East Asian library in a North American university archive Chinese e-resources locally or rely on e-content providers to provide long-term access? Chinese materials selectors in East Asian libraries are worried about the uncertainty of perpetual access to Chinese e-resources. While Chinese e-book and e-journal purchases usually means the library has perpetual rights to the content, the implementations and safeguards vary. Currently in most cases, the Chinese vendors do

not provide a copy of the e-book for an institution's own repositories and in some cases a third party depository is provided. For example, SuperStar Digital Library appears to be a more uncertain situation. When buying a title, the customer can prepay an additional access fee for 5 years at a 35% surcharge of the list price of the book. SuperStar Digital Library guarantees access for this period of time, but what happens after 5 years appears to be an open question. An East Asian library may "purchase" an e-title from SuperStar Digital Library, but SuperStar Digital Library states that they usually offer explicit "perpetual access" in the license agreement. All these issues and proposed solutions are in a state of change.

As for the question of perpetual access and/or data ownership of *Chinese Academic Journals* from East View, the situation has been relatively stable. The NERL license with East View has a perpetual access clause. If a library subscriber cancels the subscription in the future, it can continue to have access for materials it originally owned, although there is a 10% annual service charge at the current subscription rate. Also, there is a provision for providing the content of CDs or DVDs in the event that Internet access disappears. While this is not as good and safe as actual data ownership (where libraries now might pay extra and get a copy of the data), it is reasonable. The main worry, of course, is the question of what should happen if the vendor goes out of business. It is most likely under these circumstances that vendors may not have plans to fulfill this type of obligation. This is much better than a number of other products where the license really is only a current lease, and the content disappears if the libraries stop their subscription. For instance, in a review of ordering procedures to obtain additional

modules and previously unpurchased titles from *Chinese Academic Journals*, East Asian libraries asked whether they could acquire backup DVD-ROMs of the content for which they have perpetual access. As has already been noted, this normally adds 20% to the total cost. So, for example, if the total price was \$36,252, not including the added 20%, these DVD backups would be an additional \$7,250, which comes to a revised total of \$43,502. However, given the information and pricing clarification received currently from East View, librarians may decide that they would definitely not pursue the backup DVD option at this time from Chinese Academic Journals. It is worth noting that only one academic institution we know of has chosen to pursue getting these DVDs. Libraries may want to reconsider this option in the future, especially if pricing and technical issues improve. The pricing for backup DVDs is based on list price and not a discounted price; consequently the additional cost beyond the current \$36,000 price would be another \$10,098, and for back years an additional \$2,378.

Chinese Studies librarians are also challenged by ongoing uncertainties regarding electronic reserves. If the license does not cover terms such as granting the library to make materials available through e-reserve systems or to make back up copies, or if no one pays the additional permission fees, what should Chinese Studies librarians do? Another question Chinese Studies librarians deal with is how to deal with vendors who do not own the copyright or electronic right to materials. Is it legal to use a database through a particular provider when the copyright situation is not clear? For example, a Chinese e-content provider signed a contract with a CD-ROM company to make their publications into CD-ROM and to sell the CD-ROMs to the North American market.

However, once the Chinese vendor found out this CD-ROM company started to sell their own online database of materials, the publisher claimed the CD-ROM company violated the copyright law, because the publisher never granted a copyright to that CD-ROM company. What should libraries do to deal with this kind of a dispute? Upon request, some owners may agree in advance to provide the licensee with one residual set of the licensed materials on CD-ROM /DVD discs (including retrieval software) in the unlikely event that the licensee is unable to continue accessing the licensed materials on the Internet through no fault of the licensee. In many cases the Chinese digital content owners provide the discs at no extra cost beyond the international shipping/handling charges prevailing at the time of shipment. For the China Academic Journals database, such costs are currently estimated at \$360, plus \$20 for each additional month remaining in the subscription year. The licensee is not entitled to receive residual CD/DVD-ROM discs in cases involving termination for legitimate causes, breach of contract, or failure to renew a subscription and the owner is under no obligation under those circumstances.

Chinese Studies librarians face a number of controversial problems. For example, how should East Asian libraries effectively access and incorporate electronic content into their e-reserve systems? Is it "legal" to buy photocopied materials of a certain period in Chinese history, to get e-mailed articles from a database company, or to use online materials in Chinese university libraries supposedly restricted? Even more typically, is it legal to obtain pirated books that seem to be everywhere in China (J. Liu, 2003)?

To help Chinese Studies librarians solve some of these problems, some Chinese digital providers offer an archival/backup-copy licensing option to East Asian libraries.

Upon request, a licensee may receive from the provider one copy of the licensed materials or a component of the licensed materials in a mutually agreeable electronic medium to be maintained as a backup or archival copy. This is done in order to fulfill the licensee's right to perpetual access to those materials. Sometimes Chinese digital content providers grant to East Asian libraries a nonexclusive, royalty-free, perpetual license to use any licensed materials that were accessible during the term of the license agreement. In the event of cancellation, a licensee may choose to access licensed materials at any location where these e-resources are hosted. Alternatively, as mentioned above, a licensee may choose to access licensed materials via an archival/backup-copy.

Most Chinese e-resource providers take advantage of the mirror sites across the globe to guarantee perpetual access to its users. Among their mirror sites, the National Library of Science and Technology in China has a preliminary agreement with these Chinese digital content providers to provide services on their behalf in the future for the purpose of perpetual access for East Asian libraries in North America. These providers also negotiate similar agreements with prestigious North American universities to host their databases. For instance, Wanfang Data has reached agreements with libraries outside China and since 2006, Wanfang Data has hosted resources at OCLC (Online Computer Library Council) and allowed OCLC to offer libraries access on its behalf. Users are offered access to services of Wanfang Data resources on Chinese Studies, i.e. Chinese Studies Online (CSO), which contains China Online Journals (COJ), Dissertations of China (DOC), and Policies and Laws of China (PLOC), from its local server hosted in an East Asian library (D. Liu, 2006).

As explained previously, digital archives and permanent access are issues of importance to East Asian libraries and institutes, and have been included in their mission statements and strategy plans. As a consequence, the quality of resources and the potential of having permanent deposits have been highlighted among the criteria for making purchases. Many Chinese digital content providers offer three options for obtaining digital archives and perpetual access. First, local mirror sites allow libraries to host all licensed materials, which are updated by the sites on a regular basis. Secondly, an archival/backup copy will be provided upon a library's request. Finally, East Asian libraries may also choose to permanently allow access licensed materials from any organization/library that hosts their e-resources. Many of providers are continuing to explore innovative measures to help libraries and institutes to realize their mission of possessing digital archives with perpetual access, and to facilitate the distribution of high quality Chinese resources around the world.

Preservation of Chinese E-Resources

Preservation is another issue that is extremely important to Chinese digital resources in North American East Asian libraries. Chinese books, journals and other research materials in digital form are strong on access, but inferior to paper products in the realm of preservation. Without better preservation methods, problems with unstable media, system obsolescence, format proliferation, and Web site abandonment could jeopardize the future usefulness of the wealth of Chinese e-resources now being created and widely used in colleges and universities. To meet these needs, East Asian libraries in North America have to initiate a centralized archival strategy as well as low-cost

decentralized, permanently maintained digital "caches" of authoritative versions of http-delivered content. In this regard, the open-source software enables East Asian libraries to locally collect, store, preserve, and archive authorized content, and so to safeguard their community's access to that content.

The idea of building a dark archive has also emerged. A "dark" archive refers to an archive with no real-time, online access to the content by anyone except repository staff. Dark archives refer primarily to security copies of perpetual licensed books. Dark archives are out of favor right now, but there are some valid reasons for creating them. They serve as contingent copies for Chinese digital content providers when access to licensed materials encounters problems of any kind. For example, in the SuperStar Digital Library, the dark archive is only offered for perpetually purchased books included in the database subscription. So whenever a library negotiates a perpetual license to purchase some books, vendors normally give a copy of the licensed books (as a dark archive) in order to assure perpetual access, regardless of what happens.

With regard to Chinese digital preservation, East Asian libraries have implemented many strategies. They include regular data backup (utilized by a vast majority of the East Asian libraries), migration of the data, and refreshing the data. Other strategies used include maintenance of legacy equipment (hardware to read obsolete file formats to access obsolete storage media such as floppy disks), outsourcing digital preservation to an externally managed repository, and emulation. The types of media used for storing digital collections include online media, such as networked hard drives, or removable magnetic media. For instance, at Stanford East Asia Library, digital

collections are most often stored in in-house systems managed by the institution or by a combination of in-house, partner organization, and storage vendor (outsourced) methods (X. Zhou, 2005).

Some East Asian libraries are developing a digital repository to store Chinese digital collections and associated metadata for long-term preservation. The digital repository will also provide tools so that users can access these online collections. Tools are being developed to automate ingestion of digital collections into the repository. Once a collection is digitized there are a variety of ways in which the content can be made available to end-users from within and outside the East Asian Studies community. If a record exists in several libraries' online catalogs, the digital files can be linked directly to that record; so when a patron conducts an initial search, they will find the digital files. Collections can be made available for browsing via collection web pages, which can be designed in-house or in consultation with a web design firm (Cheng, 2004).

Libraries' In-house Digital Projects

As most East Asian collections in North America have been relying on Chinese materials obtained from East Asian vendors, a few East Asian libraries have begun to take initiatives to have their own programs to produce and acquire digital library collections. In these institutions, digitization program staff provides project management, consultation, and system development services in support of efforts to digitize and reformat Chinese collections and archived Chinese materials (Cheng, 2004). For instance, UC Berkeley's East Asian Library digitization program is broad in scope, focusing on the development and delivery of digital projects and initiatives involving the greater

academic research community as well as a variety of global partners (P. Zhou & Leonard, 2004). Projects and initiatives have involved the digitization, preservation and provision of online access to print, image, audio, visual and originally digital electronic materials. Project contents include circulating collections and previously published Chinese works as well as unpublished, unique and historically valuable materials (P. Zhou, 2004).

Let's take Stanford University as another example. Its libraries manage and operate several digitization labs staffed by highly skilled professional imaging specialists. The labs are capable of converting a wide variety of traditional library and archival materials into digital formats, including printed books, journals, objects of fine art, photographs, maps, manuscripts, and analog audio media. Digitization program staff also oversees the operation of the Digitizing Line, the first fully robotic page-turning book-scanner in production in the world (Shao, 2005).

Stanford East Asia Library is committed to providing access to digital content as well as its preservation. In this spirit, East Asian library staff continually develops, evaluates, and refines digital conversion practices in the interest of preserving circulating and archived materials as well as maintaining access to them. Digital program staff is actively involved in building an infrastructure for preservation and provision of digital content and evaluating new technologies that support the operation of a modern digital library. Once a project for digitizing Chinese materials is approved, a project manager (usually Chinese Studies librarian) is assigned. Project managers develop a detailed project plan that includes a list of all items to be digitized, a proposed project workflow, a plan for access provisions, and details of any preservation, metadata, and intellectual

property right considerations. The project plan also includes a schedule with detailed milestones and a project budget. The development of a project plan is iterative, and requires the involvement of the appropriate Chinese Studies librarian as well as other project stakeholders. Stanford East Asian Library has a number of digitization labs available to support Chinese digital projects. In some cases, these projects require use of an outside vendor to perform these digitization services, which have consequently involved the solicitation of bids for these projects. The project manager helps manage the process of selecting a vendor and monitors the ongoing vendor relationship (Shao, 2006).

With regard to conducting in-house digitalization, most digital projects of Chinese materials involve several steps. These include (a) selection of content to be digitized; (b) digitization of archival masters for preservation; (c) quality control; (d) creation of derivatives for online access; and (e) capture of descriptive, administrative, and technical metadata. In many cases, standards exist to ensure long-term preservation and make it easier to provide access.

CHAPTER 6

Conclusion: Challenges and Expectations

Despite the initial success of integrating Chinese digital resources to North America's major East Asian libraries, Chinese Studies librarians are still struggling with many challenges and problems in their management of e-resources, some more apparent than others. They are getting more interested in obtaining the full texts of books online than in making accessible the information those print books contained. Comprehensiveness is not merely about the total number of electronic databases or bytes, but about possessing truly high-quality digital information.

Some Considerations on Acquisitions of E-Resources

There are many issues related to Chinese e-resources that are important and should be taken into account by Chinese Studies librarians in their decisions regarding the future development of Chinese digital collections. A number of challenges awaiting Chinese Studies librarians--such as technical and policy issues--have hindered the acquisition of Chinese e-resources. As a result, Chinese Studies librarians must embark on a journey to address the obstacles and to position the libraries properly for future successes in the utilization of Chinese e-resources.

Libraries outside of China with a Chinese collection and a capable user community face unique challenges today in accessing and managing Chinese digital content. Firstly, Chinese-language databases are difficult to install and maintain outside of China. Management of these databases requires not only special language expertise, but very often also special platforms and software. The different coding systems,

software standards, and loading/servicing requirements needed for holding Chinese digital content pose specific challenges to those seeking to reach interoperability and scalability in Western-language oriented environments. Data loading, archiving, and system upgrading require special attention to Chinese digital resources. Secondly, because the publishing market for Chinese e-materials is fluid, there is no absolute assurance that databases available today will continue to be available in the future, or that their content will continue to be accessible if it is not archived now. Although these are problems common to all digital collections, they are especially troublesome in the context of Chinese digital publishing, since the legal and market remedies employed in North America have yet to be firmly established in China.

When an East Asian library moves from subscriptions of paper copies to those that provide access to a commercial database, its ability of lending would be bound by restrictive licensing agreements. For example, the Stanford East Asia Library can send a paper or digitized copy of an article in a journal format for interlibrary loan to its patrons, but cannot do the same with an article in the Chinese Academic Journals database. Sometimes vendors of Chinese e-resources intimidate Chinese Studies librarians in North America with contract terms such as that the vendor reserves the right to change them at any time, arguing that East Asian libraries cannot reproduce or disseminate any software or even any single document within that software. Consequently, this arrangement appears actually to be a type of subscription and not really a purchase of materials. Also, the pricing listed in the contract often suggests only a one time payment, without reference to any future fees. Chinese material selectors have to request a written

clarification from Chinese e-resource vendors clearly stating that with this one-time payment, libraries are entitled to continued access to materials indefinitely. Otherwise, what are East Asian libraries to do if a few years later they get another bill, one that they did not expect?

Often Chinese digital content providers refer to an access control tool, meaning their software contains this tool. In that case, Chinese materials selectors need to ask for more details about this item to make sure it does not conflict with the technical environment of their universities. It is normally not a major problem if the vendor indicates that they will impose a limit on the number of simultaneous users based on the type of licensing purchased by libraries.

Many of these problems and issues are best handled, or perhaps most effectively handled, by a centralized approach that includes support for an established infrastructure related to Chinese e-resources. East Asian libraries with a Chinese collection in North America have increasingly been pressed to develop strategies for acquisition, management, perpetual access, and preservation of Chinese digital content through a more standardized infrastructure.

The common linguistic problems in this realm include solving the missing character problem, caused by the inadequacy of present-day Interchange Codes for Chinese characters, authority control over variants of Chinese characters, auto-segmentation of text for keyword indexing, parsing of Chinese sentences, and many more similar issues. At present, most Chinese e-resources do not correctly integrate simplified and traditional versions of a Chinese name or title into a simple entry when browsing the

search results. For example, a single author's name written in simplified or traditional Chinese characters should be consolidated into one single entry in the author index. Sometimes these Chinese electronic databases do combine these variant character forms into one heading. Yet, the fact is that creating two headings for the same name in different character forms sometimes causes two names to be filed very far apart in the browsing list. Having the same name or title appear as multiple separate entries on the browsing list can be seriously troublesome for Chinese readers, especially for overseas Chinese readers. For instance, the Scripta Sinica database is hosted directly on a Stanford server as an application. The "database component" is not a connection to an external database, but rather storage inside the application itself, with the local installation being entirely self-contained. As for the migration, it was fairly straightforward and simple; but nevertheless, there were some tweaks that appeared at the end, including some hard-wired URLs, some security issues, and other matters that needed to be fixed. It seems like libraries require a little more back-and-forth in clarifying those matters with Taiwanese providers--nothing major, but still necessary. It is probably not yet worth moving away from the older, incomplete versions such as Rune and Caslon right now. Making a tar backup or something simple of the sort is normally adequate. It seems not worth the time spent setting up and adjusting a new version of the old application that is soon afterward going to be completely replaced.

It is now time for librarians to be more involved, either by creating their own digital products or by working more closely with Chinese digital content vendors. After all, Chinese Studies librarians know users' needs much better than these vendors. Instead

of passively selecting from what vendors offer, they should make recommendations about which kind of digital products should be made available.

Pressure of Increasing Prices

Although the costs for production and distribution of Chinese e-resources are falling due to advances in technology, especially for e-journals, the prices of many Chinese digital resources have been rising much faster than the rate of inflation in the past 5 years. A dramatic increase in Chinese e-resource prices has occurred since the early 2000s, when one would find double-digit inflation in the cost of Chinese e-books every year. The cost of e-books published in China has increased due to the pressure on enterprises to be responsible for their profits and losses under economic restructuring. It is estimated that in the past 5 years (2000-2005), the average cost per e-book has risen to 3 times its previous price (C. Zhang & G. Jiang, 2002).

This pricing trend puts severe pressure on East Asian libraries' already constrained acquisitions budgets. Many commercial Chinese e-content providers use the technique of "bundling" major e-journal titles with minor ones, requiring multi-year contracts to lock-in revenue. These pricing strategies create more pressure on East Asian libraries' budgets, which effectively ends up hindering the dissemination of Chinese language scholarships. Under such circumstances, many East Asian libraries have decided to refuse the so-called "big deal" or bundled subscription plans from Chinese commercial vendors, which have restricted Chinese Studies librarians' traditional freedom in making collection development decisions. Instead, Chinese Studies librarians have to resume title-by-title selection of e-books and e-journals in the best interest of the

East Asian Studies community. Chinese Studies librarians have started the process of scrutinizing the pricing of e-journals and e-books and to drop those where pricing decisions have made them disproportionately expensive compared to their educational and research value.

While new technologies are revolutionizing the way users read, making it increasingly likely that they do at least some of their serious reading on screens, the printed book will not be going away anytime soon. East Asian libraries prefer the online editions of Chinese journals, as long as it means a lower price. However, they continue to buy print copies because many readers prefer it and online editions are often embargoed (as through aggregators). Chinese librarians expect that ten years from now, they will see that a lot more texts will be digitized, but libraries will not have gone away. As a result, East Asian libraries must create the technical infrastructure to support the acquisition, organization, delivery, and archiving of digital library materials in addition to their traditional systems. While significant initial steps have been taken, much remains to be done to achieve this vision. Although many challenges still exist, East Asian libraries are now on a better footing thanks to their diligent staff and the efficient methods and programs they have already developed.

Cost-Efficiency of Chinese E-Resource Acquisitions

The availability of electronic versions of standard monographs relevant to Chinese Studies programs supported by Chinese e-resource providers doubtlessly has increased in number. Recent statistics strongly suggest that the humanities and social sciences will not become “bookless” if Chinese Studies librarians understand that the

printed book continues to be an indispensable unit of Chinese Studies research. It is certainly not assumed that the monograph or the systematic treatise would disappear. In addition, factors such as affordability, conditions of access and the research and teaching value of Chinese culture and language will continue to affect strategic institutional development. These factors will also determine how large and varied a Chinese e-resources marketplace will be. Exactly the magnitude an East Asian library can be a participant as well as consumer in these areas is a critical factor as well. East Asian libraries need to continue to take advantage of cost-effective ways that help keep Chinese e-resource providers in check and to provide lower-costs and alternative distribution methods for digital resources.

A large number of East Asian libraries have reported that they have very limited institutional funds allocated for the creation, acquisition, management, or sustainability of digital collections. The lack of a suitable budget for the acquisition and maintenance of digital materials is most clearly evident among many small East Asian collections. Besides locating funding support from outside the library, the only way to provide services under these resource constraints is to improve the cost-efficiency of the acquisition process. For example, for acquiring Chinese e-journals and e-books, it is difficult to use "approval plans" operated by vendors, which bring books to the library in North America on the basis of a profile established by East Asian libraries. The title-by-title book selection still going on in East Asian libraries may be considered inefficient. Also, despite the new text display systems based on Unicode, which have finally allowed

Roman and non-Roman script languages to share the digital world, there are still obstacles preventing the seamless use of Chinese language in many libraries' catalogs.

As already mentioned, besides finding external funding, the only way to provide services within the constraints of financial resources is to improve the cost-efficiency of the library's processes. In order to be more successful in this area, East Asian libraries need to assess and demonstrate their efficiency. Efforts toward improving customer satisfaction, work flow, cost-efficiency, and financial accountability will make East Asian libraries more visible to other libraries and enable them to share their special concerns more broadly with others. Dealing effectively with such organizational changes would move East Asian libraries forward. Taking advantage of such opportunities to bring about changes can only be good for the future of those libraries.

Budget difficulties sometimes can provide an impetus for re-evaluating current collecting processes, creating an opportunity to discuss refreshing of the collection with library constituents. If a journal or newspaper is available in e-format, its use increases at the expense of a comparable journals or newspapers available in paper and use will shift from paper to electronic. Let us take as an example a subscription to the *People's Daily*, the largest and the most important newspaper in China. In the past, an East Asian library has been subscribing to three editions of the *People's Daily* that have the same content, but are in different formats, resulting in a total expense of \$1,250 annually. These formats include (a) a domestic edition in paper format that is airmailed daily from Beijing (usually taking 1 week to arrive) at a cost of \$750 per year; (b) a miniaturized edition in paper format (for circulation purposes) that was surface-mailed monthly from Beijing at a

cost of \$200 per year; and (c) a microfilm edition (for preservation purpose) that was surface-mailed yearly at a cost of \$250 per year. Now Chinese Studies librarians are replacing the bulky original newspaper with its electronic edition. In this edition, the entire newspaper is converted into electronic files. Fifty-six years of past daily issues have been condensed into files in a database that include both full texts accessible via a powerful full-text search engine and PDF facsimiles of the source materials. The files are fully downloadable and printable individually. The search capability of the electronic edition includes a 6-layer search engine, which allows users to insert commands into six different categories to conduct a highly targeted search for specialized content. The basic cost of this archived material is \$475 per year, which saves an East Asian library \$725 in annual subscription expenses. As a result, East Asian libraries save considerable resources in space, materials, the cost of archival microfilm, and staff time for boxing, bar coding, and retrieval (Shao, 2006).

E-Resource Sharing and Cooperation

Chinese electronic resource sharing is useful among designated East Asia libraries in North America. Many East Asian libraries have begun to collaborate effectively in this regard. In the past several years, many East Asian libraries have formed consortia to obtain better deals from Chinese e-resource vendors (Ma, 2004, p. 3). In general, the results of this strategy seem to be positive. For example, Stanford University Library is a member of NERL and its East Asian Library works closely with some of its counterparts within NERL. NERL was organized in 1996 and its core membership comprises 26 large and 40 smaller academic research libraries with the common objectives of access and

cost containment, joint licensing, and possible joint deployment of electronic resources. NERL offers a forum in which members can share information about management and budgeting for electronic resources and focuses primarily on expensive resources. NERL was instrumental in making the Chinese Academic Journals database available in North America. NERL acts as a consortium to help libraries obtain good prices, coordinating choices of e-databases instead of funding subscriptions. The coordination is rationalized in such a manner that there is no overlap in collection efforts. For instance, both libraries coordinate the purchase of expensive items and local gazetteers to avoid unnecessary duplication of research materials. More and more East Asian libraries have started to expand the sharing of their information resources with other East Asian collections, even developing cooperative relations for sharing library costs with prestigious international libraries such as the National Library of China, the National Science and Technology Library, the Shanghai Library, the National Central Library (Taiwan), the Library of the Chinese Academy of Sciences, and the National Library of Singapore (Cheng, 2004).

Eventually traditional materials will be replaced by digital resources. When most authors submit their manuscripts in electronic format or when typesetting is done completely on the computer, it will be much more cost effective to produce e-books. Because of the nature and length of books and articles, many people tend to accept e-books and e-journals more readily than printed books and journals, and more so in the sciences than in the humanities. Likewise in Chinese Studies, e-resources will probably become the preferred format of publication sometime in the future (P. Zhou, 2004).

At present East Asian libraries in North America are continuing to maximize all opportunities to develop their Chinese e-resources through effective management. East Asian collections are developing a strong infrastructure and working closely with Chinese e-content providers to develop strategies and tools necessary for bringing Chinese-language databases into the global market. Chinese digital resources make a large/substantial contribution to the collective body of knowledge that is accessible worldwide, further democratizing the information that is essential for the functioning of East Asian libraries in North America. These developments help East Asian libraries realize their mission of acquiring and making accessible a universal repository of information in order to further human understanding and achievement. East Asian libraries support making books available in digital form so that those books, among other things, can be researched through electronic means. I believe that there is a real opportunity to move Chinese materials into the global digital arena in the foreseeable future.

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Appendix A

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No modification or claimed waiver of any provision of this Agreement shall be valid except by written amendment signed by authorized representatives of Licensor and Licensee.

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Waiver of any provision herein shall not be deemed a waiver of any other provision herein, nor shall waiver of any breach of this Agreement be construed as a continuing waiver of other breaches of the same or other provisions of this Agreement.

XXI. Notices

All notices given pursuant to this Agreement shall be in writing and may be hand delivered, or shall be deemed received within five (5) days after mailing if sent by registered or certified mail, return receipt requested. If any notice is sent by facsimile, confirmation copies must be sent by U.S. Mail or hand delivery to the specified address. Either party may change its Notice Address by written notice to the other party.

Appendix A. Residual CDs/DVDs

Upon request, the Owner hereby agrees in advance to provide the Licensee with one residual set of the License Materials on CD/DVD-ROM disc (including retrieval software)

in the unlikely event the Licensee is unable to continue accessing the Licensed Materials on the Internet through no fault of the Licensee.

The Owner will provide the discs at no extra cost beyond international shipping/handling charges prevailing at the time of shipment. Such costs are currently estimated at \$360, plus \$20 for each additional month remaining in the subscription year.

Licensee is not entitled to receive residual CD/DVD-ROM discs in cases involving termination for cause, breach of contract, or failure to renew a subscription.

Owner is under no obligation to ship residual CD/DVD-ROM discs to the Licensee in cases involving termination for cause, breach of contract, or failure to renew a subscription.

Appendix B

Agreement for the Exchange of Academic Materials between the Institute of History and Philology, Academia Sinica and the Stanford University Libraries

In order to promote academic research and the exchange of materials, The Institute of History and Philology, Academia Sinica (hereafter IHP) and The Stanford University Libraries (hereafter SUL) hereby consent to this Agreement for the Exchange of Academic Materials.

Article I. Definition of Terms

For the purposes of this Agreement, the terms listed below are defined as follows:

1. "Digital content" indicates all visual, aural or tactile digitized information accessible to users, whether in text, sound or image format.
2. "Digital resources" refers to files with digital content stored on computer hardware or other media types. It shall include, but is not limited to, text files, graphics files, motion picture files, audio files and audio-visual files.
3. "Media types" includes printed paper, photographs, books, video and audio recordings, CD-ROMs and other physical and digital media.
4. "Third party": Unless otherwise specified, this term refers to all parties other than those conferring authorization and those authorized by this Agreement, including juridical persons and natural persons.

Article II. Authorization

1. IHP agrees to grant SUL non-exclusive authorization to install at SUL and to access the Scripta Sinica database, as specified in Appendix 1, and furthermore authorizes SUL to permit access for authorized users.
2. "Authorized users" are hereby defined as:
 1. Current students, instructors and staff of Stanford University.
 2. On-site users within Stanford University organizations or libraries.

Article III. Restrictions on the Use of the Scripta Sinica

1. Without prior written consent from IHP, SUL may not authorize any third party or other unauthorized user to access the digital resources specified in Appendix 1.
SUL may not engage in any commercial use of the digital resources specified in Appendix 1, including copying the digital resources onto other computer storage devices, or transferring onto other media types.
In addition, SUL may not obtain profit by any direct or indirect means through the sale of the digital resources to a third party. SUL, however, may make back-up copies only for reasons of system security or stability, and is bound by the principle of fair use.
3. SUL may not publicly transmit or disseminate the digital resources specified in Appendix 1 outside the terms of this authorization.

4. SUL should exercise the due care of a good administrator to ensure that authorized persons do not violate the terms of the authorization outlined in this Agreement while accessing the database.

5. If an authorized person violates the terms of authorization for use, SUL should restrict said person's right to use the database.

Article IV. Provision of the Database

IHP will provide, within six (6) months of the signing of this agreement, a copy of the digital resources specified in Appendix 1, for installation on computer hardware provided by SUL. Installation will meet the system and security requirements of the SUL computing environment.

The digital resources are to be picked up remotely by SUL from IHP using Secure File Transfer Protocol (SFTP) via the internet, or by others means mutually agreed upon by IHP and SUL.

IHP staff will provide, at no additional cost to SUL, technical assistance or consultation remotely (e.g., via telephone, e-mail) to the extent IHP deems such assistance or consultation reasonable. If SUL requests that IHP provide in-house technical assistance, SUL should assume the cost of transportation, room and board required by IHP technical staff during the course of the trip.

IHP will provide SUL with adequate software and documentation for the use of database. This software may be updated with advances in the technology available. Installation of any such updates will be done with the approval of SUL, and installation will meet the system and security requirements of the SUL computing environment.

Remote software update, technical assistance, and consultation will be provided free of charge within three years of the first complete transfer of the digital resources as specified in Appendix 1. Beyond this three-year period, IHP will notify SUL of any software update or new addition to the Scripta Sinica. Recompenses for the installation of the new contents of the Scripta Sinica, software updates, technical assistance, and consultation will then be mutually determined by IHP and SUL.

Article V. Contribution in Return for Authorization

In order to assist in the goal of developing the database, SUL agrees to purchase for shipment to IHP academic materials to the value, per vendors' invoices, of no less than US \$XXXX. IHP will decide upon a concrete list of the materials to be provided. In principle, this task ought to be completed within two (2) years of signing this Agreement. However, this deadline may be extended by written agreement between SUL and IHP in the event that the requested materials are unavailable or unable to be procured within that time limit. In such a case, IHP reserves the right to supplement the original list of materials with additional requests until the value of the materials received is equivalent to the amount herein specified.

SUL agrees to make initial payment for all fees required to ship the academic materials from vendors to IHP. IHP will then reimburse SUL in full for all shipping fees within two (2) months of the receipt of the last item of each shipment, following the issuance of an invoice by SUL.

Article VI. Violation of the Agreement

If either party believes that the other is in breach of this Agreement, that party may notify the other in writing requesting that the actions in breach be rectified. After the party in breach of the Agreement receives written notice, it should rectify the violation within thirty (30) days. In the event that the matter is not rectified within thirty (30) days, the party not in violation of the Agreement has the right to terminate the Agreement.

If this Agreement is terminated due to a substantiated breach by SUL that has not been rectified, all privileges granted to SUL and any other authorized persons to use the database may be suspended by IHP.

If this Agreement is terminated due to a substantiated breach by IHP that has not been rectified, SUL may terminate any future shipments of materials to IHP.

Article VII. Intellectual Property Rights

The copyrights of the Scripta Sinica in this Agreement belong to IHP or persons who have authorized IHP to make use of their work.

SUL may not dispute ownership of the trademark or copyright of the texts included in the Scripta Sinica. SUL must clearly indicate that said digital resources are the property of IHP and access to the database is authorized by IHP. If in accordance with the terms of this Agreement, SUL transfers the digital resources onto another media type, it must likewise clearly indicate the source of the copyright.

Article VIII. Affirmation and Guarantee

1. Both parties affirm and guarantee that they are legal organizational bodies, have the right to sign this Agreement, and furthermore have the right to fulfill the obligations and privileges set forth in this Agreement.

2. SUL affirms and guarantees that it shall effectively restrict access to the database by unauthorized users.

3. IHP guarantees that the database will operate in normal working order at the time of installation. In implementing the database, SUL may request that IHP provide free comprehensive technical support and consultation within three years of the first complete transfer of the database.

Article IX. Notices

1. All notices to either party under this Agreement must be made in writing. If any notice is given via email, a confirmation of receipt should be issued within five (5) business days.

2. If SUL does not fulfill the commitments and guarantees within this Agreement, IHP may terminate this Agreement in writing.

Article X. Changes to the Agreement

1. All changes to this Agreement shall be agreed upon by IHP and SUL prior to implementation.

2. All changes to this Agreement shall be made in writing and specified in an Amendment which shall be signed by IHP and SUL.

3. All Amendments signed by both parties shall become an integral part of this Agreement.

Article XI. Additional Content and Materials

IHP will inform SUL about any content that is added to Scripta Sinica in the future and not listed in Appendix 1 of this Agreement. If SUL wishes to install and access such additional content, IHP will inform SUL what additional contribution of academic materials IHP wishes to receive in return. If agreement is reached, it will be specified in an Amendment to this Agreement.

Article XII. Termination of the Agreement; Retention of Content and Materials

This Agreement may be terminated by either party by giving the other party at least ninety (90) days prior written notice.

If this Agreement is terminated, each party retains the materials or resources it has received up to the time of termination. Thus, IHP retains the shipments of academic materials it has received; and SUL is permitted to retain, and to continue to deliver to its authorized users the content already provided to SUL by IHP before the date the Agreement is terminated. Such permission will not apply if the termination is due to violation of Agreement, as specified in Article VI-2. IHP and SUL confirm that both parties will try their best not to terminate the agreement until the book shipments and installation of the database are complete.

Article XIII. Severability

In the event that any provision of this Agreement is declared invalid or unenforceable by a court, such invalidity or unenforceability shall not affect the validity or enforceability of the remaining terms of this Agreement.

Article XIV. Waiver

The failure of either party to insist upon strict compliance with any term, provision or condition of this Agreement shall not constitute or be deemed to constitute a waiver or relinquishment of its right to enforce the same in accordance with this Agreement.

Article XV. Copies of the Agreement

There are two copies of this Agreement; both parties shall reserve one copy each for their records. There exists only one version of this Agreement, which is written in English.

Article XVI. Governing Laws and Jurisdiction

If one of the parties of this Agreement determines to pursue through a court action a controversy or claim arising out of or relating to this Agreement, such proceedings will be brought forward in the courts of, and subject to the laws of, the jurisdiction in which the defendant is located.

This Agreement may be executed in one or more counterparts, each of which shall be deemed an original, but all of which together will constitute one and the same instrument.

IN WITNESS WHEREOF, this Agreement has been executed in duplicate by and on behalf of the parties hereto.

Director
Institute of Philology
Academia Sinica
130 Academia Road, Section 2
Nan-kang, Taipei 11529
Taiwan, R.O.C.

Date:

THE BOARD OF TRUSTEE OF THE
LELAND STANFORD JUNIOR UNIVERSITY

University Librarian
The Stanford University Libraries
Stanford, CA 94305-6004
U.S.A.

Date: