

Libraries in the Early 21st Century
Vol. 1

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De Gruyter Saur

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An International Perspective

Edited on behalf of IFLA by
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Foreword

At no time in the history of librarianship has technology had such a significant impact. The exponential growth of technology and its concomitant impact has transformed the way in which information is created, stored, and, more importantly, shared. This technology has also heightened the expectations of library users to be connected to information from all corners of the world, increasing the impetus for the globalization of information.

Globalization must be seen in the context of access to information that is produced or held across all of the continents. The current IFLA presidential theme of “Libraries driving access to knowledge” becomes a growing reality when access to information is just a click away. It is not debatable that in the current information world, the most efficient conduit to making the world one small information global village is the commensurate technology.

This book, edited by Dr. R. N. Sharma, is a collection of contributions by leading international experts on the utilization of technology in the development of libraries. There are contributions, including those of past presidents of the International Federation of Library Associations and Institutions (IFLA), which make this publication a valuable contribution to the body of knowledge, especially in the library and information science (LIS) discipline.

The book is exhaustive both in geographic and substance coverage. The authors discuss the development of libraries in their respective countries, with the emphasis on the influence of technology on that development. The authors interrogate the problems they face when introducing technology because of the lack of funds, leadership, planning, software, hardware, training, and equipment. Another feature of the book is the prediction of how libraries will develop in the next 15 years (2010–2025) in their countries.

Dr. Sharma is eminently qualified to edit this crucial publication, as he has an exceptional background in international librarianship which began in the early 1980s. He has an exemplary authorship profile, having published 11 books and over 250 articles and book reviews. His leadership within the LIS discipline includes presentations of papers at more than 30 national and international conferences, including many as keynote addresses. Dr Sharma has served on 35 committees of ALA, ACRL, and other professional associations and has served as chair of many committees, including the International Relations Committee/ACRL (2008–2010), Asian, African and the Middle Eastern Section of ACRL, and President of the Asian/Pacific American Librarians Association. His contribution to international librarianship has earned him, in 2005, the ACRL honor of Academic/Research Librarian of the Year Award.

IFLA, being the leading international body representing the interests of library and information services and their users, is proud to be associated with this essential publication. The globalization of information for the growth and development of the world is what underpins IFLA as an internationally representative organization.

This is an exciting and absorbing publication.

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Introduction

R.N. Sharma, Ph.D.

The late Dr. S. R. Ranganathan (1892–1972), a well-known brilliant librarian and a library educator from India, was the first person in the world to predict in the 1950s, during one of his trips to Europe, that online catalogs will replace card catalogs in libraries and technology will play an important and an effective role in shaping libraries. His prediction has certainly come true. Technology was introduced in libraries in the 1960s and has now become an integral part of the profession of librarianship. It is dominating libraries, especially in the developed countries of the world. During the last 45 years libraries and librarianship have changed tremendously. Libraries have changed from storing and retrieving information from the four walls of library buildings, to online storage methods, including online databases on the World Wide Web, to accessing the information, including e-books through mobile technology, and retrieving books from stacks with robot assistance. At present, information is available 24 hours a day, seven days a week from libraries of many nations, and not only from libraries, but also from homes, offices, and even remote areas through computers as well as mobile phones, in many languages. Thus, libraries truly have become virtual for the benefit of all scholars, students, faculty, researchers, and others who are interested in finding information.

But this progress is more visible in developed nations and a few developing countries of the world. According to the United Nations, “In common practice, Japan in Asia, Canada and the United States of America, Australia and New Zealand in Oceania, and most European countries are considered developed regions or areas.”¹ Many countries in Africa, Asia, the Middle East and South America are trying to introduce technology in their libraries, but a majority of them are still behind because of lack of funds and initiative from their rulers and political leaders, poverty, hunger, illiteracy, war, famines, and poor planning. I have been interested in international librarianship for a long time and have been disappointed at the slow progress of libraries in the developing and undeveloped nations. In spite of the fact that libraries in the developed nations have progressed at a faster rate in the information age, the gap between rich and poor countries libraries has widened. Therefore, I decided to edit a book on libraries in the early twenty-first century and invited many well

1 “Developed Country” in Wikipedia, p.2. <http://en.wikipedia.org/wiki/developed-country>. (1. Aug. 2011).

known librarians and library educators from selected countries to write about their libraries. The authors were selected through the library databases, Google, personal contacts, help from IFLA and its various committees, and a call for papers on the websites of a few library associations. Fifty authors were selected to write chapters on the history and development of libraries in their countries with an emphasis on the development during the last 30 years from 1980 to 2010. It was during the 1980s, 1990s and the first decade of the present century that many important changes were introduced in the field of library and information science through technology. The changes have certainly made a difference in the profession and brought libraries and librarians closer to each other. All contributors were instructed to give a clear picture of the status of libraries with achievements, barriers, and hurdles, and how libraries will develop in their countries during the next 15 years. The writing style of all contributors is very different because of their education systems, backgrounds, cultures, nationalities and languages. They have done an excellent job of writing their chapters and giving their honest views of the development of libraries in their countries including difficulties.

Libraries have been part of the world for centuries, but there was no international library association until 1927. The International Federation of Library Association (IFLA) was formed in Edinburgh, United Kingdom by a few European and American librarians led by Gabriel Henriot of France. It was a small beginning with a bright future. In 1976 libraries were allowed to become institutional members of the association and its name was changed to the International Federation of Library Associations and Institutions (IFLA). In 1979 IFLA elected its first woman President, Else Granheim of Norway, and it started holding conferences outside Europe in Asia, Africa, North and South America, Australia and other parts of the world. Since 1980 IFLA has paid attention to many important aspects of international librarianship including copyright matters, freedom of access to information, interlibrary loan lending, preservation and conservation, and standardization of bibliographic activities. A new program "Advancement for Librarianship in the Third World" was introduced in 1986. IFLA has done an excellent job of bringing libraries and librarians of the world together to discuss various issues of international librarianship and to address the needs of the profession. IFLA is still a small association with only 1,700 members from 150 countries, but it is the global voice of the profession of library and information science. The introduction of technology has certainly helped to bring the professionals and the profession closer in the global village of the information age. IFLA, with its headquarters in The Hague, Netherlands, has led the profession in an effective manner. Therefore, I want to dedicate this book to IFLA for its contributions, leadership, and guidance to International Librarianship. It is the first time in history of IFLA and library literature that all living presidents of IFLA have contributed chapters on librarianship in one book. Thus, history has been created in the field of international librarianship. It is my hope that it will help to pro-

mote the profession. I want to thank all living Presidents of IFLA for their contributions and congratulate them for this rare feat and achievement in international librarianship.

It has been an excellent and rewarding experience to work with all authors. The response to my invitation was overwhelming. My sincere thanks goes to all authors who took the time from their busy schedules to write their chapters. Their hard work has been rewarded with the publication of the book with a “Forward” by Ms. Ellen Tise, President of IFLA from 2009–2011. I also want to thank the publisher and Dr. Alice Keller, Editorial Director of the De Gruyter/Saur for their guidance and for providing the finishing touches to the manuscript and preparing it for publication in two volumes.

It is a comprehensive book with first hand and up-to-date information on libraries of many countries from all continents. It will help students and faculty of library schools all over the world to learn, understand, and gain knowledge about the development of libraries in many countries. It will help librarians to learn more about libraries in other nations, their strengths, and weaknesses. It will also help leaders of the profession to know more about the problems and major gaps between the libraries of developed, developing, and underdeveloped countries. Finally, it will help library leaders and library associations including IFLA to work as a team to solve the problems and bridge the gap between the rich and poor nations and to improve libraries in the information age of the Twenty-first Century for the benefit of their citizens, scholars, and visitors through a dialog with the leaders of many countries.

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“Developed Country” in Wikipedia, p.2. <http://en.wikiPedia.org/wiki/developed-country>. (1. Aug. 2011).

Part 1

International Librarianship

1.1 Let's Peel the Onion Together: Exploration of the Outer Limits of International Librarianship

Ellen R. Tise and Reggie Raju

Introduction

The discourse on international librarianship has not, over the decades, deviated substantially from the core principles of collaborative and cooperative practices at an international level. This is corroborated by Lor (2008) who quotes Harvard-Williams as stating that librarians have a long and honorable tradition of cooperation. Thus, international librarianship has been and continues to be characterized by cooperation in respect of document supply, bibliographic standards, preservation and other technical areas. The significant element in this characterization is the role of libraries – libraries in different countries. However, libraries have grown much broader and are now inclusive of any medium that makes access to knowledge and information possible, given the ubiquitous nature of knowledge and information. Libraries, by driving access to knowledge and innovation, are bringing the world together to enhance innovation, growth and development. The world is now being referred to as a single entity, that is, the global village. As indicated by Lor (2008), because of rapid developments in information and communication technologies and the accompanying phenomena of globalization and disintermediation, efficient cooperation among librarians worldwide is needed to participate effectively in global forums such as the World Intellectual Property Organization (WIPO) and the World Summit on the Information Society (WSIS). It is at these forums that far-reaching decisions are made that affect free and fair access to information resources in libraries that serve the peoples of the world.

The Whole Onion: International Federation of Library Associations and Institutions (IFLA)

The focus of this chapter is on identifying and developing methods to bring the world together and to etch out ways of breaking down barriers and eradicating any form of elitism. The fundamental principle is that developed countries are dependent on developing countries even if it is just for their natural resources, human resources or space. On the other hand, developing countries are dependent on the developed countries for their finances and infrastructure.

The reality is that the world is a conglomeration of developed and developing countries with a great sense of interdependence. Librarians, through their years of cooperation, collaboration and sharing, have contributed to bringing the world together by making accessible the most essential commodity for growth and development, and that is information and knowledge. Libraries drive access to knowledge. Therefore, it is imperative that there is an international body to bring librarians together to make accessible this critical commodity of information and knowledge.

This embodiment of international librarianship, is IFLA. IFLA, the trusted global voice of libraries world-wide, has a strong commitment to enabling library associations and institutions, and their staff, throughout the world, to participate in the work of the Federation regardless of geographical location. IFLA is an international non-governmental organization (NGO) based in The Hague, Netherlands, and has been active since 1927. It is a member-based organization and the leading international body representing the interests of library and information services and their users. IFLA has over 1450 members in 151 countries (126 in Africa; 260 in Asia and Oceania; 705 in Europe; 89 in Latin America; 279 in North America) of which 123 are National Associations and 1059 are Institutions. Its purpose is to promote high standards of provision and delivery of library and information services, encourage widespread understanding of the value of good library and information services and to represent the interest of its members throughout the world. The Federation has three regional offices: IFLA Africa based in Pretoria, South Africa; IFLA Asia and Oceania (including the five sub-regions of Asia and Oceania: West Asia, South Asia, Southeast Asia, East Asia and Oceania) based in Singapore; and IFLA Latin America and Caribbean, based in Rio de Janeiro. In addition to these IFLA has four language centers, one for Arabic in Egypt, French for Africa in Senegal, Russian in the Russian Federation and Chinese in China. IFLA is, amongst others, the thread that pulls together the continents in the endeavor to promote international librarianship *enroute* to the global village.

International Librarianship: The Concept

Librarianship has always been international. However, the concept “international librarianship” gained momentum when discourse in librarianship was guided by geographical affiliation. Newly developed ideas were representative of a region or country. These new ideas were then passed from one country to another by librarians to make the librarian’s world more global and the community in which the librarian works more understandable for local people. The technology that accompanied this transfer of information heightened the expectations.

This exportation and importation invariably meant an understanding of what was currently available in a specific region or country. In this context,

comparative librarianship became a significant factor in international librarianship as there was a need to understand the level of librarianship in the region before importing new ideas to that region. Reinforcing this argument is the view of Kajberg (2009) who points out that comparative librarianship is a study of the development in many countries to discover what developments have been successful and can be copied elsewhere. Some years earlier Harvey (1973) stated that comparative librarianship is essentially or predominantly international in that it involves comparisons across borders. Thus, it is incumbent on librarians to constrict the world and merge the borders of the different countries into one global village. There has been significant activity and development within the Library and Information Science (LIS) profession that facilitates the merging process, and the rapid advances in technology have drastically enhanced dissemination mechanisms. Further, the growth of open access on the back of open source software has positively impacted on dissemination of information. Therefore, it is safe to argue that open access and technology, among other developments, have played a significant role in bridging the information gap between the haves and have-nots. The much freer flow of information brings some relief to the poverty stricken countries of the global community.

The Onion Metaphor and Broadening of the Concept

Malone and Yohe (2002) quote the economic historian David Landes stating that, “the greatest single-problem and danger facing the world of the third millennium ... is the gap in wealth and health that separates rich and poor”. One response to this dilemma is unified learning, universal sharing of knowledge and information to make accurate choices and to enhance innovation. There are a number of hypotheses attached to this response and one of those hypotheses is that access to knowledge and information is a critical resource in leveling the playing field, that information is critical for innovation and growth. Therefore, international librarianship is becoming much broader than the interaction of traditional libraries across borders.

The authors use the onion metaphor to demonstrate the growing need for new and relevant layers beyond an already established core. The fundamental principles of international librarianship still remain at the crux of information provision with newer influential issues such as technology and open access contributing to the development of outer layers. However, these outer layers are neither more nor less significant to the inner layers, but they contribute to a more comprehensive whole.

The existence and growth of the outer layers will remove tunnel vision, and in fact will allow for greater provision of information through a broader lens. This in no way detracts from the role of the traditional library, but rather radically expands the metaphorical walls of the library into virtual realms. The

critical issue is for information to become more accessible to the citizens of the world, to help the citizens of the world to find solutions to their problems, and to help find innovative and creative ways to deal with issues that are unique to specific communities. Libraries need to drive access to knowledge to every member of the global village including those that are accessing information from a remote area using mobile technology. This equitable dissemination of information will ensure that information is not the monopoly of the rich. The constriction of the world and the linking of communities within the global village become significant issues for a “broader-lensed” international librarian.

The Synergy between Knowledge Society and International Librarianship

The challenge for libraries in this expanded age of international librarianship is to discover, integrate, disseminate and apply the exponentially growing wealth of human knowledge. The furtherance of a knowledge-based society is a critical ambition of international librarianship. The strategy for a knowledge-based society calls for new kinds of knowledge partnerships among all the producers and disseminators of knowledge and information. As indicated at the WSIS conference in 2005, a rich public domain is an essential element for the growth of the knowledge society, creating multiple benefits such as educated public, new jobs, innovation, business opportunities, and the advancement of sciences. Information in the public domain should be easily accessible to support the knowledge based society. Public institutions such as libraries and archives, museums, cultural collections and other community-based access points should be strengthened in order to promote the preservation of documentary records and free and equitable access to information.

Contemporary technology is enhancing the dissemination of knowledge and information. Lor (2008) states that “modern information and communications technologies (ICTs) are bringing about profound transformation in the information and knowledge landscape, affecting the creation, distribution, dissemination and repackaging of information as well as the interactive sharing of knowledge”. Modern ICTs allow information to be carried swiftly and unobtrusively across national boundaries.

What Is It that We Can Share with Each Other?

Lor (2008) quotes Miles Jackson who talks about library development in developing countries and poses the question of what developing countries can do to contribute to developed countries in terms of contemporary advancements in librarianship. However, what needs to be pointed out is that the world of

information must be seen through a broader lens. The role of finding and sharing information (which is the core business of libraries) will contribute to new innovations for the continued growth of developed countries. Given that there are practices that have been tried and tested in developed countries, it is understandable that developing countries are ready to adopt and adapt rather than reinvent the wheel. However, it must also be pointed out that processed information converted into innovation is dependent on a variety of contributors, including resources that are located in developing countries. The symbiotic relationship between developed and developing countries is critical for the growth and advancement of the global village. Further, it must be noted that there is a two-way flow of scholarly information between the developed and developing worlds. Knowledge production is not the monopoly of developed countries. For example, Africa has a rich scholarly heritage, as demonstrated by the rediscovery of centers of learning such as Timbuktu, where the Sankore Mosque once housed one of the largest universities of the Muslim world. Further, there is growing appreciation for Africa's indigenous knowledge.

Indigenous Knowledge

Africa has a strong oral culture. However, this strong oral culture is on the decline given the systematic process, by the colonial governments, to relegate that culture to a status of inferiority and of no value. This allegation is corroborated by Kawooya (2006) who quotes Beyaraza as stating that colonialists systematically dismissed African cultures and indigenous knowledge. Exacerbating the demise of the oral culture is the low preservation rate of the rich cultural heritage of Africa which must be viewed in consideration of an aging population and the potential loss of knowledge with the death of these elders. Raseroka (2008) draws an analogy from the death of these elders stating that, "in Africa, each time an old person dies, it's a library that burns down."

The dominance of Africa's oral culture is rapidly waning with very little effort to collect, preserve and organize this rich culture. Mchombu (1991) says that the one institution most qualified to collect, preserve and organize this rich culture is the library. However, African libraries have found it very difficult to draw nourishment from their own rich environment. Instead, the libraries have remained aloof and isolated and have been content to serve the minority communities at the expense of developing innovative services and forming alliances or partnerships with skilled librarians to ensure that the rich culture becomes the commodity of the world (Mchombu 1991). The lack of conviction to collect, preserve and organize the rich oral culture contributes to the deprivation of this tradition not only for Africans but also the rest of the world. Significant opportunities to save Africa from being a marginal player in the global knowledge exchange are lost. This neglect contributes to the "evaporation" of Africa's historical oral culture (Kawooya 2006). This lack of com-

mitment to collect and disseminate the rich African oral culture will do very little to dispel the notion that information flow is a one-way process from developed countries to developing countries. It is imperative that libraries and librarians come together to collect, preserve and disseminate this rich culture in the spirit of developing a new layer. This would bring Africa into the core of the global village.

Open Access

There is substantial cooperation among libraries across borders, but higher education institutions in particular seem to thrive on cooperation and are very often leaders in advocating collaboration. Hammond (2009) states that the education of “global citizens” has become a standard goal for many higher education institutions. Numerous universities have also joined international university consortia or nurtured bilateral institutional relationships to facilitate international partnerships and networking.

Cooperation at institutional level often is cascaded down to divisions such as the library. Cooperation in terms of exchanging information via Interlibrary Loan (ILL) is fast being superseded by placing high quality research findings into institutional repositories which are directly accessible to researchers. The opening of access to scholarly research material removes the substantial barrier of cost. Research materials that normally would be published in journals with high annual subscription rates are now available to the information-seeking research communities across the world via institutional repositories. The open access movement which is international in nature addresses the cost barrier by arguing for the “free availability of literature on the public internet, permitting any users to read, download, copy, distribute” The only barrier is gaining access to the internet itself.

This opening of access to information is driven by the libraries’ core business of making information available to their user communities. Libraries have been in the forefront of this open access movement, and they are now using alternate forums to drive access to knowledge and information. The realms of international librarianship are now being expanded to include non-traditional roles, including acting as a publisher (via repositories).

Bridging the Digital Divide: A New Layer

In teasing out the metaphor, it becomes evident that the growth of the outer layers on an established core enhances the constriction of the world. Cooperation, collaboration and sharing, at a local, national and international level, have for decades underpinned sound library practice. However, in more recent decades technology has radically improved the capacity to collaborate and

share information for the benefit of the different information seeking communities. However, technology could also have the converse effect of breaking down the global village through the creation of a new set of barriers, that is, the digital divide.

The rapid development of technology has undoubtedly contributed significantly to improving access to information and expediting growth and development. However, although technology has the magnetic capacity to bring the world's information together and to break geographic boundaries, it has created the contrary effect of forming new boundaries and exacerbating information poverty. Furthermore, technology has created communities within communities and widened the information gap between developed and developing countries. The divide between the information rich, that is, those that have unhindered access to information, and the information poor, that is, those that do not have access to information, is by no means decreasing as technology advances.

This divide between the information rich and information poor, is arguably one of the most challenging issues that librarians have to come to terms with in the current technological age. It goes to the core of what libraries and librarians do, which is to make information accessible utilizing contemporary technology. However, there are numerous other elements of the digital divide in addition to the issue of access. As indicated by authors such as Chowdhury (2001) and Moe (2004), the crux of the chasm is the capacity to use technology to improve the lives of people. If technology is not used effectively to improve the lives of people, then it will have the opposite effect of widening the divide. This assertion is supported by Fink and Kenny (2003), who add to the issue of access to technology other elements such as the ability to use technology, actual use of technology and the impact of its use.

It is acknowledged that the expansion of technology has stimulated productivity (including intellectual output), driven the economic growth of countries, diminished the importance of distance, and globalized markets and economies. Further, technology has linked markets, institutions, and people all over the globe and has radically altered people's lives and how they have performed at work. It has had a significant impact on scientific output and the sharing of that output within the global village. Therefore, as much as technology has created a divide among and between communities, its outcomes have exponentially enhanced the functioning of the global village. Further, it is important for libraries to convert the negatives of the digital divide into positives, and in their roles as information providers they are presented with the inherent capacity to add value to this conversion process.

Moe (2004) emphasizes the fact that librarians and libraries have a significant role to play in addressing this fast-growing new outer layer called "bridging the digital divide". Some of the roles that librarians can play include providing the policy makers with information needed for making effective decisions related to technology use in libraries, using the technology to promote

literacy and free access to information, designing road maps for better serving their user communities and enhancing the impact of library services in addressing growth and development imperatives of individual countries and the world.

Cullen (2001) reinforces Moe's (2004) views by stating that libraries' commitment to freedom of access to information and the promotion of life-long learning positions them as a significant role-player in closing the digital divide and nurturing the principle of a global village. Libraries have been the force behind many initiatives to increase reading literacy and access to information in the past, from the very foundation of public libraries as self-education resources for workers, to the mobile libraries found in some form in most library cultures, and to adult literacy and community education programs. Libraries still need to take a more active part in the promotion of information literacy, including technological and internet skills, and initiative-relevant training to bridge the gap. It is an international phenomenon and must be addressed as such.

One of many ways in which the digital divide can be addressed is through digital inclusion. Albernaz (2002) makes the point that if the digital divide is a problem, then the most logical step would be to correct it through an inclusion process, that is, the promotion of "digital inclusion." Such a process would create opportunities for the excluded communities. Albernaz (2002) argues the point that the most common association with the concept "digital inclusion" is its influence on economic progress or growth. There is an assumption that basic computer and Internet skills would provide the necessary stimulus for people living on society's "margins" to find work more easily (or to find higher-paying work) and help break the cycle of poverty. Albernaz (2002) goes on to state that for nearly a decade, non-governmental organizations in Brazil and throughout the rest of Latin America have been establishing free or low-cost computer skills courses in impoverished areas. Although studies have shown that those who do find better jobs after completing these courses are rare, the exposure to computers and the Internet has, for all intents and purposes, achieved the goal of 'digital inclusion'.

As libraries move forward in this new outer layer as a profession, as a core driver of access to knowledge globally, libraries and librarians should re-engineer their skills and expertise of the worldwide profession to ensure that the world's citizens have access to the world's knowledge. Such an approach is appropriate for a profession that values freedom, equity and inclusion, and has a long tradition of expressing this through cooperation and sharing. Providing access to information for all through libraries empowers every citizen and embraces the notion of social inclusion and of librarians becoming active change agents in society.

Conclusion

The authors hope that they were able to demonstrate the synergy that exists between the knowledge society and international librarianship. If librarianship in the current era is going to survive, then it must be expanded to allow for greater provision of information through a broader lens as indicated. The Internet has provided librarians with a golden opportunity to achieve this. Balas (2000) makes the point that the Internet has contributed to the constricting of the world. The Internet has brought people together and has “made it easier to communicate over long distances so people who have never met each other can share common interests and concerns”. He also makes the point that, “while the internet does bring people together with common concerns and interests together, it can also reveal fascinating diversity of viewpoints, customs and experiences. The web is a good place to expand our views of our profession”.

The Internet has not only allowed librarians to expand the pool of resources they can offer to library patrons, but also it has expanded their access to resources for their own profession. Librarians can learn from colleagues from all over the world and bring new ideas and perspectives to their own work environments. While there are some who are critical of the “shrinking of the world” as a result of technology, it is this technology that could have the opposite effect in that it provides exciting opportunities to explore diversity of viewpoints and experiences. The new layers that are added to the core will change over time as new opportunities present themselves. It is incumbent on libraries to continuously add to the tried and tested layers. International librarianship has grown to take on new perspectives in the quest to constrict the world into a global village.

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1.2 ALA and its International Relations Program

Beverly P. Lynch

Introduction

The definitive history of the role of the American Library Association (ALA) in international library development has yet to be written, although there have been several historical reviews over the years,¹ and a number of important studies have been published on the influence U.S. librarians have had in the development of the field in various countries.² The history is extraordinarily complex, including as it does the work ALA has carried out overseas for the U.S. government, foreign governments, and international agencies such as UNESCO; the assignments various private foundations have made to the ALA to undertake overseas assistance of interest to the foundations; records of American librarians working abroad; and the enthusiasm and leadership of some of the most prominent members of the American library community who have worked to provide assistance to libraries, library associations, library education, and consultations in countries around the world.

Most of these activities have been carried out with financial support from agencies outside of the association. The International Relations Office within ALA, funded by the foundations and the various governmental agencies in order to administer a particular program, has been influenced heavily by the particular program it was assigned to administer. Within the association, international programs have competed with other programs more popular with ALA's membership and so the defense and explanation of the spending of membership monies for international activities has been difficult.

Recently, as the ALA has worked to draft its strategic plan for 2010–15, the results of a survey of the association's membership showed that international work was valued at 33rd out of 37 values.³ So even as the library world

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- 1 Peggy Sullivan, "The International Relations Program of the American Library Association," *Library Trends* 20, no. 3 (January 1972): 577–591; Peggy Sullivan, *Carl H. Milam and the American Library Association* (New York: The H.W. Wilson Co, 1976) 195–237.
 - 2 M.B. Konnur, *Transnational Library Relations; the Indo-American Experience* (New Delhi, Concept Publication Company, 1990); J. Periam Danton, *United States Influence on Norwegian Librarianship, 1890–1940* (Berkeley, University of California Press, 1957); Yukihisa Suzuka, *American Influence on the Development of Library Services in Japan, 1860–1941* (Ph.D. thesis, University of Michigan, 1974); Ming-Yueh Tsay, "The Influence of the American Library Association on Modern Chinese Librarianship, 1924–1949," *Asian Libraries* 8, no. 8 (1999) 275–288.
 - 3 www.ala.org. Ahead to 2010 Value Proposition Gap Analysis, 2004–2009. (14. Aug., 2009).

becomes more global in all of its aspects, finding financial support and institutional capability for international programs within the ALA remains a challenge.

International Relations Committee (IRC)

The association has had committees responsible for various international activities for many years. Frank K. Walter, in a 1919 review of ALA's international activities, commented that ALA then had six committees dealing with international affairs, and that one committee might be preferable. The name of the ALA committee has varied, sometimes called the International Relations Committee and sometimes the Board on International Relations. The International Relations Committee was established in 1923 at the request of the ALA Council and it continues as a Council committee.

The current charge to the committee is a broad one: to have full responsibility for the association's international relations programs and initiatives; to work with the International Relations Round Table, division international relations committees and other units of the association in promoting the exchange of professional information, techniques and knowledge, as well as personnel and literature between and among libraries and individuals throughout the world; to advocate the recognition of the international aspects of the library profession and its priority within ALA; to recommend international relations policy for Council approval and to take the necessary steps for implementation; to make recommendations to the ALA Executive Board for appointments or nominations to international organizations and other agencies concerned with international library and information services; to administer programs of the association focused on international relations (awards, etc); to promote program and publications activities on international relations by the association and its divisions and committees; to maintain communication, when appropriate, with other library and information services organizations concerned with international relations; to represent the association's view to organizations and agencies outside the ALA that are concerned with international relations of libraries; and to encourage active participation by U.S. Librarians in the work of international organizations.⁴ The assignment is a large one for a relatively small committee of twelve appointed for two year terms. The committee is well-served by six subcommittees representing geographical regions: Africa, the Americas, the East Asia and the Pacific, the Eurasia and Central Asia, Europe, Near East and South Asia. Two subcommittees work on awards and one subcommittee works on the Guadalajara Book Fair. Members of these subcommittees are appointed by the IRC chair. Special subcommittees are appointed from time to time to work on special concerns. Within the

complex organizational structure of ALA, other committees within the divisions and elsewhere emerge with an international focus, and the International Relations Committee makes every effort to coordinate all of these efforts.

International Relations Round Table

This is the membership group within the ALA which has program responsibility. Its officers are elected annually from its membership. Among its activities, the Round Table supports programs related to international exchanges, and International Sister Libraries. At the annual conference of the ALA the Round Table supports a poster session, an international papers session, and a reception for visitors to the conference from other countries. The IRRT publishes a newsletter, *International Leads*, reporting on various activities of the Round Table and its members. The IRC itself emphasizes policy. That is, the IRC does not mount programs at the annual conference, as this is the work of the IRRT. But there sometimes is overlap.

The International Relations Office

ALA's first international relations office was established in 1941 at the insistence of Carl H. Milan, the Executive Secretary of the ALA.⁵ The funding for the office came from external sources assigned to the ALA for various library programs around the world. The choice of the first head of the office, was fortuitous: Harry M. Lydenberg, retired director of the New York Public Library, and ALA president 1932–33, came to the post from the directorship of the Benjamin Franklin Library in Mexico City. The International Relations Office was housed in the Library of Congress in Washington, enabling a good and close working relationship between the Library and ALA.

Some of the finest leaders in American librarianship have been ALA's International Relations Officer. They have contributed much to the development of libraries around the world and have built a solid base for international relations within the association. Their published works offer fine advice to those librarians who have undertaken foreign assignments as well as to the U.S. government, various foundations such as the Ford Foundation, the Rockefeller Foundation, and other agencies interested in supporting the development and improvement of libraries worldwide.

Lester Asheim headed the IRO from 1961 to 1971 (full time in the IRO at first, then sharing his time with the Committee on Education). In 1966 Asheim's Phineas L. Windsor lectures on *Librarianship in the Developing*

5 Sullivan. *Carl H. Milan*. 204.

Countries were published by the University of Illinois Press⁶. In this important work Asheim carefully comments on the differences the American librarian confronts abroad. He calls this “culture shock.” What he means and then describes are the differences the American librarian finds as he goes into other countries: absence of public libraries as they are in the U.S.; no service to children; a national library in name but not as we would know it. University libraries in other countries are likely to be more similar to what U.S. librarians know, but there still are major differences which he describes. Asheim’s book is about 45 years old and yet it still offers important insights.

Rayward Swank, International Relations Officer from 1959–1961, on leave from Stanford University, identified six characteristics of American librarianship he felt were “suitable for export.”⁷ These characteristics are 1) the conception of the library as an organization of books; 2) the evolution of a library profession; 3) the attitude of service; 4) the function of the library as an educational institution; 5) the role of the library in the advancement of intellectual freedom; and 6) the conception of organized information as a public resource and responsibility.

I will comment on just one characteristic Swank identified as being “suitable for export,” the one related to intellectual freedom. Under the leadership of Robert Wedgeworth, past Executive Director of the ALA and president of the International Federation of Library Associations and Institutions, 1991–1997, IFLA embraced the policy of intellectual freedom. Intellectual freedom has emerged as one of the important policy areas and continuing programs of IFLA, and is a direct result of the influence of the ALA.

Over the years the ALA’s international relations program has changed as the world of librarianship has changed, and it continues to do so. The Library Fellows program, funded by the United States Information Agency and administered by the International Relations Office of ALA, was initiated in 1986 and continued through 1998 when the funding ceased. It was the last formal project funded outside of the association but managed by the ALA that provided expertise and assistance to colleagues in 83 countries. It also enabled 41 librarians from 35 countries to participate in an exchange opportunity in the U.S. to learn first-hand how libraries in the U.S. function.

ALA no longer plays a formal role in consulting for libraries and governments abroad as it once did, although many of its members are called upon to do this. ALA has, among its members, extraordinary librarians with special subject and language skills who continue to work with libraries and governments all over the world. ALA does continue to promote the exchange of professional information, techniques and knowledge, and to promote program and

6 Lester Asheim, *Librarianship in the Developing Countries*. (Urbana, IL, University of Illinois Press, 1966).

7 Raynard C. Swank, “International Values in American Librarianship,” *The Cornell Library Conference*, papers read at the dedication of the Central Libraries, October 1962. (Ithaca, NY Cornell University Library, 1964) 115–129.

publication activities on international relations by the association and its members.

Let me comment on three international activities of the ALA in which I have been engaged over the last fifteen to twenty years. Each of these has antecedents in past international activities of the ALA.

First American/South Asian Libraries Conference, August 27–28, 1992 New Delhi, India

Ravi Sharma, then of the University of Evansville, Indiana, chaired the IRC Subcommittee for this conference, and Professor P.B. Mangla, University of Delhi and Vice President of IFLA, coordinated the Indian program and local arrangements. The impetus for the conference was the IFLA meeting scheduled for New Delhi to which many American librarians would be going. This enabled the leadership of ALA in the early 1990s to meet the leaders of the Indian library community, to share information and ideas, and seek agreement on various topics and policies. Library education was the focus of the papers and the discussions which followed. No conference followed this one, but there has been much interchange between the librarians from the countries. M.R. Konnur has ably documented much of the early relations between American and Indian Librarians.⁸

Japan-United States Conference on Libraries and Information Science in Higher Education

There have been five conferences in this series and the papers from each of them have been published. The first conference was held in Tokyo in May 1969. This was a joint conference with the Japan Library Association on the role of libraries in higher education and research and came about because of the work of Thomas R. Buckman, who had been Director of ALA's International Relations Office following Lester Asheim, and who served as a consultant on international programs for the International Relations Office of the ALA from November 1, 1966, through May 31, 1967.⁹ 47 American and

8 See above: M.K. Konnur.

9 Sullivan, "The International Relations Program of the American Library Association," 589.

10 University and Research Libraries in Japan and the United States. *Proceedings of the First Japan-United States Conference on Libraries and Information Science in Higher Education*. Edited by Thomas R. Buckman, Yukihisa Suzuki, Warren M. Tsuneishi. Tokyo, 15–19 1969. (Chicago, American Library Association, 1972); *Issues in Library Administration*; papers presented at the Second United States-Japan Conference on Libraries and Information Science in Higher Education. Edited by Warren M. Tsuneishi, Thomas R. Buckman, Yukihisa Suzuk. (New York, Columbia University Press, 1974); Japanese and U.S. Re-

Japanese librarians, educators and scholars explored the various issues related to the flow of information across national borders. The ensuing publication provides a benchmark against which subsequent work can be measured.¹⁰ The first paper in the volume, by Buckman provides a succinct history of the development of the Japan-U.S. collaboration on libraries which followed World War II. The *Proceedings* also identifies some of the activities, visits, consultations important to the collaboration and the various proposals to the ALA that it undertake a formal program. The International Relations Committee appointed an Advisory Committee for Liaison with Japanese Libraries. All members of this committee had visited Japan in a professional capacity on one or more occasions and had developed a growing knowledge of the Japanese library world. This committee continued the joint work with the Japanese Library Community.

The second conference was held in Racine Wisconsin in 1974. Its papers also were published. Three more conferences were held: the third in Kyoto, 1975; the fourth held in Racine Wisconsin in October 1988; and the most recent, the fifth, held in Tokyo in 1992. The committee provided continuity throughout this series. Warren Tsuneishi, Chief of the Orientalia Division, Library of Congress, was central to the planning of all the conferences and was a co-editor of each of the five proceedings. Everyone participating agreed that the conference series served the central purpose of sharing information and techniques, emphasizing the importance of university library collections in the vernacular languages being so central to the work of the scholars in these universities.

China-U.S. Conferences

The ALA has jointly organized and supported four China-U.S. conferences and planning for a fifth is underway. The first joint conference was held in Beijing in 1996, immediately before the 1996 IFLA meeting. It was modeled on the 1992 Delhi conference, taking advantage of the attendance of many of the leaders of the ALA who would be in China for the IFLA meeting. The second was held in Queens, New York City, and Washington D.C., immediately before the 2001 IFLA conference in Boston. Again the purpose was to have a small invitation conference of the library leaders from China and the U.S. who would be attending the IFLA meeting. The attendees found these

search Libraries at the Turning Point. Proceedings of the third Japan-U.S. Conference on Libraries and Information Science in Higher Education, Kyoto, Japan, October 28–31, 1975. (Metuchen, N.J. Scarecrow Press, 1977); Strengthening the U.S. – Japan Library Partnership in the Global Information Flow Fourth U.S. – Japan Conference on Library and Information Science in Higher Education, Racine, WI, October 1988. (Chicago, American Library Association and Tokyo Maruzen International Co. 1990); Japan-U.S. Collaboration in Enhancing International Access to Scholarly Information: Looking Toward the 21st Century (Tokyo, Universal Academy Press, 1993).

conferences to be extraordinary in furthering the purpose of exchanging information and exploring important issues in international librarianship. The attendees at the second conference adopted a resolution calling for the continuing of the series. The third invitational conference was held in Shanghai in 2005 and the fourth, the most recent was held in Dublin, Ohio, in 2007 and was hosted by OCLC (Online Computer Library Center). The Chinese have invited us to jointly sponsor the fifth conference in this series. The Chinese government has been very supportive of this series and American sponsors and participants have been as well.

As with the Japan-U.S. conferences continuity has been essential. Hwa-Wei Lee, then of Ohio University, was in 1996 chair of the IRC's Committee on East Asia and made the initial contacts with China. I was chairing the ALA's International Relations Office at the time, had attended the Delhi invitation conference and observed the importance of that meeting, and asked Hwa-Wei to explore the idea with his Chinese colleagues. In addition to the presence of Dr. Lee, the U.S. organizing committee has been remarkably stable. Several new people are added regularly, but the core continues.

One cannot overestimate the efforts that go into mounting an international conference. Leadership, of course, strong interest in the conference theme, and money are all required. The ALA should take great pride in these conferences series. They meet exactly the purpose of the international relations agenda and have furthered ALA's international activities in these countries.

Other Activities

I have emphasized these conference series for I believe they have contributed much to ALA's relationships with India, Japan, and China. They directly support the IRC's responsibility to promote the exchange of professional information, technology, and knowledge between and among libraries and individuals throughout the world. The conferences provide good models for future activities and have built on past efforts going back many decades. There are many more activities in the areas of international relations that are carried out throughout the year. ALA is large and complex and embraces the growing numbers of specializations in librarianship. ALA also is able to draw upon the talents and the knowledge, skills, and abilities of its members.

IFLA and its activities as well are an important part of ALA's work. Seventy-five ALA members are currently representing ALA on forty IFLA Section Committees. Elections for the 2009–2013 terms have just been completed. ALA continues to be well represented.

ALA also is represented at many other conferences and meetings around the world, such as the Crimea conference, the Sophia conference, and, of course, the meetings of national library associations. We have long known, really since the founding of ALA in 1876, that libraries and information tran-

scend national boundaries. Our programming is designed to enhance the globalization of our field.

Other international activities include representation at international books fairs. These include the Guadalajara Book Fair in which over 100 ALA librarians participate each year and consult with librarians and book sellers in Mexico, as well as other book fairs such as those in Hong Kong, Frankfurt, and Jerusalem. Furthermore, the Campaign for the World's Libraries is a joint effort between ALA and IFLA. It is an educational campaign designed to showcase the unique and vital roles played by libraries worldwide.

In 2007 ALA joined the U.S. Committee of the Blue Shield, which is concerned with the destruction of cultural property worldwide. The Committee of the Blue Shield and the ALA worked long and hard to get the U.S. government to ratify the 1954 "Hague Convention for the Protection of Cultural Property". The U.S. government ratified the Hague Convention in 2008.

Closing Comment

Five ALA divisions, including ACRL (Association of College and Research Libraries), have international relations committees. Each of these emphasizes its own special interests and mounts programs of interest to its members at the annual ALA conference. In 2005 ACRL endorsed a declaration encouraging institutions to explore sister-library partnerships and to build relationships with libraries in other cultures. This is a long-standing objective of the ALA, and this ACRL initiative was led by Camila Alire, then ACRL president and ALA president for 2009–2010.

Although the general membership of the ALA does not value international work to the extent that it should in terms of staff and office support, as seen in the recent survey of values the members support, the dedication of the association's leadership over the years, the quality of the contributions made to international librarianship by the leadership and the members, and the importance governmental agencies and foundations have attached to ALA's efforts, its activities, and its administration of major programs over many decades, have resulted in major contributions to the development of librarianship worldwide. It has been a pleasure to describe some of the work to you.

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- Services in Japan, 1860–1941* (Ph.D. thesis, University of Michigan, 1974); Ming-Yueh Tsay, “The Influence of the American Library Association on Modern Chinese Librarianship, 1924–1949,” *Asian Libraries* 8, no. 8 (1999) 275–288.
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1.3 Technology and Academic Libraries in East Asia: An Overview*

Anchi Hoh and Peter R. Young

Introduction

Over the past several decades, the rapid and growing global economic development and progress of East Asia nations have attracted the attention of scholars, researchers, and policy makers. This growth lends support for characterizing the twenty-first century as the “Pacific Century.” During this time frame, library and information studies publications note steady progress in the adoption of digital networking technologies in East Asian academic and research libraries. An increased number of published professional and scholarly articles describing system development and digital content services in support of Asian higher education initiatives over the last decade reveal a trend that is approaching a transformation in scholarly communication, driven by the adoption and integration of digital repositories and networking technology into the Asian academic library environment. In short, the development of digital libraries in East Asia is progressing significantly.

Despite the challenges of vernacular Asian language conventions and the historic dominance of English-language-based system development, East Asian academic libraries are experiencing a rapid advancement toward a future dominated by digital content, services, and learning through the development and implementation of digital repositories. Rather than attempt to be a comprehensive and detailed survey of the current status and development trajectory for digital technology in East Asian academic libraries, this chapter assumes that the development of digital content repositories in these institutions reflects a certain degree of progress and development. Digital collections available through institutional and discipline-based digital content repositories reflect a growing and dynamic indication of the migration of scholarly, academic and scientific research communications to digital venues. For the purpose of this study, the focus will be on the development of digital libraries in China, Japan, and South Korea.

According to William Y. Arms, Professor of Computer Science at Cornell University and author of *Digital Libraries*, the goal of a digital library is to adopt advanced technology to collect, store, organize, and access knowledge

* This article reflects the personal views and observations of the authors. Views and opinions included in this article do not represent official policies or positions of the Library of Congress or the U.S. Federal government

resources in different content and types stored, in a variety of electronic forms. Digital library technology performs the finding, processing, sorting, storing, archiving, transmission and management of digital resources. Digital libraries offer information services that are always available and are not limited by time or location. In a narrower sense, a digital library is a specific organization that uses information, computer and network technology to search, collect, sort, store, and retrieve informational resources.¹ In Arms' view, the term "repository" is related to archiving. "A repository is any computer system whose primary function is to store digital material for use in a library. Repositories are the book shelves of digital libraries."² However, the terms "digital library" and "digital repository" are frequently used interchangeably by library and information science professionals. This convention is adopted in this overview. To sum up, an informal definition of digital libraries is "a managed collection of information, with associated services, where the information is stored in digital formats and accessible over a network."³

With respect to academic libraries, this study examines the libraries in China, Japan, and South Korea affiliated with higher education institutions and research organizations. The role of the academic libraries in the establishment of digital libraries has been as facilitators and implementers. The advent of digital libraries indeed has suggested a revolutionary transition in the roles and functions of traditional academic libraries, as well as their interaction with each other and their constituents. One example is that it has been frequently remarked that academic libraries in these East Asian countries were traditionally less involved with inter-institutional cooperation in the areas of cataloging, acquisitions, and in resources sharing. Limited funding, staff shortages, and the lack of management support were traditionally the primary concerns. As technology advances and the construction of digital libraries becomes a social, political and economic priority, government has played a key role in passing laws, appropriating funds, and mandating the establishment of digital information resources centers to implement digital initiatives and to conduct research on related issues such as digital library standards and specifications, preservation, as well as policies related to intellectual property. Academic libraries, as the traditional hub of cultural, academic, and scholarly affairs, now assume the front and center role, to provide leadership and assistance in building digital libraries, either collaboratively or locally.

This study surveys the progress that national libraries have made in the evolution of digital libraries. The national libraries in China, Japan, and South Korea, have long provided library professional and information service leadership. In all three cases, the national libraries are key players, instigating and

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- 1 William Y. Arms, *Digital Libraries*, London: Massachusetts Institute of Technology, 2001.
 - 2 William Y. Arms, *Digital Libraries (1999 Edition)*, <http://www.cs.cornell.edu/wya/DigLib/MS1999/Chapter13.html> (11. Apr. 2010).
 - 3 Leye Yao and Ping Zhao, "Digital Libraries in China: Progress and Prospects," *The Electronic Library* 27, no. 2 (2009): 308–309.

implementing their respective national governments' digital initiatives. Thus, it is important to note the contribution and efforts the national libraries have made in the overall development of digital libraries, both at the national level and in the international arena.

The development of academic digital repositories in China, Japan, and South Korea reflect similarities with respect to funding, planning strategies, and service development. But there are also distinctive characteristics specific to each country, depending on factors such as how the library profession is positioned in relation to academia, the various strategies adopted in digital repository construction, and collaboration patterns. The following offers a closer look at each country's achievements and challenges in digital repository development.

China Academic Digital Library and Technology

According to the China Internet Information Network Center (CIINC), by the end of 2009, China had reached 384 million Internet users, which makes it one of the few countries with the largest Internet populations in the world.⁴ Based on the Ministry of Education in China, in 2008 there were in total 8,819 higher education institutions.⁵ The number of electronic library resources at these higher education institutions, including electronic books and magazines, amounts to 153.2 billion items, which accounts for 30% of the total library resources of both print and electronic formats and indicates a rapid increase of 587% since 2004.⁶ The fast growth of electronic resources together with the rising number of Internet users in China combine to fuel significant changes in scholarly communication and research patterns. This development projects the unavoidable transition of academic libraries' functions in terms of services, collection acquisitions and development, and cooperation models.

As technology and higher education advance, the traditional role of academic libraries in China functioning at a small scale has been undergoing unprecedented transformation in the areas of staffing, collections and services. At the same time, these academic libraries are faced by new challenges and opportunities, which dictate new roles and functions for identifying and retaining audiences and users, and re-strategizing technical approach and coopera-

4 "Statistical Survey Report on Internet Development in China," *China Internet Network Information Center*, <http://www.cnnic.net.cn/uploadfiles/pdf/2010/3/15/142705.pdf> (9. Apr. 2010).

5 "Number of Schools by Level and Type," *Ministry of Education of the People's Republic of China*, <http://www.moe.gov.cn/edoas/website18/96/info1261474691589796.htm> (9. Apr. 2010).

6 "Condition of Fixed Assets and teaching Resources," *Ministry of Education of the People's Republic of China*, <http://www.moe.gov.cn/edoas/website18/78/info1261560388091178.htm> (9. Apr. 2010).

tion patterns.⁷ In order to retain audiences and enhance services, China's academic libraries are incorporating existing services, such as online catalogs and virtual reference services, with newer and more effective digital technologies, such as online search engines, instant messaging, and social networking media. While communications technologies are undergoing enhancement, the quality and quantity of digital library content deserves no less attention. Along with the acquisitions of electronic resources, as proven by the sizable statistical increase of 587% from 2004 to 2008, university libraries have been focusing on collection digitization and the improvement of bibliographic databases. It is in this context that the construction of digital repositories becomes more important than ever, because it aims at providing integrated services to a broader audience by striving to be "an online, searchable, web-accessible database containing works of research deposited by scholars... [with] both increased access to scholarship and long-term preservation."⁸

The construction of digital libraries in China has been proceeding simultaneously at three levels: individual institutional, cross-institutional, and national. The latter two types of development are often mandated by a government agency, such as the Ministry of Education or the State Council of China, and require a larger scale of cooperation and involvement of university libraries across the country.

In regard to progress made by individual institutions in digital library construction, many digital repository projects have been initiated and implemented. A group of scholars conducted an investigation in 2009 of digital library development and improvement in China by examining the websites of the top ten ranked university libraries nationwide.⁹ They highlighted three areas: virtual reference services, library academic information resources portals, and integrated searching systems or platforms. This study identified measurement targets such as content arrangement, digital resources, mainstream modes, subject navigation systems that implement resource selection/organization/retrieval and service/feedback systems, locally-developed database constructions, and user instruction programs. In the area of digital resources, the authors noted that generally digital resources consist of two types: locally-owned digitized information resource databases and commercial databases. Digital content includes master and doctoral dissertations, digitized collections, library cataloging systems, and virtual reference services/reader feedback mechanisms. Purchased databases include those fee-based e-resources provided by vendors, Chinese full-text databases residing in local networks or campuses, and CD-ROM databases. Moreover, Open Access (OA) resources are increasingly incorporated into various types of libraries. In

7 Ping Ke, "Toward Continual Reform: Progress in Academic Libraries in China," *College & Research Libraries* 63, no. 2 (March 2002): 164–170.

8 "Glossary: Digital Repository," *University Library, University of Illinois at Urbana-Champaign*, <http://www.library.illinois.edu/scholcomm/glossary.html#d> (10. Apr. 2010).

9 Leye Yao and Ping Zhao, "Digital Libraries in China: Progress and Prospects."

the perspective of mainstream modes, the study commented that despite the fact that library portals are equipped with integrated search functions, they still lack some form of standardization and are in need of cross-database retrieval platform and navigation system construction.¹⁰

Cross-institutional cooperation in Chinese academic and research digital library construction is a predictable development rooted in libraries' existing practices concerning cooperative acquisitions/cataloging, interlibrary loan, reference services, and other areas. Currently, large scale digital cooperative projects are developing at a rapid speed. An excellent example is the National Science Technology Library (NSTL) (<http://www.nstl.gov.cn/index.html>) digital development program. Founded in 2000 with the approval of the State Council of China, the NSTL is a virtual institution comprised of four key founding members: the Chinese Academy of Agricultural Sciences Library (www.caas.net.cn/), the Library of the Chinese Academy of Medical Sciences (www.library.imicams.ac.cn/), the Library of Chinese Academy of Sciences (www.las.ac.cn/index.jsp), and the National Engineering and Technology Library (NETL) (www.metalinfo.net.cn/). Under NETL, which is also a virtual agency, are four other institutes, namely, China's Machinery Industry Information Institute (www.machineinfo.gov.cn/), China's Metallurgical Information & Standardization Research Institute (www.mmi.gov.cn/), China's National Chemical Information Center (www.cncic.gov.cn/), and the Institute of Scientific and Technological Information of China (www.istic.ac.cn/Eng/index_en.html).

NSTL is charged with the following goals: 1) to coordinate a collective effort in acquiring comprehensively from all available resources documentation and information in natural sciences, engineering and technologies, agricultural sciences, and medical sciences, in order to meet the needs of national development; 2) to contribute to the establishment of data processing standards and specifications; 3) to provide in-depth processing of information and diversified services and to promote information resource sharing to the science and technology community nationwide; 4) to develop international cooperation and exchange. Based on the principles of "Unified programming, Standard processing, Associated constructing and Resource sharing," the functions of the NSTL are to acquire, organize and share documents and information in the areas of technology, agriculture, engineering, physics, and medicine.¹¹

NSTL's National Internet-based Sci-tech Information Service System (NISS) provides a major service navigation focal point, equipped with the capabilities of full-text search and delivery, and subject/journal title browsing. The NISS is open to the public free of charge with the exception of the full-text delivery service. The main features in its services include: 1) Information retrieval services in two areas - document retrieval/full-text delivery, and title

¹⁰ Ibid., 309–318.

¹¹ "About Us," *National Science and Technology Library*, <http://www.nstl.gov.cn/index.html> (10. Apr. 2010).