

# A decade of job realignment movement at large Chinese and American academic libraries from 1998 to 2007

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**Abstract** Based on a questionnaire survey, the paper made a comparative study on the changes of traditional library positions within the context of the emerging professional positions and functional units at some large academic libraries in China and in the United States from 1998 to 2007. It describes how some of the library professional positions and functional units have gone through a time period of intensified and proactive position allocation realignment in terms of their rise, decline, fission and/or fusion within the administrative context of their library's evolving changes in missions, objectives and service delivery structure under the impact of the rapid development of information technologies. Such changes are graphically demonstrated in several charts in this paper to highlight the evolutionary development of academic librarianship in general and the waves of changes for library position reallocations in specific in the ten-year period under study. It is believed that such a study can be useful for discerning the overall developing trend of academic librarianship, especially in the area of the rising professional and social status of academic librarianship during this period. The movement of library position allocation realignment was a corresponding response at the time to the influx of applicable information technologies to the library scene. It not only made the library operation to become "leaner and meaner," but also gave added impetus to the rise of the professional and social status of their practitioners in the society due to the latter's enhanced service delivery innovations and capabilities for meeting their constituencies' timely information needs more satisfactorily.

**Keywords** Academic library, Position allocation, Library job realignment, Traditional library positions, Emerging library positions, Emerging library functional units

## 1 Introduction

With the development of information environment and corresponding changes of information users' needs in the last 10 years, academic libraries both in China and in the United States are continuously readjusting their traditional library positions and setting up new ones to foment a wave of library organizational restructuring. Their aim was to reposition themselves more viably in modern library and information



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service field with expanded functionalities and competitiveness. The purpose of this study was to survey the changes of library professional positions in academic libraries, and to explore the nature of the newly emerged positions. It also aims to show how libraries realigned their staffing structure and reallocated positions in order to cope with a changing socio-cultural and educational environment of learning, teaching and research on their respective campuses, which were being enormously impacted by the rapid development of the Internet and other information technologies. We hope that this study can be useful to optimize the effect of human resources planning at academic libraries in China and to promote further service innovations for the overall development of academic librarianship so as to keep pace with the progress of a new technology-supported higher educational system in the dawning era of an information society.

## 2 Literature review

Journal articles on content analysis of librarian position announcements are abundant in foreign countries. Studies on position announcements generally fall into three categories: 1) Specific skills (e.g. computer competencies or foreign language proficiencies); 2) specific types of positions (i.e. catalogers or reference librarians); and 3) general issues (e.g. job opportunities for recent library school graduates or the status of academic librarians)<sup>[1]</sup>.

Studies analyze various types of positions including academic subject specialists, collection management librarians, reference librarians, serials and monographic catalogers, acquisitions librarians, system librarians, preservation librarians, government document librarians, bibliographers and so on. Those were mostly traditional positions. In recent years, some newly emerged positions are noticed. For example, John D. Shank<sup>[2]</sup> studied job advertisements from periodicals (e.g. *College and Research Libraries News*, *Library Journal* and *the Chronicle of Higher Education*), a job discussion list (Libjobs), and an employment Web site (Educause) from 1999–2004 to investigate the newly emerged position announcement of Instructional Design Librarian. Others studied job descriptions for metadata librarians, electronic and digital librarians and so on. But all these studies did not analyze the overall changes of library positions and the reasons behind these position changes.

The above situation is of no difference in China either. Journal articles about library position changes in China are few and far in between. Few library and information professionals have studied systematically the newly emerged positions at academic libraries in China. So, we took our survey aiming at the changes of allocating library positions at some large Chinese academic libraries in recent years.



At the same time, we also explored the realignment of library positions at ARL libraries (American Research Libraries), which may be viewed as a microcosm of other large foreign academic libraries of world class in general. It is our purpose to analyze the similarities and differences of the changing landscape of academic library positions between China and foreign countries with a specially focused concentration on ARL member Libraries in the United States. Until now, such systematic comparison has not yet been seen in any professional publications.

### 3 Survey & methodology

First of all, we selected the year 1998 as the starting point for our analyzing libraries' changes in reallocating professional positions because digital libraries were quickly developed in scale after 1998 in most developed world economies including the United States. At this time in China, digital library projects also began to enter into a preliminary stage of practical operation. The wide-spread library digitization projects and the development of digital libraries brought unprecedented new challenges and opportunities for academic libraries all over the world. In order to accomplish a reoriented library service outlook that is technology-dependent and intellectual-access centric, academic libraries began to realign their staffing structure and position allocation to meet the increased and pressing information demands of curricular and pedagogical innovations on universities at this time. Thus, it is the most opportune time for us to study this important episode of how large academic libraries took the lead to restructure them to meet the changing information needs of their hosting institutions of higher learning.

Secondly, we designed two questionnaires (Appendix I), one in Chinese for academic libraries in China, the other in English for academic libraries in foreign countries. We tried to find out whether traditional acquisitions and cataloging positions have changed; whether newly emerging positions in such areas as digital library, online user service, copyright, marketing, Information Commons, scholarly communication and institutional repository have been created or added; also whether there are any other new positions over the 10-year period surveyed (1998–2007) have been created or eliminated. Based on these two surveys, we analyzed what commonalities and differences, if any, of changes in allocating positions at academic libraries are among large libraries in China and U.S.A. (a representing sample of developed foreign countries). Then, we described how the positions have changed or persisted. Finally, we studied the trend of evolution in the rise and demise of academic library positions.

Thirdly, we studied the top 40 university libraries in China according to Chinese University Rankings published by Research Center for Chinese Science Evaluation



in 2008 (Appendix II). As for academic libraries in foreign countries, we examined the top 40 ARL (American Research Libraries) member libraries from the top 100 universities based on Academic Rankings of World Universities published by Institute of Higher Education of Shanghai Jiao Tong University, China, in 2008 (Appendix III).

Finally, the survey was sent via email to the 80 selected libraries. Points of contacts were made after having identified each library's website and the name of its University Librarian or to the person most likely to manage human resources at the library. If we happened to have made the wrong contact, we requested that our email questionnaire be forwarded to the correct person at that institution. There were 20 of those 40 selected Chinese academic libraries and 19 of those 40 contacted ARL member libraries responded. The rate of valid response was 50 percent.

## 4 Findings

### 4.1 Traditional acquisitions and cataloging positions

#### 4.1.1 Cataloging positions have been greatly reduced in American academic libraries as compared to that in China

Traditional library positions in acquisitions and cataloging departments were some of the most affected sectors in the new digitized library environment. The positions in acquisitions and cataloging departments have undergone great changes both in China and American academic libraries. The number and proportionate change (most likely in reduction) of cataloging positions in a library can serve as a barometer to reflect the changing situation in the cataloging area. In our study, we surveyed the number of cataloging positions at academic libraries in China and in foreign countries in 1998 and 2007. We can easily detect the changes made about cataloging positions at both foreign and China's academic libraries.

In addition, we also found that the proportion of cataloging positions in China's academic libraries had not decreased noticeably (Table 1). The number of libraries which stated the proportion of cataloging positions increased is almost equal to that of decreased. In contrast, the proportion of cataloging positions in foreign academic libraries significantly reduced.

There were 13 of the 19 responding ARL member libraries showing a decrease in their cataloging positions in 2007 as compared to that in 1998. This is in sharp contrast to the situation of China's academic libraries where traditional cataloging positions were left pretty much unchanged. In the mean time, foreign academic libraries began to cut the size of their traditional cataloging positions and to restructure their traditional cataloging departments. For example, some libraries changed the name of cataloging department into "Cataloging and Metadata Services



Table 1 Comparison of traditional acquisitions and cataloging positions in Chinese and U.S. academic libraries

Questions	Response of 20 Chinese sample libraries surveyed	Response of 19 American sample libraries surveyed
Whether the percentage of cataloging positions among all your library's positions in 2007 increased or decreased compared with 1998?	Increased: 7 Decreased: 8 No change: 5	Increased: 3 Decreased: 13 No change: 3
Have your library outsourced cataloging functions?	Yes: 8 No: 12	Yes: 10 No: 7 In planning: 2
Have there been any new positions added to handle electronic resources related work?	Yes: 10 No: 10	Yes: 14 No: 5

\* Note: The figures in columns 2 and 3 represent the number of libraries responding to the questions.

Department.” Meanwhile, there came along a newly emerged position named “metadata librarian” which was not found in China’s academic libraries. The appearance of metadata librarian was partly due to the development of digital libraries on the one hand, and also, due to the development of MARC (Machine readable cataloging) on the other hand<sup>[1]</sup>.

#### 4.1.2 More electronic resources related positions have emerged at foreign academic libraries than at China’s academic libraries

Most responding libraries in China indicated that most of their newly added positions related to electronic resources, such as “Digital Resources Cataloging Librarian,” “Electronic Resources Cataloging Librarian,” “Digital Resource Metadata Assistant Librarian,” etc. were closely associated with the development of electronic resources in libraries’ collection. However, foreign academic libraries, unlike China’s academic libraries, added more positions related to electronic resources directly into the traditional acquisitions and cataloging departments. Ten out of 20 responding libraries in China did not create positions specifically for electronic resources, whereas only 5 out of the 19 responding libraries in the United States did not establish such positions (Table 1). In addition, the percentage of staff working on electronic resources in foreign academic libraries is larger than that in China. Six of the 19 responding ARL member libraries from the United States showed their percentage of staff working on electronic resources was at 30%–60% in the past 10 years (1998–2007). Yale University Library even reached more than 90%. However, there were only 2 responding libraries in China, which reached 30%–60%; most China’s academic libraries reported the percentage of positions related to electronic resources was below 30%.



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### 4.1.3 Most surveyed libraries have reservations about outsourcing of entire cataloging functions

Academic libraries in China have reservations about outsourcing of cataloging, but they worried about the quality of cataloging data after outsourcing, so there are still a large number of libraries in China refrains themselves from outsourcing practice. Outsourcing of cataloging functions to a certain extent in foreign academic libraries is relatively more common. In varying degrees, this may result in reducing cataloging positions. However, academic libraries both in China and foreign countries have not completely outsourced the entire cataloging processes; they just outsourced a portion of cataloging procedures or some specific library resources (Table 1).

In short, academic libraries both in China and foreign countries have realigned their traditional acquisition and cataloging positions in varying degrees. The changes in foreign academic libraries were greater than those in China. In any case, most academic libraries both in China and in foreign countries indicated that the number of staff working on electronic resources increased in 2007 as compared to that in 1998. This shows that as electronic resources have become an important part of academic libraries' collection, traditional acquisition and cataloging positions were negatively affected and began to change correspondingly.

## 4.2 The rise of digital library positions

### 4.2.1 Digital library positions have rose in academic libraries both in China and in foreign countries

The development of electronic resources impacts not only on traditional acquisition and cataloging positions, but also on digital library operation as a whole. Academic libraries both in China and foreign countries actively established such essential positions. 17 of the 20 responding libraries in China have created new positions to deal with digital library operation. All of 19 responding libraries in the United States have either created or added new digital library positions (Table 2).

There is a disparity of scale in the establishment of digital positions (or a department dedicated to do digital library operation) between China's academic libraries and that of American academic libraries. There were not many academic libraries in China, which have established a new special functional department/unit to do digital library operation. In contrast, ARL member libraries have almost established new special department/unit to handle all sorts of digital operations. However, most academic libraries both in China and the United States said that the number of their staff working on digital library business increased in 2007 as compared to that in 1998. The percentage of such digital operation related staff remains below 30% of the total number of the entire library's professional staff.



Table 2 Comparison of digital library positions in surveyed China's academic libraries and ARL member libraries

Questions	Response of 20 Chinese sample libraries surveyed	Response of 19 American sample libraries surveyed
Has your library created a newly digitization-related department?	Yes: 8 No: 12	Yes: 16 No: 2 In planning: 1
Has your library created new digitization-related positions?	Yes: 17 No: 3	Yes: 19 No: 0
Has your library been involved in long-term digital preservation?	Yes: 11 No: 3 In planning: 6	Yes: 16 No: 3
Have you created any long-term digital preservation positions?	Yes: 6 No: 9 In planning: 5	Yes: 11 No: 7 In planning: 1

#### 4.2.2 Digital preservation positions have rose at academic libraries both in China and abroad

Preservation of digital resources is not as popular in China's academic libraries as in their counter parts abroad. There were 11 out of the 20 responding libraries in China indicated that they had engaged in performing long-term preservation of digital resources and 6 of them had created special positions to do such work. However, it is a common practice to preserve digital resources in ARL member libraries. There were 16 out of the 19 responding libraries, which had done such work and 11 of them had established digital preservation positions (Table 2).

#### 4.3 The rise of information literacy coaching positions at academic libraries

##### 4.3.1 Positions for educating library users have been created

Academic libraries both in China and foreign countries pay great attention to user education. Most of them have created information literacy coaching positions. However, there are not many academic libraries in China, which have set up a special department for library user education (Table 3). Those libraries that did not have a special user education department indicated that such a task was being handled by their existing reference department. There were user education programs in all ARL member libraries. Most of the responding libraries said that the number of their user education positions increased in 2007 as compared to that in 1998. There were 4 out of the 19 responding libraries indicated that the percentage of their user education positions remained at 30%–60% in the past 10 years; many others were below 30%.



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Table 3 Comparison of user education positions in China and ARL member libraries

Questions	Response of 20 Chinese sample libraries surveyed	Response of 19 American sample libraries surveyed
Is there any library instruction (or library literacy or user education) department in your library?	Yes: 8 No: 12	There are many user education programs
Have you created positions for librarians to handle library instructions (including library literacy or user education classes)?	Yes: 19 No: 1	Yes: 15 No: 4
Have you ever been involved in subject liaison service?	Yes: 18 In planning: 2	Not applicable

#### 4.3.2 Subject liaison service positions

The selected ARL member libraries have had a long standing practice of appointing subject librarians to perform subject liaison service to academic disciplinary offering units, which is not so common in large academic libraries in China. We therefore only surveyed China's academic libraries about such practice but did not survey this issue in our questionnaire to the selected ARL member libraries. On the basis of our survey, we found that only 2 out of the 20 China's responding libraries were planning to develop subject liaison service. Others had already implemented the service (Table 3). Among the 20 China's responding academic libraries, 18 of them indicated that the percentage of subject liaison librarians in the total library staff poll remained below 30%, the other 2 libraries ranged between 30%–60%.

#### 4.4 Library positions for information commons

China's academic libraries have just started to build Information Commons. The survey shows that only 5 of the 20 responding libraries in China have created Information Commons. There are 6 libraries, which are planning to build Information Commons. Foreign academic libraries are more interested in establishing Information Commons. 14 out of the 19 responding ARL member libraries have built Information Commons (Table 4). As for the allocation of positions to Information Commons, academic libraries both in China and in foreign countries are likely to assign their existing staff from the public service area to manage its activities concurrently. There are only a limited number of libraries, which have set up new positions to manage the commons. The survey suggests large foreign academic libraries begin allocating new library space for Information Commons in order to provide users with new services. China's academic libraries also start getting into the activities of development in this area.





Table 4 Comparison of Information Commons positions in China and foreign academic libraries

Questions	Response of 20 Chinese sample libraries surveyed	Response of 19 American sample libraries surveyed
Is there an Information Commons (or Media Commons or Learning Commons in your library)?	Yes: 5 No: 9 In planning: 6	Yes: 14 No: 3 In planning: 2
Are there any librarian positions created to manage the commons?	Yes: 2 No: 11 In planning: 3 Assign the work to existing staff: 4	Yes: 7 In planning: 5 Assign the work to existing staff: 7

#### 4.5 Library positions for scholarly communication and institutional repository

There are 13 out of the 20 responding libraries in China said that they had staff engaged in open access and institutional (disciplinary) repository, but none of them had created a special department to do the job. They just assigned the task to an existing department to handle it temporarily. As for the related positions, Hong Kong University Library and Library of Hong Kong University of Science and Technology (these two libraries have built institutional repositories) have created new institutional repository positions. Twelve out of the 20 responding libraries in China expressed that the percentage of staff working on open access and institutional repository was below 30% in the past 10 years (1998–2007). From this fact, we can say that open access and institutional (disciplinary) repository are relatively new to China’s academic libraries. However, in another survey<sup>[4]</sup> about the 40 ARL member libraries, we found 23 of them had created scholarly communication positions; 27 of them had established institutional repository positions. It suggests that American academic and research libraries place an important role in scholarly communication and institutional repositories. They actively integrate these newly developed library functional areas into the overall library operation by adding or creating new positions in strengthening the operation in these areas.

#### 4.6 Positions for library outreach

Of the 20 responding libraries in China, only 5 libraries have built an out-reach department. Two libraries have created marketing positions; the rest said they had assigned staff to engaged in library out-reach operation. They did not specifically create special new positions for such tasks. Ten of the 19 foreign responding libraries indicated that they had created or added new outreach positions in 2007 showing an increase of staffing in this area as compared to that situation in 1998. The staffing ratio in this area remained below 30% basically. From this, we can speculate foreign



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academic libraries place relatively more emphasis on library outreach programs. China's academic libraries have yet to do some catching-up work in this regard.

#### 4.7 Copyright positions at some ARL member libraries but none in China

There were 4 of 19 foreign responding libraries indicated that they had established copyright departments and copyright librarian positions. None of 20 responding libraries in China had such departments and positions. However, most academic libraries indicated they had staff engaged in this type of work probably on part-time basis. Some academic libraries were considering creating copyright departments and/or copyright librarian positions in the future. Some expressed that there were staff who had been working on copyright issues; they were handling such tasks mostly on a part-time basis.

The percentage of staff involved in copyright issues was very small. The survey showed foreign academic libraries had already begun placing more emphasis on copyright issues and to provide such related services accordingly. In China, although there are some libraries, which have realized the importance of copyright issues, nevertheless, they did not get themselves involved in such work proactively. However, in view of the fact that copyright is relatively a new and important field for academic libraries both in China and in foreign countries to get into, we believe that China's academic libraries should attach greater importance to this field of operation and to develop feasible initiatives in a more earnest manner.

#### 4.8 Only a small percentage of new positions being created or added at many of a given library

Academic libraries both in China and foreign countries showed that the percentage of new positions was not very large. It remained below 30% in the 10 years surveyed (Table 5). However, the number of new positions in the last 5 years of the period

Table 5 Comparison of new positions being added at academic libraries under survey over the period of 1998–2007

Questions	Response of 20 Chinese sample libraries surveyed	Response of 19 American sample libraries surveyed
Compared with the first 5 years (1998–2002), the number of newly-created positions in the last 5 years (2003–2007)	Increased: 14 Decreased: 5 No response: 1	Increased: 13 Decreased: 3 No change: 2 No response: 1
The percentage of new positions in the past 10 years	Most remain below 30%, only 3 at 30%–60%	Below 30%

Note: "No response" means this library responded to all the rest questions of the survey but did not answer this particular question in Table 5.



surveyed (2003–2007) showed a significant increase as compared to the first 5 years during the same period (1998–2002). This indicates that academic libraries both in China and foreign countries gradually speeded up their realignment of allocating positions, and accelerated their process of institutional structure transformation. The establishment of new departments and/or new positions can be interpreted as a realignment of a library's infrastructure showing it is in a state of fait accompli for its self-directed rejuvenation efforts in adapting itself to the new environment.

## 5 Summaries

Our study found that traditional library positions are being adjusted continuously in response to the changing information environment at large and to the restated missions and objectives of their hosting universities in particular. The capabilities and qualification requirements of professional librarians are also being upgraded constantly and continuously through a process of peer reviews.

### 5.1 Changing trend of traditional library positions

First of all, acquisitions and cataloging position was one of the most affected positions in the new environment. Foreign academic libraries are now reducing positions for cataloging librarians on the one hand but creating metadata librarians and electronic resources cataloging positions on the other hand. However, changes of acquisitions and cataloging positions in China's academic libraries are not so noticeable.

Secondly, there are major changes in the responsibilities of traditional reference librarians whose duties are being shifted from informal user education and general reference work to subject-specific in-depth referencing service, to formal or credit-bearing class presentations on intellectual access as well as to relevant resources contents covering all types and in all formats of source materials as well as standard writing styles.

Thirdly, in addition to system librarians, there emerged technology positions and web librarians at traditional technology departments in digitized libraries<sup>[5]</sup>. Libraries' 2.0 positions were originated in response to the development of libraries' 2.0 environment<sup>[6]</sup>.

Fourthly, academic libraries have started getting into the business of long-term preservation of digital resources at varying degrees and have created full-time job positions for digital preservation librarians.

Lastly, traditional library user education librarians have expanded their pedagogy to include curricular design, which is based on the support of new applicable information technologies. Thus, some large academic libraries have restructured the



contents of their class offering or have established new positions in assisting teaching faculty to perform curriculum design with appropriate new cutting-edge information technologies, instructional technologies and software<sup>[7]</sup>.

## 5.2 The three most prominent areas in terms of job creations

During 2003–2007, newly created library positions at large academic libraries both in China and in the United States fell into the following three major categories, namely, 1) Digital resources, 2) technology and 3) user education. However, the job titles for those newly created positions include but not limited to the three categories mentioned above. These are digital resources acquisitions librarians, electronic resources librarians, digital projects librarians, electronic records archivists and so on. It is not a common practice for those surveyed libraries to create copyright and outreach positions. There are more scholarly communication and institutional repository positions established at American academic libraries than at their counterparts in China.

It is worth mentioning that foreign academic libraries attach great importance to libraries' strategic development and planning. Several surveyed American libraries have established positions in these two emerging areas. Librarians who are working in these areas have their career title designated as planning and assessment librarian, communications director or fund raising librarian. However, none of these positions were established at China's academic libraries. In addition, the position of metadata librarian, while it is quite prevalent at American academic libraries, is not yet seen at any of China's academic libraries.

## 5.3 Digital resources positions and technology positions

In the last-five year of the survey period, academic libraries in China mainly created two types of positions in technology departments: Digital resources positions and technology positions. Digital resources positions are jobs primarily related to the development of databases and the integration of resources, such as for the development of local databases, metadata integration, OA resources integration, digital resources construction, digital resources management, and digitization and so on and for the logistic and technological support in these areas of undertakings. Technology positions are established for jobs mainly pertaining to system architecture, software development, system development, network security, system application development and forum management.

But technology departments in China's large academic libraries, in most cases, showed a commitment to the development of digital libraries in general and to the development of digital resources construction in particular. This situation was particularly more common in those libraries where digitized modus operandi and



such related administrative units were yet to be developed. As a result, such tasks drove the need to create new positions in their existing and/or newly created technology departments.

In contrast, most foreign academic libraries have already created special departments related either to their special projects of digitization or to the overall development of digital libraries. As such, their technology departments mainly take the responsibility of information technology support. Their newly created positions in technology departments have been mostly technology positions. Librarians working in such capacities would be designated as Web Designers, Graphic Designers, Web librarians and Programming Librarians. This highlights one of the differences in job formations of the newly emerged positions in technology departments between China's and those of America's ARL member libraries.

#### **5.4 The developing trend of position allocations at large academic libraries projected for the years from 2008 to 2012**

China's large academic libraries are beginning to realize the importance of more in-depth service in the areas of scholarly communication and copyright. They are creating new positions in copyright, open access and institutional (disciplinary) repositories. One of the most needed positions at China's large academic libraries is for subject scholar-librarian. Six of 20 responding libraries in China have indicated that they would create subject liaison librarians during 2008 to 2012. Some other academic libraries in China anticipated to develop new positions in such areas as intelligence analysis, ancient book restoration, library outreaching, online resources mining, information development and information services. We also found foreign academic libraries inclined to add metadata librarian positions, e-science positions, data preservation and library marketing positions.

In short, our survey suggests that the most needed positions are in-depth service related to intellectual access positions in the future both in China's and in large foreign academic libraries. Academic libraries have been taking corresponding measures earnestly to a rapidly changing information need of their constituents due to a new ubiquitous information-technology supported environment on university campuses and in the society. They are realigning their library positions and functional units so as to upgrade the capacity of their mission-oriented service level and to accomplish their library stated objectives more satisfactorily.

## **6 Reasons behind the realignment of library position allocations at large academic libraries**

From the above passages, we have realized that though there are some differences about the characteristics of position adjustment, there are, nevertheless, significant



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similarities for the reasons of such position realignment. According to our survey and based on a few other authors' studies, we sketched the landscape of the evolutionary change of position allocations at large academic library positions as shown in Fig 1.

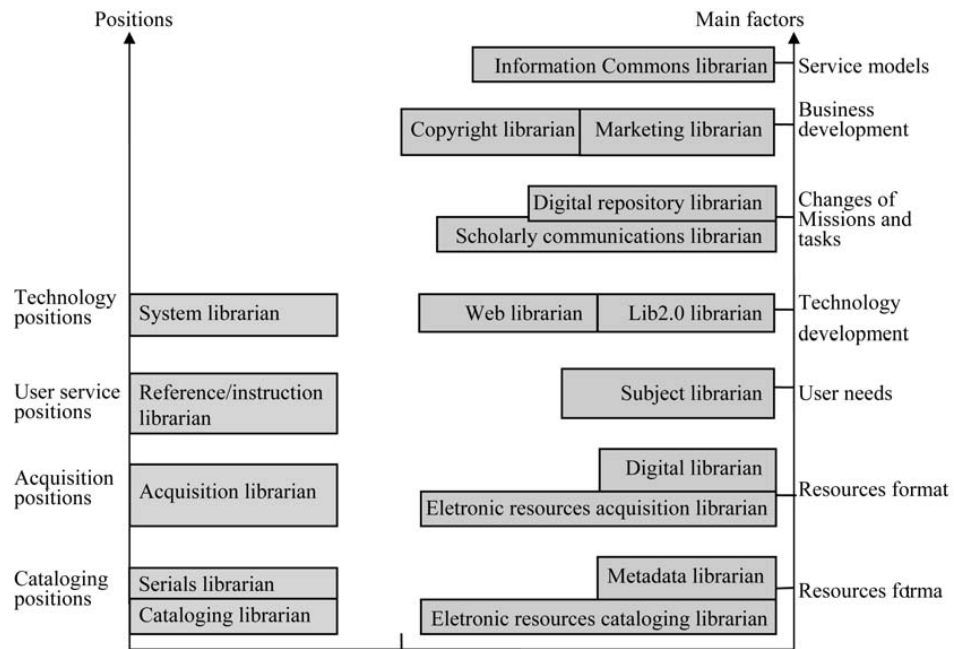


Fig. 1 Evolution of academic library positions during 1998–2007.

Figure 1 describes the positions both before 1998 (not all of the positions are listed but only for those positions that have undergone a substantial change) and the emerging positions after 1998. From Fig. 1 we can see that some traditional positions, such as cataloging librarians, serials librarians, acquisitions librarians, reference/instruction librarian, system librarians, etc. are now being replaced by new positions as time goes by. For example, acquisitions librarians once were responsible for print resources acquisition, with the changes of resource formats, their tasks probably would be replaced in part or in whole by digital librarians or electronic resources acquisitions librarians. In addition, some positions are newly emerging positions, which we have never seen in traditional departments prior to 1998. For example, with changes of library missions and tasks, there appear scholarly communications librarians and digital repository librarians. All of these factors discussed above in this paper have caused those large academic libraries to take action for a realignment



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of their job allocations and along with them, a series of new job descriptions for both the existing ones and the newly created ones..

Needless to say, it was the changes of information resource formats and multifarious ways for their storage and retrieval that have caused the necessity for libraries to take concerted actions for the realignment of their positions and functional units in a newly emerged networking environment. Both China and foreign academic libraries have correspondingly created new positions specifically aimed at the handling of the enormous amount of influx and outpouring of digital resources within a given library as well as handling information exchanges among a host of collaborative consortia member libraries on a daily routine basis. Under such circumstances, traditional positions in the acquisitions and cataloging units have undergone a great change.

There are, however, some newly emerged positions to have also come into being concurrently. Among them, electronic resources related positions grew in size considerably after 1998. There appeared metadata librarians and electronic resources cataloging librarians in traditional cataloging departments. Electronic resources related positions also surfaced in technical service departments. Many academic libraries have established special positions working on digital library project.

As user needs changed, reference services began their transformation to have become more subject-specific oriented services. Many academic libraries created subject liaison librarian positions, which were one of the most newly added positions since 1998. Some librarian have even predicted that subject librarian positions would become one of the most demanding library service areas during the years of 2008–2012.

Technology changes also affected position additions and creations. With the development of information exchanges via networked information technologies, many foreign academic libraries began to install web librarian positions and also library2.0's positions as well. In addition, participating in scholarly communication and establishing institutional repositories are new additions to library's reinvented missions and objectives in the new environment. These new tasks brought forth new positions in these emerging areas, where they were not found in existence before 1998.

Copyright and library outreaching functions even though enjoyed some special attention by library administration before 1998, it was due to the intensified business development and a rising awareness of their importance after that year since, a few large academic libraries began to establish new full-time positions in these two areas.

Information Commons is one of the new service models in strengthening and enriching reference functions in recent years. Many academic libraries have



established Information Commons and created new positions in this area. In all, we can see positions have evolved with the changes of resource formats, user needs, information technologies, library missions and objectives and business service models. All of these factors contributed to the massive and timely realignment of positions and functional units at both domestic and foreign large academic libraries.

## 7 Conclusions and suggestions

Through our research and analysis, we found that both China and foreign large academic libraries have adjusted positions and job descriptions to adapt to changes in the new environment. Foreign academic libraries have made greater changes of traditional acquisitions and cataloging positions than those in China's academic libraries. As for the creation of new positions such as in the areas of scholarly communication, institutional repositories, library outreaching and copyright, it is apparent that foreign academic libraries have done more. Academic libraries in China should exert more efforts in driving their own institutional transformation so as to keep pace with the progress of the dawning a new era of an information society in China.

This, however, does not mean that we have to follow suit when a new position appears in some foreign academic libraries. We need to consider our own user needs, our own funding resources, and consider whether our need for this job is professionally justified. Of course, new positions are established to meet the pressing needs of information service demands and of business development. If all prerequisite conditions are favorable for new recruitment, it is advisable that before we start the process of personnel recruitment, we should first investigate the current librarian pool to find out whether there are qualified colleagues to handle the job. If there is none, we should then follow an established policy and procedure for library staff recruitment.

Finally, we suggest that academic libraries in China should first make it clear about their library's missions, objectives, financial resources. They should also have detailed written statements about each librarian's job responsibilities and standards and procedures for the periodical review of librarians' job performance in the new networked information environment and then make necessary detailed strategic development plans accordingly for their staged implementations. Needless to say, policies and procedures for personnel recruitment and/or for position realignment should be carefully factored into any strategic planning for the future development of the library. After all, it is the "singer," not the "song" that really counts.





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## Appendix I Questionnaire on position allocation at large Chinese and American academic libraries from 1998 to 2007

### 1 technical services positions

- (1) The percentage of cataloging positions among all your library's positions in 2007 \_\_\_\_\_ compared with 1998.  
A. increased                      B. decreased                      C. no change
- (2) Have your library outsourced cataloging functions?  
A. yes                                  B. no                                  C. in planning
- (3) Do you think cataloging positions will be affected due to electronic acquisitions and outsourcing?  
A. yes, will decrease the number                      B. no, will not affect the number
- (4) Have new kinds of positions been added into your library's collection development department, especially as electronic resources become more and more important? (e.g. Electronic resources acquisitions librarian. electronic resources cataloguer)  
A. yes                      B. no, the duties are assigned to existing staff                      C. in planning
- (5) Compared with 1998, the number of librarians working on electronic resources in 2007 \_\_\_\_\_.  
A. increased                      B. decreased                      C. no change



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- (6) During the past 10 years, the percentage of librarian positions involved in electronic resources among all your library's positions is \_\_\_\_\_.
- A.  $\leq 30\%$       B. 30%–60%      C. 60%–90%      D.  $\geq 90\%$

**2 New digitization-related positions**

- (7) Has your library created a newly digitization-related department?  
A. yes      B. no      C. in planning
- (8) Has your library created new digitization-related positions?  
A. yes      B. no, the duties are assigned to existing staff      C. in planning
- (9) Has your library been involved in long-term digital preservation?  
A. yes      B. no      C. in planning
- (10) If yes, have you created any long-term digital preservation positions?  
A. yes      B. no      C. in planning
- (11) Compared with 1998, the number of librarians working on digital library program (such as: digitization, long-term digital preservation) in 2007 \_\_\_\_\_.
- A. increased      B. decreased      C. no change
- (12) During the past 10 years, the percentage of librarian positions involved in digital library program among all your library's positions is \_\_\_\_\_.
- A.  $\leq 30\%$       B. 30%–60%      C. 60%–90%      D.  $\geq 90\%$

**3 library instruction (or library literacy or user education) positions**

- (13) Is there any library instruction (or library literacy or user education) program in your library?  
A. yes      B. no      C. in planning
- (14) Have you created positions to work as library instruction (or library literacy or user education) librarians?  
A. yes      B. no, user education duties are assigned to existing staff      C. in planning
- (15) Compared with 1998, the number of library instruction positions in your library in 2007 \_\_\_\_\_.
- A. increased      B. decreased      C. no change
- (16) During the past 10 years, the percentage of library instruction positions among all your library's positions is \_\_\_\_\_.
- A.  $\leq 30\%$       B. 30%–60%      C. 60%–90%      D.  $\geq 90\%$

**4 Information Commons (or Media Commons or Learning Commons) positions**

- (17) Is there an Information Commons (or Media Commons or Learning Commons) in your library?  
A. yes      B. no



- (18) Are there any librarian positions created to manage the commons? Such as information commons librarians?  
A. yes      B. no, the duties are assigned to existing staff      C. in planning

### 5 Scholarly communication and institutional repository positions

- (19) Is there an institutional repository (IR) in your library?  
A. yes      B. no      C. in planning
- (20) Was a librarian position created to manage or oversee the IR?  
A. yes      B. no, assigned IR collection and management duties to existing staff  
C. in planning
- (21) Does your library have a department about scholarly communication?  
A. Yes      B. No      C. in planning
- (22) Does your library have a Scholarly Communications Librarian?  
A. yes      B. no, assigned the duties to existing staff      C. planned
- (23) During the past 10 years, the percentage of scholarly communication and institutional repository positions among all your library's positions is \_\_\_\_\_.  
A.  $\leq 30\%$       B. 30%–60%      C. 60%–90%      D.  $\geq 90\%$

### 6 Library outreach positions

- (24) Is there any outreach program in your library?  
A. yes      B. no      C. in planning
- (25) Have you created library outreach librarian positions?  
A. yes      B. no, the duties are assigned to existing staff      C. in planning
- (26) Compared with 1998, the number of outreach positions in your library in 2007 \_\_\_\_\_.  
A. increased      B. decreased      C. no change
- (27) During the past 10 years, the percentage of outreach positions among all your library's positions is \_\_\_\_\_.  
A.  $\leq 30\%$       B. 30%–60%      C. 60%–90%      D.  $\geq 90\%$

### 7 copyright librarian positions

- (28) Is there any copyright compliance and education in your library?  
A. yes      B. no      C. in planning
- (29) Have you created a copyright department in your library?  
A. yes  
B. no, copyright compliance and education duties are assigned to existing staff  
C. in planning



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- (30) Have you had created any librarian positions to manage the copyright?  
 A. there is no full time librarian managing copyrights, all are part time positions  
 B. haven't created yet C. have created the position
- (31) Compared with 1998, the number of copyright librarian positions in your library in 2007 \_\_\_\_\_.  
 A. increased B. decreased C. no change
- (32) During the past 10 years, the percentage of copyright librarian positions among all your library's positions is \_\_\_\_\_.  
 A.  $\leq 30\%$  B. 30%–60% C. 60%–90% D.  $\geq 90\%$

**8 about the overall new positions in your library**

- (33) The number of librarians (including professional librarians and support staffs) in 2007 in your library \_\_\_\_\_ compared with 1998.  
 A. increased B. decreased C. no change
- (34) Compared with the former 5 years (1998–2002), the number of newly- created positions in your library in the latter 5 years (2003–2007) is \_\_\_\_\_.  
 A. increased B. decreased C. no change
- (35) In the past ten years (1998 to 2007), the percentage of new positions among all your library's positions is \_\_\_\_\_.  
 A.  $\leq 30\%$  B. 30%–60% C. 60%–90% D.  $\geq 90\%$

**9 open questions**

- (36) With the exception of the above new positions, any other new and non-traditional positions were added to your library in the past 10 years (1998 to 2007)? If so, what are they?  
 \_\_\_\_\_
- (37) What kind of library positions do you need most in the next 5 years (2008–2012)?  
 \_\_\_\_\_

## Appendix II 40 Chinese Academic libraries surveyed according to Chinese University Rankings published by Research Center for Chinese Science Evaluation in 2008



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- 1 Peking University Library
- 2 Tsinghua University Library
- 3 Zhejiang University Library
- 4 Fudan University Library
- 5 Shanghai Jiaotong University Library
- 6 Nanjing University Library
- 7 Wuhan University Library

- 8 Beijing Normal University Library
- 9 Huazhong University of Science & Technology Library
- 10 Sun Yat-sen University Library
- 11 Library of Renmin University of China
- 12 Library of University of Science & Technology of China
- 13 Jilin University Library
- 14 Sichuan University Library
- 15 Xi'an Jiaotong University Library
- 16 Shandong University Library
- 17 Harbin Institute of Technology Library
- 18 Xiamen University Library
- 19 Tianjin University Library
- 20 Central South University Library
- 21 Tongji University Library
- 22 Library of BeiHang University
- 23 East China Normal University Library
- 24 Southeast University Library
- 25 Dalian University of Technology Library
- 26 China Agricultural University Library
- 27 Northwestern Polytechnical University Library
- 28 Beijing Institute of Technology Library
- 29 South China University of Technology Library
- 30 Northeastern University Libraries
- 31 East China University of Technology Library
- 32 Central China Normal University Library
- 33 Beijing Jiaotong University Library
- 34 China University of Geosciences Library
- 35 Ocean University of China Library
- 36 Jinan University Library
- 37 Library of Nanjing University of Aeronautics and Astronautics
- 38 Shanghai University Library
- 39 The University of Hong Kong Libraries
- 40 Library of Hong Kong University of Science and Technology

### Appendix III 40 ARL members libraries surveyed

- 1 Harvard University Libraries
- 2 Massachusetts Institute of Technology Libraries
- 3 Princeton University Library
- 4 Columbia University Libraries
- 5 University of Chicago Library
- 6 Yale University Library



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- 7 Cornell University Library
- 8 University of Pennsylvania Libraries
- 9 University of Wisconsin–Madison Libraries
- 10 University of Michigan Library
- 11 University of Washington Libraries
- 12 Johns Hopkins University Libraries
- 13 University of Toronto Libraries
- 14 University of Illinois at Urbana-Champaign Library
- 15 University of Illinois at Chicago Library
- 16 Duke University Libraries
- 17 New York University Libraries
- 18 University of Minnesota Libraries
- 19 University of Colorado at Boulder Libraries
- 20 University of British Columbia Library
- 21 University of Texas Libraries
- 22 Vanderbilt University Library
- 23 Pennsylvania State University Libraries
- 24 Rutgers University Libraries
- 25 University of Pittsburgh Libraries
- 26 University of Southern California Libraries
- 27 University of Rochester Libraries
- 28 University of North Carolina at Chapel Hill Libraries
- 29 University of Maryland Libraries
- 30 Purdue University Libraries
- 31 University of Florida Libraries
- 32 Rice University Library
- 33 University of Arizona Library
- 34 Michigan State University Libraries
- 35 University of Utah Library
- 36 North Carolina State University Libraries
- 37 Washington State University Libraries
- 38 The University of Connecticut Libraries
- 39 Oklahoma State University Library
- 40 University of Oregon Libraries



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