

Current Library and Information Services in the Community of the Chinese Academy of Sciences*

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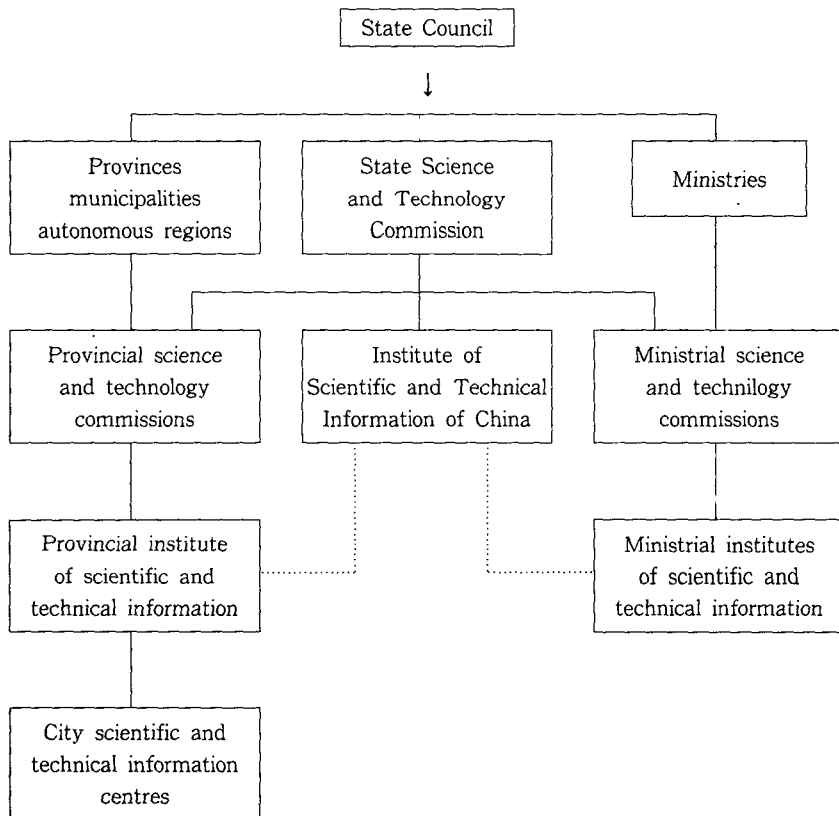
Before making introduction to LISCAS, I would like to say a few lines about the Library and Information System in China (LISC). There are two parallel systems existing in China. They are the Chinese Library System (CLS) and the Chinese Information System (CIS). Relationship between the two systems is formed, but practical cooperation and coordination in library and information services are far from perfect, because of the different administration organs of the government.

CIS is governed by the State Science and Technology Commission (SSTC). At the top of the system is the Institute of Scientific and Technical

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Information of China (ISTIC), which was established in October 1956, and has evolved into the national comprehensive scientific and technical information centre in China. The next level contains 43 institutes at the ministry level and, 30 at the provincial level, whilst the lower tier consists of around 300 institutes at the city level (see Fig. One).

Fig. One Sketch of the Chinese Information System.

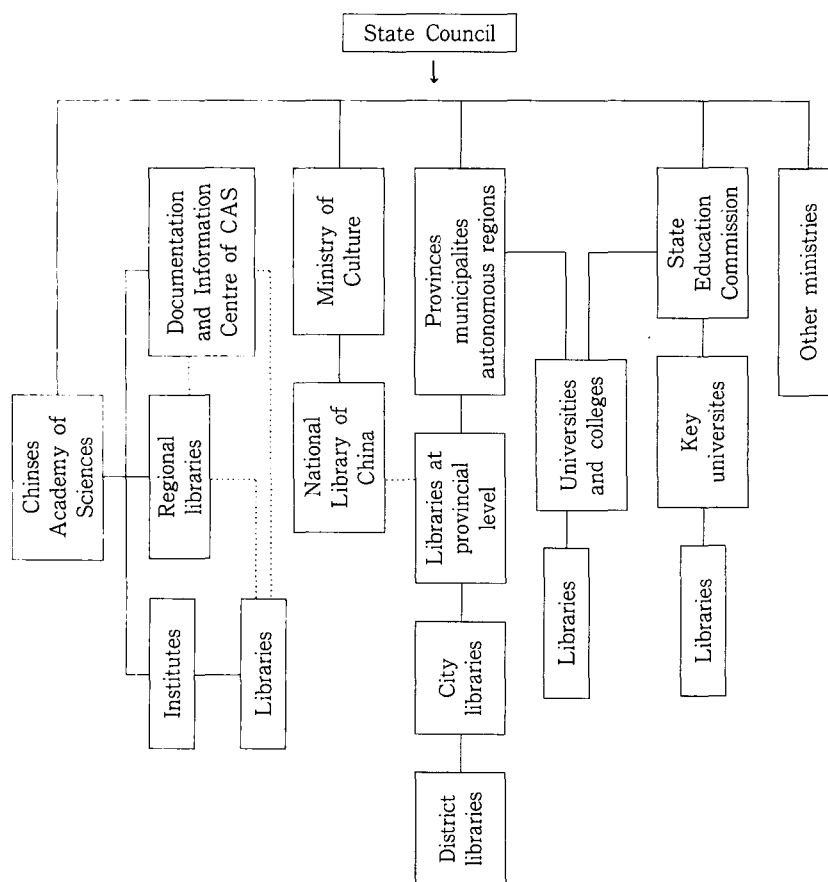


Notes: — direct control
 indirect control

CLS is administered by the Ministry of Culture, with the National Library of China as its leading organization. The system is mainly composed of public libraries, tertiary education library and academic libraries (see Fig. Two).

Keeping in mind the overall structure, one may be much easier to understand the function of the LISC and the role played by its components.

Fig. Two Sketch of the Chinese Library System.



Notes: — direct control
 indirect control

1 LISCAS structure

The Chinese Academy of Sciences (CAS), the highest scientific research centre in the country, has assigned since its inception in 1949 great importance to the development of modern library and information services. As a result, LISCAS has been developed to a stage where it has the capacity to satisfy the increasing information needs of patrons. The Academy's organ entrusted with the supervision responsibility is the Commission on Publishing, Library and Information Science (CPLIS), which is functionally the top of the hierarchy, although administratively it interfaces with the components of the system only indirectly via the Academy's branches or institutes.

Hierarchically speaking, LISCAS is divided into three administrative levels. The first level is the principal Documentation and Information Centre of the Chinese Academy of Sciences, which is functionally responsible for giving guidance to the units of the system. The next level contains four regional centres of Shanghai, Lanzhou, Wuhan and Chengdu, whilst the lowest tier consists of 142 institute, university or factory libraries. The system has a workforce of 2,789 staff members, with a collection amounting to more than 30 million items.

Founded in April 1950, the Documentation and Information Centre of the Chinese Academy of Sciences has developed to become the most comprehensive sci-tech library in China. It mainly caters for the scientists in the Academy, but open to the public as well. Moreover, as an institution which offers Master degree courses in both library and information sciences and, Ph.D. courses in library science, it has trained 27 postgraduate students up to the present.

Whilst institute libraries are as diverse as they could be in areas for the comprehensive nature of coverage by the Academy, regional centres tend to be specialized in a certain area. For example, the Shanghai and Lanzhou regional centres concentrate on the life sciences and earth sciences respectively, the Shanghai Centre being the Academy's life sciences documentation and

information centre.

2 LISCAS major programmes and current activities

2.1 Theoretical research

From the outset, attention was paid to theoretical studies. Staff are encouraged to take courses, summarize their working experiences, and do projects during their worktime. As a result, much progress has been made since its inception.

In 1978, LISCAS first put forward the concept of the integration of library and information services. The doctrine was premised on the three common attributes: the same responsibilities, same patrons and same working media both for librarians and information specialists in the academic environment (1). The theory that library and information services as an integral part of scientific research activities and, therefore, personnel working in these fields as an integral part of scientific research workers, constitutes another important contribution by LISCAS to the theoretical treasury in librarianship in China (2). It would not be so easy for the library and information system in China to have gained the prestigious grounds without these theoretical achievements.

In 1992, two projects "The study on the rational distribution of documentary information resources in the Chinese Academy of Sciences" and "The study on the developmental strategy of library and information services in the Chinese Academy of Sciences" were completed with the cooperation and coordination efforts done by several units in the system. They, afterwards, won "Second Grade" scientific award conferred by CAS. Of most importance, they were used as most valuable supporting materials in making the Eighth Five Year Plan.

2.2 The integration of library and information science

As already mentioned above, the other parallel library and information organizations-institutions of information science, have made great contributions to the development of library and information services in China, focusing their interests on information analysis, information retrieval, and database construction etc. Unfortunately, there is no such institution existing in the Academy. In order to cope with the ever increasing information needs, the Academy adopted the policy of the integration of library and information science. Bearing in mind the discrepancies between the library and information sciences, and the poor basis in information services provided by the system, however, measures were taken to expand and strengthen obligations and commitments in the light of information services. More and more research workers from laboratories have been recruited into the system as information specialists to bridge the gap between the information provider and user: librarians are encouraged to keep in touch with relevant researchers, even sometimes working together with them for a while. Efforts are also made to recruit persons with subject background in addition to library or information science. These steps have indeed worked miracles. As far as information analysis work is concerned, 57 projects have received Sci-tech Advancement Awards conferred by the Academy since 1986 (Table One). Furthermore, information units, on the one hand, have widened their revenue to compensate for their financial shortage by doing projects from the user market. On the other hand, many information specialists, especially young staff members, have been trained in terms of practical work and their career has progressed. At present, many libraries in other sectors have also followed the model to expand their library services. It is, perhaps, still too early to make comments on its role affecting the development of library and information services. From the cost-effective view of point, however, the merits of the concept have already come into being for strengthening library's role in information services.

Table One: Outline of The Projects Received Sci-Tech Advancement Award conferred by the Academy since 1986.

Time	Second Grade	Third Grade	Total
1986	5	11	16
1987	2	3	5
1988	3	2	5
1989	2	3	5
1990		2	2
1991	4	4	8
1992	4	5	9
1993	3	4	7
Total	23	34	57

2.3 Publication of secondary periodicals and construction of databases

In today's fast-moving technological scene, the transfer of information to bring about success is of vital importance. In addition to efforts to provide better services and make more progress, priority has been given to publication of secondary periodicals and construction of databases. In this respect, initial preparatory work was done by many specialists. Market analysis was carried out in the light of fierce competitive environment. Thesauruses of specific subjects were compiled with the aid of relevant scientists. In regard to standards and formats, two basic approaches to the solution of information processing problems were adopted: exact adoption of international standards for foreign materials, such as AACR 2, ISBD(s), etc., and equivalent adoption of foreign standards for Chinese literature, which meant some modifications to suit the need of unique features inherent in the literature. These strategies may not be surprising, but they do represent radical breaks with the past.

In the practical scene, consortia or specialized coordination networks were

formed to take the undertaking (Table Two) (3). The horizontal cooperation model based on the needs and initiatives of each institute with mutual

Table Two: Outline of the networks formed by LISCAS.

Network	Date of founding
Shanghai Lib & Info Professional Exchange Network	July 1980
Chengdu Lib & Info Network	1983
Chemical Information Network	April 1983
Geological Information Network	September 1983
Chinese Natural Resource Network	December 1984
Physical Information Network	May 1985
Astronomical Information Network	June 1985
Earth Science Network	October 1985
Biological Information Network	March 1986
Lanzhou Lib & Info Coordination Network	October 1986
Kunming Lib & Info Network	February 1987
Xingiang Lib & Info Network	March 1987
Changchun Lib & Info Coordination Network	April 1987
Shenyang Lib & Info Coordination Network	April 1987
Optics and Photoelectronics Info Network	May 1987
Wuhan Lib & Info Network	January 1988
Guangzhou Lib & Info Network	May 1988
Sci-Tech Vedio Info Network	August 1988
Nanjing Lib & Info Network	November 1988
Hefei Lib & Info Network	April 1989
Southwest Area Lib & Info Network	December 1989
Notheast Area Lib & Info Network	October 1990

benefits, is in the form of decentralized document processing and centralized editing. The advantage of the networks, consisting of several institute libraries in the same broad subject areas, have already been displayed for successful information flow and the making of secondary periodicals.

Table Three: Secondary periodicals published by LISCAS.

Serial No.	Title	Frequency	Publisher
1	Chinese Mathematical Abstracts	Quarterly	DICCAS
2	Chinese Dynamical Abstracts	Quarterly	DICCAS
3	Chinese Physical Abstracts	Bimonthly	DICCAS
4	Chinese Astronomical Abstracts	Quarterly	Beijing Observatory
5	Chinese Geographical Abstracts	Quarterly	Institute of Geography
6	Foreign Geographical Abstracts	Quarterly	Institute of Geography
7	Paleontological Abstracts	Quarterly	Nanjing Institute of Palaeontology
8	Chinese Natural Resource Abstracts	Quarterly	CISNAR
9	Chinese Biological Abstracts	Monthly	SDIC
10	Chinese Optical and Applied Optical Abstracts	Bimonthly	CIOFM
11	Chinese Radio & Electronic Abstracts	Quarterly	Institute of Electronics

Notes: DICCAS Documentation and Information Centre
 CISNAR Commission for Integrated Survey of Natural Resources
 SDIC Shanghai Documentation and Information Centre
 CIOFM Changchun Institute of Optic and Fine Mechanics

All the above publishers are under the jurisdiction of the Chinese Academy of Sciences.

Because of the initial fulfilment, the mighty project of publishing a series of specialized secondary periodicals covering all specialities mainly in natural sciences was launched from 1985. Up to the present the number of these periodicals has reached 11 and annual coverage is around 40,000 entries (Table Three).

Thanks to the enhancement of the wide application of information technology and the riddance from the bottleneck in Chinese character processing, the construction of Chinese databases found themselves a good foundation. Many secondary periodical publishers now regard their book form publications as the pre-processing for database creation and, therefore, are

Table Four: Databases constructed by LISCAS.

Serial No.	Databases	Records
1	Chinese Computer Science and Technology Database	85mb
2	Chinese Database of Chemical Bibliography	102mb
3	Enviroment and Resource Database	24mb
4	Chinese Biological Database	80mb
5	Chinese Rare Earth Database	16mb
6	Chinese Optical Database	24mb
7	Chinese Medical Plant Database	7.1mb
8	Chinese Natural Resource Database	300mb
9	Chinese Microbial Resource Database	9mb
10	Chinese Economical Plant Database	10mb
11	Chinese Spectroscopy Database	141mb
12	Database of X-Ray Photo Electron Spectroscopy	8mb
13	Chinese Astronomy Database	1050mb
14	Chinese Optical Lenses Database	84mb
15	Metal Erosion Database	13mb

keen to build databases in the light of widening the depth of processing and utilizing information. In coincidence, the Scientific Database Centre of the Chinese Academy of Sciences was founded in time, both to supervise all the activities concerning records, format, standards, etc., and to give financial support to each database builder. In December 1993, the Specialist Panel for Bibliographic Database Construction was established to handle matters arising from the development of bibliographic databases, such as quality control, computer-aided indexing and database marketing, etc. At present, there are 15 databases (7 bibliographic databases and 8 databanks) constructed in the community of the Chinese Academy of Sciences (Table Four). They have certainly made a great contribution to the communication of information and knowledge both at home and abroad.

2.4 Information retrieval and information analysis

In an effort to provide information more effectively and efficiently in an academic environment like the Chinese Academy of Sciences, the system always pays attention to information retrieval services. As early as in the 1970s, plenty of imported databases, such as CAS, Science Citation Index, Conference Papers, Biotechnology, etc., were used to do SDI for research needs. Later in March 1987 international information retrieval online terminals were installed, connecting with Dialog, STN, DATA-STAR, etc. for online searching and, furthermore, the online terminal got networked a couple of years ago, and those who have no direct links with Dialog or other intermediaries can get through by dialing the number with the host of the terminal. These greatly facilitate the dissemination of information.

Right now CD-ROM is a popular topic for librarians to do information services. Due to the easy-going nature, CDs are greatly appreciated by both librarians and scientists. Take the CD "Medline" for example, there are 14 units which are in possession of the CD in Shanghai and all these are heavily

used. Scientists are very much interested in using CDs, because they can build their own project-oriented databases just by downloading the hits every time when they do information retrieval, while librarians, especially those from smaller libraries, can afford to provide as much information as large libraries do, and use the information in a very cost-effective way. The situation at present is that the librarians are confronted with the problem of resource sharing due to heavy purchases of duplicated CDs.

It must be noted that sound though information retrieval services are, the effective provision and supply of retrieved information is far from perfect. The problem of information retrieval divorced from document delivery does exist seriously because of both budget constraints and uneven distribution of documentary information resources.

As regards information analysis, it involves, to some extent, knowledge input and information repackaging and information reprocessing. The services can be divided into three levels: services for decision making; services for scientific projects; and services for the development of national economy. As the principle purposes of the Chinese Academy of Sciences have been modified, in line with the Four Modernization drive, to encourage the transition of research achievements to practical application, priority of information analysis has been given to the three-fold: information provision to guide the transformation of sci-tech research achievements into commodities; information services to trace the development of high technology; and information management to support decision-making in a scientific way.

As the reform drive progresses in our country, information specialists in the community, taking the opportunity resulted in a series of reform measures, have responded to the new policies. They concentrate their work on market-oriented services and, in return, they get information projects from the market regulations — economic efficiency and social efficiency. This is an entirely new mechanism to govern our library and information services. In such a new environment, there is a long way for us to go, and there is much to learn.

2.5 Automation

Perhaps the most revolutionary change in knowledge and outlook has been in information sharing. It is now recognized that direct access to human knowledge all over the world is the basis of research and development. As part of the major efforts in automation connexion, the programme of the Computerized Union Catalogue of Serials in Western Languages was underway in April 1983. The main task of the programme was: (a) to re-catalogue more than 20,000 serial titles presently subscribed to and held by LISCAS according to the rules of AACR 2 and ISBD(s); (b) to develop software to process the data; and (c) to print out the results in three forms—tape, card and book forms. The programme was completed early in 1987, with all the tasks fulfilled ahead of schedule. Based on the achievement, the work of adding other active serial titles in Beijing area to the database began in 1992, and the outcome is expected to be a national-like union catalogue of serials in western languages. In the interests of users, this would greatly facilitate the information retrieval services and document delivery.

As for house-keeping systems for libraries, the Documentation and Information Centre in Beijing, and Shanghai Documentation and Information Centre of the Chinese Academy of Sciences have developed their own integrated systems on mini-computers by themselves. And many an institute library uses PC to control its professional transactions. Fortunately, all these systems are running well and the fantastic terminals have given us a great help.

In regard to office automation, it has developed to an relatively advanced stage, with all documents printed out by computers and many periodicals edited by software packages and printed by offsetting.

Networking, however, is still in its early stage. In a narrow sense, network, more or less, means resources sharing, especially in respect of information services. Historical experience has already shown the merits of successful information flow and the share of colleagues' efforts. Unfortunately, several

obvious impediments have militated against progress in this respect. Different libraries under different jurisdiction make the overall planning and cooperation more difficult, and the vast area of China adds the telecommunication constraint to the bottleneck. However, the project of Zhong Guan Cun Network in Beijing connecting Beijing University, Qing Hua University and the Chinese Academy of Sciences has been underway. It will certainly gain experience for further efforts in building variety of networks.

2.6 Staff training

Although the system has a large workforce, the majority are young, untrained, and inexperienced, with a fair amount of them having no subject background. Especially in the fast-progressing age when economic efficiency is, by and large, put in the first place, it is of a stern problem to have staff members competent for their work. It is a challenge we must fully prepare for today.

The principle for staff training is to study what one needs and what one lacks, as on-the-job training, a supervising system is introduced: a certain period of time contract between a new recruit and supervisor (according to the newcomer's qualification) is established, and their head will check and evaluate both the recruit and the supervisor every year. In case of the off-the-job training, staff members are encouraged to attend seminars and workshops to exchange views and share experiences with their colleagues. Graduates majoring in library and information science are sometimes assigned to universities or colleges to take subject courses corresponding to their work. For the non-graduates, more courses are given to enable them to enrich their knowledge and help them to be more competent for their work. Generally speaking, every staff member is entitled to have at least half a year for sabbatical study every three years.

In addition to these, an information science department is affiliated to the Academy's university, the University of Science and Technology of China. The

department enrolls around 60 graduates every year to compensate for the shortage of qualified personnel in the system. Furthermore, approved by the authority from the State Education Commission, the system is entitled to offer Master degree courses both in Library Science and Information Science and, from 1993 it can also offer Ph.D. courses in Library Science. These measures have certainly raised the academic and professional level of the staff members in the system and, also contributed a lot to the development of library and information services in China.

3 Conclusion

As the reform drive steps forward, LISCAS, like other units in China, is confronted with both chances and challenges. It has never had the chance like the reform to regard science and technology by the Party and people as productive forces, and the first productive forces at that. Now it has the time to prove itself. As far as it adheres to the obligations and commitments of serving its patrons, with the modern approaches and technologies, it will certainly make further improvement. However, technology develops rapidly and, changes brought about by the in-depth reform drive make us into a situation in which we must learn what we don't know. Development of high technology tends to make services away from libraries. All these are challenges we must fully prepare for today.

Nevertheless, we have already laid a solid foundation for further advancement. The information age, on the one hand, gives us a wide stage to distinguish ourselves, on the other, it needs information specialists to fulfil the historical task and push the society forward. As a subsystem of CLS, we will try our best to forge ahead.

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국문초록

中國科學院의 文獻情報活動 現況*

龔 義 臺**

中國 圖書館體制的 한 下部體制로서 中國科學院 文獻情報體制는 理論 研究와 實務 實踐 兩面에서 中國의 文獻情報活動 發展에 크게 寄與해왔다. 現在 中國에 風靡하고 있는 改革運動으로 中國科學院 文獻情報體制는 훌륭한 機會와 挑戰에 直面해 있다. 中國科學院 文獻情報體制가 現代的인 技術과 手段으로 그 利用者에게 奉仕해야 할 義務와 責任을 堅持하고 있는 한 同 文獻情報體制는 그 活動을 더욱 더 改善해 나갈 것이다.

이러한 基本的인 背景아래 本 論文에서는 첫째, 中國科學院 文獻情報體制的 組織 構造; 둘째, 그 主要 事業과 活動 現況 - 特히 理論 研究, 圖書館學과 情報學의 統合, 二次刊行物의 出版과 데이터베이스의 構築, 情報檢索과 情報分析, 自動化, 職員訓練; 셋째, 結論으로서 中國科學院 文獻情報活動의 將來 發展을 展望하였다.

* 本 論文은 1994年 3月 2日 韓國科學技術研究院 國際科學技術協力센터 主催로 開催된 中國技術情報管理에 관한 세미나에서 發表한 內容임.

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