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Preface

In April 2004, the Sino-German Center for Research Promotion in Beijing sponsored a Chinese-German workshop on “Current Developments in Scientific Libraries” in Chengdu, China, which was attended by around 50 library specialists, including 15 participants from Germany. The sessions largely focussed on developments in the field of digital libraries. The workshop was followed by a symposium in June 2005 in Hanover, Germany, entitled “Chinese-German Cooperation in Library Information Science”, which was funded by the German Research Foundation (*DFG*). This follow-up event was attended by around 40 participants, 17 of which made the trip from China. It picked up on several subjects that had been raised in the first workshop and analysed them in even greater depth. More than 25 people were able to attend both the events, thereby creating a common thread that significantly aided communication between the participants.

The events were coordinated and organised by Prof. Ye Jianzhong (Chengdu Library of the Academy of Sciences) from the Chinese side and by Library Director Uwe Rosemann (German National Library of Science and Technology, Hanover) from the German side.

This volume documents the Chinese and German contributions to the 2005 workshops. It focuses on some of the key topics that emerged in Chengdu, such as establishing scientific information portals, archiving data, particularly digital data, in the long term (one of the biggest challenges faced by digital libraries), exchanging metadata and complete digital texts as a basis for fruitful cooperation, and creating product development strategies for new services in a globally networked environment.

It was no surprise to discover that Chinese and German libraries are confronted by very similar problems and are already pressing ahead with similar problem-solving approaches. Once again, it emerged that the way in which the Chinese formulate and consistently implement development strategies can, and indeed should, be seen as a worthy model for the German libraries to follow.

The exchange of information and know-how between the two countries has proved to be extremely rewarding. The Hanover workshop participants urgently recommended that continued efforts should be made to encourage cooperation between

Chinese and German library specialists and carry out joint projects. The Chinese and German partners are planning to make an application to the Sino-German Center for Research Promotion requesting that they sponsor a coordination group, which would be geared towards bolstering this collaborative approach in the medium term through projects, staff exchanges and further conferences.

I am optimistic that Chinese-German cooperation in the library arena will continue to produce positive results and synergies in the future.

This volume represents a milestone in this development.

Uwe Rosemann
August 2005

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(页码依英文文章排)

Vascoda—Discover Information

Uwe Rosemann

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Vascoda is a portal for scientific information that went online in August 2003. It will be a central access point for all fields of science. It already offers access to subjects ranging from “A like Anglo-American Culture” to “W like Wood-Technology”. Not all subject fields are covered yet, though. Important subjects like biology or chemistry are still missing, but they will be included in within a year or so. The portal allows interdisciplinary searches as well as—in the future—complex navigation and browsing. A DDC-browsing tool that is being developed at Die Deutsche Bibliothek (German “National” Library) will be used to enable browsing-options in vascoda.

Search-engine-technology will make it easier to further enhance the vascoda-service. (The details will be explained below.) Access to all types of documents is possible: born-digital as well as digitised and print materials can be obtained either free of charge or through pay-per-view options.

The idea behind vascoda is to facilitate access to quality information. While a search through Google will generate a number of hits that can be used for academic or other high-standard research and millions of unusable links, this new portal will only index quality material. This will help users find information more quickly and to find precisely what they were looking for.

Vascoda offers access to full-texts, link-collections, bibliographic and other databases, subject-specific search engines and more. The portal is also a nucleus in the creation of a German Digital Library. The German Digital Library will—in the future—provide a central access for all kinds of research.

Two of the most important sponsors of subject-information in Germany, the BMBF (Federal Ministry for Education and Research) and the DFG (German Research Foundation) are working together to make this portal a reality and to benefit from a combined portal instead of sponsoring two or more competing access points.

More than forty German institutions - with co-operation partners worldwide – are working together to offer users an actual one-stop-shop for all scientific information. The

partners of this project are libraries as well as information centres and other institutions providing quality academic information. Subito libraries are not counted here.

The target user-group is the higher education and academic research community but also researchers working for large-scale businesses and industries as well as all other people interested in high-quality information.

- It is widely believed that almost everything can be found through Google or other search-engines. A German study showed that in the year 2000, 64% of the students used search engines to look for information while only 5% used subject specific information gateways. Information specialists know that commercial search engines are not an effectual means for a comprehensive search, because the so-called hidden web or deep web is not indexed by Google and co and because highly specialized databases can still offer a better service than a huge index of websites. The standard user, however, is not too well informed on the different search options that are made available through the internet.

A search in the main portal of vascoda will give a user a number of results from different subject areas. You see here the screen for the main search and the gateway for subject navigation.

After a successful search the results are sorted by subject and provider. In the near future, intelligent search-engine technology might also be used to include more content into the searches, to speed up the searching, and to make it easier to structure and rank the results. The plans for the implementation of search-engine technology will be explained at the end of my presentation.

- If the results generated by the search are internet-resources the user can click on the link and get the information he desires.

If, however, the information is an article from a book or a journal, the user will need information on how to access the material.

For articles from electronic journals there is a central database, called Electronic Journals Library (EZB), which holds all the licence information of German libraries. In a number of cases, the user can already access the full-text directly through the EZB. In the future, there will be an availability check offering the user different options like e.g. “view directly”, document delivery=subito, interlibrary loan etc. depending on the licence situation and the kind of material that is being ordered (e.g. electronic full-text or printed book etc.)

For articles from printjournals, the document has to be ordered by subito.

The individual subject portals offer a wealth of information in their respective subject areas. On this level the searching and the fulltext-delivery of documents should be integrated. At the moment, most of the individual virtual libraries have different subsections for searching different collections. In the long run, the aim is to offer meta-searches or search engines, which will be able to search different data-collections at the same time. A number of subject portals (14 in April 2005) already offer a meta-search of different collections. For example, the Virtual Libraries of Physics, Engineering, and Wood Technology include the TIB-Meta Search Engine which offers a combined search of several high-quality databases.

One example for a subject portal is MedPilot, the portal for medicine and related sciences. It allows a simultaneous search in 47 different databases. 31 of these databases can be used free of charge. There is a pre-selection of 15 freely available databases that the user can chose or make a selection of his own favourite databases. MedPilot has already implemented an availability check for the different publications.

Other subject-based Virtual Libraries offer access to a wealth of subject specific databases and services as well, many of them not yet bundled under a meta-search.

One example is the Virtual Library of Business and Economics, called EconBiz.

Through the website the user finds high-quality internet-resources, library catalogues, full-text-databases and a number of services like a calendar of events, a helpdesk and in the near future also an online reference option.

The last example is a portal of my own library: This is the Virtual Library of Engineering, which offers similar services. It is run by TIB and FIZ Technik, which is a host for technical databases. Both institutions are developing a concept for customized versions of the service for specific enterprises: Exactly those databases and fulltext information, which are needed for a special kind of industry, will be integrated in the library.

- At the moment, a search in vascoda is a meta-search of a number of different databases. In the near future, it will be a hybrid of meta-search and search technology. In the long run, search engine-technology will become more and more important. The implementation of intelligent search-engine-technology will improve the vascoda service in many ways. It will make the service faster and give more search and service options to the user. With the meta-search that is used now, a ranking would only be possible only after every provider has send back his set of results. Since most of the providers do not send a complete set of results,

the ranking would always be unsatisfactory and slow. A search-engine could provide different ranking and sorting options instantly. Linguistic tools would also assist users in their searches.

Search services that are provided by business companies like Scirus (http://www.scirus.com) show state of the art solutions. The user can chose information types, file formats, content sources and subject areas etc. The search can be refined in different ways. Scirus uses FAST search technology (http://www.fastsearch.com/) which will also be used for vascoda. FAST is also already successfully used for the hbz search-engine. (http://suchen.hbz-nrw.de/search/)

There are different options of getting started with the search-engine-technology in vascoda. Since the meta-search in vascoda is already in operation, there will be a step by step change from meta-search to search-engine. In the first phase, only a few vascoda-members (probably EconBiz and GetInfo) will use the search-engine-technology which will be integrated into the vascoda-search. Step by step more data-providers will follow. A federated index would include the (meta)data of the different data-providers. Each data-provider can run its own search-engine and keep its own data if they want to, the other data-providers can use a central index. The individual local search engines will be integrated through a vascoda search. Since the individual databases of the data-providers will be indexed, the vascoda-search-engine could provide access to the deep web which is inaccessible to Google and co. An authorization tool would ensure that licensed material can be automatically displayed for those users who hold a license for the particular data.

In a first step, a search in all German union catalogues could be quickly included. The users would find a “search for books” button on the vascoda-homepage.

Once the search-engine is implemented, it could be an option to co-operate with Google. Google could link to vascoda if special subject information is needed that Google itself cannot provide. A co-operation with Google would result in an immense increase in traffic on the vascoda-website. Once the technical possibilities are realized, the political implications of such a step would have to be discussed.

It will also be important to make it possible to use vascoda as a background service that will allow a seamless navigation in the content that is available, so that users can start their search in the local library and vascoda fills the gaps of the local content.

Another important but difficult point is the necessity of finding an appropriate

organizational structure to keep the services alive when the special project subsidy ends. There are plans to make the vascoda organization a registered association within the year 2005. May be that I talk about a special German problem, but in my country it is not simple to coordinate such a big number of libraries, hosts, research institutions a.s.o. on a voluntary base.

Coming to the end let me give some remarks:

Providing quality information and ensuring the long-term accessibility of documents demands a lot of time and money from everybody involved. In order to save resources, the workloads need to be shared. This means that co-operations on a national and international scale are vital for the growth and long-term development of such a large-scale project. A co-operation with Chinese institutions should be reviewed.

An exchange of experiences on the level of interdisciplinary national portals would be fruitful for both sides. A co-operation on the level of specific materials would also be very helpful. The Electronic Journals Library (EZB) might be a useful tool for Chinese partners. Including Chinese Journals into the EZB later on might also be very helpful for a number of subject portals in Germany.

The easiest way to start a co-operation would probably be on the subject level. The Library of Chinese Academy of Science (www.las.ac.cn) offers a number of subject portals. Many of the portals offer services similar to those offered by German subject portals. The Chinese partners could collect Chinese/Asian resources and the German partners could collect German/European resources. Both partners could then exchange their resources through OAI. If the resources are in English they will be helpful for Chinese as well as German academics. A start could be made in the subject areas where both countries already offer subject portals like e.g. physics or medicine.

Resources in Chinese may also be helpful for the German subject portal on East Asia and vice versa.

National and subject-specific internet portals can greatly improve their services and visibility through international co-operation.

Users will be able to navigate seamlessly between a number of high-quality services and will be able to obtain the information they need no matter where the original information is stored.

German National Union Catalogue of Serials: Services for Librarians and Users

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In the following presentation entitled "Zeitschriftendatenbank—German National Union Catalogue of Serials: Services for Librarians and Users" I would like to give you an introduction into the features and services of Zeitschriftendatenbank (in short ZDB), one of the most important bibliographic databases in Germany.

The Zeitschriftendatenbank is a classical library instrument—basically a catalogue. Why present in this symposium? First it is an essential component of library infrastructure in Germany, secondly I hope to show you what functions instruments like ZDB can have in a networked world and how they can contribute to old and new services libraries offer to their users.

Some very fundamental facts in the beginning:

The Zeitschriftendatenbank/ZDB looks back on a history of more than thirty years, a history which has been a rather successful one. During these thirty years ZDB has developed from a cataloguing automation project supported by only a few libraries to a national network with an extensive and reliable database, now firmly established in Germany.

ZDB contains entries for serials of any type, that is journals, newspapers, series, databases (continuing integrating resources) of all periods, countries and languages in different physical formats (paper, microfilm, electronic publication). Records consist of title descriptions and holding information for individual libraries.

In April 2005 there were over 1.1 million title entries in ZDB and almost 6 million holdings representing over 4700 libraries. As far as we know, this means that ZDB is the world's largest database for continuing resources.

Currently two institutions share responsibility for ZDB: the Staatsbibliothek zu Berlin (Berlin State Library) which founded ZDB 30 years ago is the responsible managing body for ZDB. It maintains editorial boards for bibliographic control and promotes and represents ZDB in the library public. Five years ago Die Deutsche

Bibliothek (the German National Library) has taken over the technical operation of the database, i.e. it serves as system host and maintains the data distribution services ZDB provides to library networks, individual libraries and other library-related services.

The two libraries work conjointly on further development of the database and its services.

In the following I would like to describe the major functions and services of ZDB in more detail:

ZDB is a tool for shared cataloguing of continuing resources.

The original purpose of ZDB—to provide a tool for shared cataloguing and thus to contribute to division of labour among German libraries - is still valid today.

Most German academic libraries belong to one of the six regional library networks. Those library networks usually also started as projects for shared cataloguing and nowadays run regional union catalogues supplemented with a multitude of other services like online interlibrary loan, portals etc. In all those library networks and their member libraries ZDB is used as a cataloguing master database. That means that new title records for serials are primarily entered into the central ZDB database and then copied into the regional union catalogue. This way every new serial title has to be catalogued only once, new records are immediately available to other libraries.

This workflow also makes sure that each new title is assigned a particular and unique ID number which is transferred into the regional catalogue. This ID number is used to clearly identify a record and thus to provide for frictionless updating.

The title descriptions in ZDB serve as an authority file for the cataloguing of continuing resources.

Evolving from its function as a cataloguing master ZDB now is considered an authority file for serials. In order to guarantee the quality in the database and to support the authority character of the title descriptions there is a rather strict management in terms of the standard new entries have to comply with and especially in terms of correcting entries. This is also important because of the wide secondary use of ZDB data in other systems—consistency of the data is a high value. To provide for this only the central editorial body located in the Staatsbibliothek zu Berlin can make major changes or delete records. Participant libraries can use a special mailing function within the database to communicate with the editors. The creation of title records is based on a cataloguing code used only in Germany and Austria and special rule interpretations for the ZDB.

Currently there are great efforts under way to adapt those cataloguing rules to international standards, namely to the Anglo-American Cataloguing Rules with the objective to facilitate the exchange of bibliographic data with other countries.

In the future ZDB will be the national bibliography for serials published in Germany and also the basis for the assignment of ISSNs to serials published in Germany.

All major libraries in Germany participate in ZDB—with one exception: the national library—Die Deutsche Bibliothek—has so far only catalogued into its own cataloguing database, which also encompasses serials and which serves as basis for the production of the national bibliography. In the next two to three years Die Deutsche Bibliothek plans to integrate its serials data into ZDB and to catalogue new records exclusively in ZDB. Being the national ISSN agency it also intends to assign International Standards Serials Numbers (ISSN) to new titles on the basis of ZDB records. This means that parts of the ZDB database will be connected to the international ISSN system on one hand and on the other that ZDB will serve as source for the German national bibliography.

ZDB is the national union catalogue for journals and other serials held by academic libraries in Germany.

The term “union catalogue” here refers to the fact that ZDB—besides functioning as an authority file—also is a catalogue containing information about the holdings for journals etc. of basically every academic library in Germany. This is a feature also unique for ZDB. As already mentioned there are several regional library networks in Germany, all with their own separate catalogues. Only for serials we have one common database that allows an immediate overview for all titles and holdings in German libraries.

Member libraries are responsible for the accuracy and completeness of their own holdings. There are two ways a library can enter its holding data into ZDB: either by entering data directly into ZDB or by having the holding information imported automatically into the system. Libraries choosing the latter usually maintain their holdings in the catalogue of the regional library network they belong to. The networks then deliver offline holdings to ZDB.

ZDB data are the basis for serials information in regional library networks and local OPACs and are therefore widely replicated and regularly distributed to other library and information systems.

As may have become clear there is a lot of data exchange between ZDB and other library databases. Principal partners are the regional library networks which receive

title and possibly holding updates on a regular basis. The networks then distribute the data to the local systems of their member libraries. The distribution of data is so far done offline, using a special German exchange format called MAB. As with the cataloguing code adaptation to international standards is expected to produce various benefits. Therefore it has recently been decided to switch to MARC 21 as future exchange format for German libraries.

ZDB and its partners also aim for facilitation and acceleration of data distribution by replacing offline procedures with complete online communication between the various systems. First steps have been taken in this direction, using the OAI (Open Archive Initiative) protocols.

It also seems desirable that ZDB data are used in information systems other than the classical library catalogue, e.g. subject based portals. Those projects and initiatives often do not work with standards traditionally used in library computing. In order to make ZDB data available to them we have to develop web services, transform data into XML, offer an OpenURL interface and so on.

ZDB is the basis for interlibrary loan and document delivery services in Germany and generally speaking provides availability information about serials.

A function that ZDB has filled from its beginning is being a tool for interlibrary lending. Until ten years ago a microfiche edition of ZDB was used in most libraries to find out where a certain journal was located and the ILL slip could be sent to. Today of course microfiches have been replaced by electronic catalogues: Usually ILL librarians first check their regional union catalogue and then—in case of failure—consult the ZDB web catalogue to locate a specific title and holdings. Currently the German library networks work intensively on realizing inter-network online ILL. The fact that title information for serials is identical in all regional catalogues ensures that ILL orders for article copies can be assigned properly. Besides holding data in ZDB have a machine readable structure, another prerequisite for automated processing of orders. This feature is also used by SUBITO, the major document delivery service in Germany, that relies on ZDB data for searching and ordering.

Triggering off an order for a document often is the last step in a course of user activities usually starting with a search in a resource like an article database that contains bibliographic information but no information about where to locate the full text of an article, be it printed or electronic. Therefore it is desirable to link bibliographic resources with catalogues and license registers in order to allow what

is called one stop shopping. ZDB is a perfect source for such availability searches. Using OpenURL techniques or link resolvers ZDB can be integrated into portals like *vascoda* we heard about in the presentation of Mr. Rosemann. Indeed ZDB is currently working with the institution hosting the vascoda portal on implementing this kind of service.

Because of its comprehensive character the ZDB database can contribute to coordinated library policies in Germany.

An example to illustrate that is the intention of the Deutsche Forschungsgemeinschaft (German Research Society) to establish tools for collection management for the special collections system it is funding. In terms of journals ZDB provides the necessary information, like e.g. how many libraries have subscribed to a title, do these libraries participate in interlibrary lending and document delivery and so forth. ZDB is currently preparing a project to develop tools that allow easy extraction of relevant statistics.

A second example is the area of preservation of library materials. Libraries making microfilm or digital masters of a printed work are supposed to enter a description of the master into ZDB. This can avoid multiple microfilming or digitization of a work and supplies an overview on preservation activities in German libraries, at least in terms of journals and newspapers. Consequently ZDB data are imported into the European Registry of Microform Masters (EROMM). The objective of this registry is to avoid double work on an international level and to provide a platform for ordering copies of secondary microforms.

Finally I would like to mention two more projects we are working on.

International cooperation.

For some time now ZDB has worked on building relations with foreign libraries and thus broadening the cooperation from a national to an international partnership. These efforts have sometimes been difficult because of differing cataloguing rules and formats used in different countries.

Since the beginning of 2004, though, the Austrian library network and its member libraries are participating in ZDB. Currently the complete serials data from the former Austrian serials database are imported into ZDB.

We also have an arrangement with the Library of Congress in Washington. ZDB is providing bibliographic data for electronic journals twice a year to LoC. Together we explore further possibilities for joint projects.

We hope that these first examples for international cooperation will not remain the

only ones. The internationalisation in terms of cataloguing code and format certainly will be helpful for such purposes. The intended implementation of Unicode in the software system the ZDB is using will also open new possibilities. Now all journal titles in ZDB in languages with non-Roman script are transliterated. One might imagine that in the future title descriptions are coded twofold in ZDB: in the original script and transliterated.

Joint data service with Elektronische Zeitschriftenbibliothek Regensburg.

But also on the national level there is work to be done. During this symposium also the Elektronische Zeitschriftenbibliothek Regensburg (Electronic Journals Library, in short *EZB*) will be presented. Most German libraries participate in EZB to manage their licenses for electronic journals and they use EZB as an access system to electronic journals.

ZDB and EZB have been cooperating for several years. All title records in EZB must also be entered into ZDB. The ID number of a ZDB record is also part of an EZB record. ZDB records for electronic journals on the other hand contain a special URL, linking to the EZB by using the ZDB record ID. By clicking on this link the access rights of a library for a particular journal will be displayed to the user.

ZDB and EZB plan to develop and implement a joint data distribution service, putting together title information from ZDB with the license information that goes with it. Such a joint data service will make it possible to integrate license information into library catalogues. This way access rights can immediately be displayed to the user, he has no longer to switch between systems.

For more information about ZDB please visit our website (www.zeitschrift-endatenbank.de); there you will also find contact addresses. The web catalogue can be reached via www. zdb-opac. de.

The Historical Relations Between the China Geological Library and Germany

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ABSTRACT In the history of the China Geological Library, there were several important facts showing the exchange of science and cultural between China and Germany in the early 20th. In the development of geosciences in China, German scientists made the major contribution.

KEYWORDS library, history, exchange, geosciences

1. THE CHINA GEOLOGICAL LIBRARY WAS THE FIRST PUBLIC SCIENCE LIBRARY IN CHINA

The China Geological Library (CGL) has developed over the last ninety years along with the growth of the study and application of geology in China. The establishment of CGL can be traced back to 1913 when the Ministry of Industry and Commerce of the Beiyang Government established two agencies: the Geological Survey and the Institute of Geological Research. The Geological Survey was a governmental agency for undertaking geological work. The Institute of Geological Research (Fig. 1) was an educational organization supported by the government. The primary task of the Institute of Geological Research was to train high-quality geologists. Dr. F. Solgar (Fig. 2), a German geologist was invited to teach in the institute in 1913. He first went to Beijing University in 1909, and became the first foreign teacher of geology worked in higher education of China.

Fig. 1 The Institute of Geological Research and CGL in 1916

Fig. 2 Dr. F. Solgar was invited to teach in the institute in 1913

Within the Institute was a library containing books from the Department of Geology at Peking University, private donations from geologists and books purchased by the Ministry of Industry and Commerce. This library was the origin of the present-day CGL and the first public specialty library in China. After the closure of the Institute of Geological Research, its library was transferred to the Geological Survey in 1916. There were three reading rooms containing 400 volumes of professional works and magazines. The first edition of China (Fig. 3), a precious major work on geosciences of China written by Ferdinand Paul Wilhelm Richthofen (Fig. 4) was collected in CGL.

Fig. 3 The first edition of China

Fig. 4 Ferdinand Paul Richthofen

2. RICHTHOFEN WROTE THE FIRST MAJOR GEOSCIENCES WORK ON CHINA

Ferdinand Paul Wilhelm Richthofen(1833~1905), a famous German geologist and geographer who contributed to the development of geology and geographical methodology. He spent much of his life to do the research on geosciences of China and produced a major work on China. In 1868, Richthofen came into China for geological exploration. He had traveled almost every part of the country until 1872, and collected a lot of geosciences material. After returning Germany, since 1877 he had began to compile his findings and to edit *China* that was embodied in five volumes and two atlases. The first volume published in 1877, the second volume published in 1882, the fourth volume published in 1883, but the third and fifth posthumous volumes appeared in 1911 and 1912. The Ministry of education of Prussia supported the publishing of the work. The price of each volume was 36 Mark, equal to 19 Chinese silver Yuan.

China was the first major comprehensive scientific work on geography, geology, paleontology, economy, and ethnology in modern science history of China. It has been

of very much important effect on geosciences in China since then. Prof. Richthofen studied the mode of origin of the loess in China, and first found that the Loess distributed on the plateau in northwestern China originated from wind and dust. He did the stratigraphic research and first put forward the stratigraphic terms of “wutaian” and “sinian” in northern China. He collected many fossils in China and did research on them. Several German paleontologists like F. Frech, E. Kayser, G. Lindstrom, C.Schwager, A.Sehenk joined his research, and their findings and achievements were published in the volumes of China[1].

China did not experience the rise of modern science like to that which took place in Europe from the 16th century onwards. The west modern geosciences have been imported to China since the late of the 19th. In 1863, American geologist Pumpelly Raphael (1837~1923) who graduated from a mining school in Germany first came into China to do geological exploration[2], but he had just stayed China for half a year and achieved not much. After Pumpelly Raphael, Richthofen was the second one of foreign scholars who came into China for geological survey. From 1868, he had spent 4 years to do hard field work and achieved a lot of findings. Richthofen plaid the most important role in spreading modern geosciences to China that time. He made major contribution to the development of geology and geography in China. He was one of the well-known pioneers in the exchange of modern sciences between China and the West.

3. GERMAN ARCHITECT BUILT THE FIRST BUILDING OF CGL

In 1921 a new building **(**Fig. 5**)** was constructed for the China Geological Library at number 9, Bingmasi yard in Beijing. This was an important event in the history of CGL and modern Chinese geology. From then on, the China Geological Library has been

Fig. 5 The CGL in 1922

housed in independent premises. The geologists helped raise 39 000 Yuan to construct the library building. Mr. Li Yuanhong, the President of Republic of China, also donated 1000 Yuan. The two-floor library building was designed and built by the German company Leu & Co. Hugo, and drew praise for its graceful architectural design. The building initially held a collection of more than 4000 volumes and provided excellent services and facilities, and thus became known as the best geological library in East Asia.

Leihu (Hugo Leu), a German architect. He came to China before 1906, and after 1910 he set up an building engineering company (Leu & Co. Hugo) in Beijing. The library building has typical German construct style in the early 20th century. In the Bingmasi yard, there was another German style building **(**Fig. 6**)** that was the office of the Geological Survey. According to the result of textural research recently made by German architects, two buildings **(**Fig. 7**)** are rare examples of pre-modernist construct work in Beijing even in China. The buildings are of very important historical significance and academic value in study on the architectural cultural exchange between China and Germany in the early 20th.

Fig. 6 The Geological survey in 1931 Fig. 7 Two German style buildings of Bingmasi yard in 1996

The Bingmasi yard was the earliest academic exchange center of that age in China. Overseas scholars like American geologist Amadeus William Grabau, French paleontologist Pierre Teilhard de Chardin used to work in the Bingmasi yard. The geosciences pioneers of China, H.T. Chang, V.K. Ting, and W.H. Wong, successfully organized nation-wide geological work there, significant success including the discovery of the skull of Peking Man was made. Many presently national academic institutions including the Institute of Vertebrate Paleontology and Paleo-anthropology (IVPP), Nanjing Institute of Soil Science (ISSAS), Nanjing Institute of Geology and Paleontology (NIGPAS), came out of the Bingmasi Yard[3].

The geological library served not only as a place for holding books, but also as a setting for historic meetings. In February 1922, the establishment of the Geological Society of China, a milestone in the history of geosciences in China, took place at a meeting in the library. In 1927, the Mine Engineering Association was also established in the library. *China Journal of Geology*, edited by the Geological Society of China, *Geology Memoirs*, edited by the Geological Survey, *Palaeontologia Sinica* and other geological journals, mostly in both Chinese and English, were published and distributed overseas by the Library. *The Geological Map of China*, *Stratigraphy of China* and many other important works were compiled and edited in the library.

As the earliest academic exchange center of China, the Bingmasi yard has remained not ruined until now, and that has drawn attention of the public. The central government Premier Wen Jiabao who was once a geologist has also showed concern to the Bingmasi Yard that tells the story of the early history of modern geosciences and science in China. A cultural heritage preservation project is now in plan.

Fig. 8 The present-day CGL

Since 1935, CGL has moved several times. In 1996, the 30th International Geological Congress was held in Beijing. To celebrate this event, a new library building was set up in the China University of Geosciences in Beijing **(**Fig. 8**)**. At this time the Library had a collection of nearly 700 000 volumes and more than 10 000 geological maps.

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中国地质图书馆与德国的历史关系

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摘　要　中国地质图书馆历史上记载了 20 世纪初一些反映中国与德国之间科学文化交流的重要事件。在中国近代科学发展史尤其是近代地质科学发展史上，德国科学家做出了重要贡献。本文就这方面做了一些研究与探讨。

关键词　图书馆　地质学　历史　交流

1．中国地质图书馆是中国最早的专业图书馆

中国地质图书馆创建于 1913 年，她伴随中国近代地质科学的发展，已经走过了 90 多年的历史。1913 年 9 月，北洋政府工商部建立了两个地质机构：地质调查所和地质研究所。地质调查所是政府地质工作机构。地质研究所是教育机构，是由国立北京大学附托工商部开办的，其主要任务是培养地质人才。德国地质学家梭格尔博士（Dr. F. Solgar）1913 年受聘于地质研究所任教，他早在 1909 年就受聘于北京大学任教。梭格尔博士是来华从事地学高等教育的第一位外籍教师。

地质研究所设有图书室，该图书室就是中国地质图书馆的雏形。当时图书室的图书来源，一是北京大学地质专业原有图书；二是地质学家们多方筹集；三是工商部出资购买。有一名图书管理员。图书室的功能主要是为教学服务。1916 年 7 月，地质研究所停办后，图书室移交到了地质调查所。地点在北京丰盛胡同 3 号，当时有图书室三间，有专门书刊约 400 余册，其中收藏有著名德国地质、地理学家李希霍芬教授撰著的《中国》（德文版共五卷）。

2．德国学者撰著了第一部论述中国地学的专著

李希霍芬（Ferdinand Paul Wilhelm, Richthofen, 1833~1905）是著名的德国地理学家、地质学家。他为近代地质学、地理学的发展做出了杰出贡献。特别是他把大量时间和精力投身于中国地学研究，完成了一部关于中国地学的巨著。李希霍芬 1868 年 9 月到中国进行地质地理考察，直至 1872 年 5 月，将近 4 年，几乎走遍了

整个中国，搜集了大量地质资料。考察的最大成果，是他回到德国之后，从 1877 年开始整理考察资料，陆续出版了德文巨著《中国》，全书共分五卷，还附有地理及地质图两册。第一卷出版于 1877 年，第二卷出版于 1882 年，第四卷出版于 1883 年，而第五卷到 1911 年才编辑出版。第三卷是 1912 年出版，此时李希霍芬去世已七年了。李希霍芬的巨著得到当时普鲁士政府的资助，出版费用也是普鲁士教育部提供的，出版后每卷的售价为 36 马克，约合当时的中国银元 19 元。

在中国近代科学史上，李希霍芬的《中国》是第一部较全面论述中国地质、地理、古生物、经济和人类社会学的综合性科学巨著，对中国近代地质学、地理学的诞生和发展具有重大影响。他研究了中国的黄土，最早提出了中国黄土的“风成论”。他研究了中国地层，收集了很多各时代地层资料，在辽宁、山东、山西和河北北部建立了 3 条地层剖面，他首先提出了“五台系”和“震旦系”等地层术语。李希霍芬采集了大量古生物化石并作了深入研究，他的朋友和学生包括古生物学家 F. Frech、E. Kayser、G. Lindstrom、C. Schwager、A. Sehenk 等多人参与了他的研究工作。他们的发现与成果都在《中国》这部巨著中发表。

中国不像欧洲早在 16 世纪就开始经历了近代科学的兴盛与发展。近代地质科学由西方传入中国是在 19 世纪中叶以后，此时地质学在西方也是新兴的学科。最先来中国作地质调查的外国地质学家是美国人庞培勒（Pumpelly Raphael，1837~1923），他是德国弗赖贝格矿业学校的毕业生，美国哈佛大学第一位矿学教授。庞培勒于 1863 年来到中国考察，由于庞培勒实地考察的时间仅约半年，成就不多。继庞培勒之后，李希霍芬是第二个到中国作地质调查的外国地质学家，自 1868 年开始，他在中国做了四年艰苦的野外地质考察，获得了许多发现。李希霍芬为当时的中国带来了近代西方地学乃至整个自然科学的思想和方法，他为中国近代地质学、地理学诞生和发展作了奠基性、开创性的贡献，他是近代中国和西方国家科学交流的重要先驱。

3．德国建筑师建造了中国地质图书馆第一座独立馆舍

1921 年地质图书馆楼在北京兵马司 9 号院落成，这无论在地质图书馆历史上还是中国近代地质事业发展史上都是一个重大事件，从此地质图书馆有了自己独立的馆舍。为筹建图书馆楼，由地质学家们发起募捐，共募集捐款 39 000 余元，当时的民国大总统黎元洪捐资 1000 元。在北京兵马司 9 号院还有另一座楼是地质调查所办公楼，也是德国建筑风格。图书馆楼由德国雷虎公司设计建造。楼体二层结构，风格别致优雅。地质图书馆当时藏书 4000 余册，并已经具备较完善的图书服务基本功能，号称是东亚第一地质图书馆。

雷虎（Hugo Leu），德国建筑师，1906 年前来华，在青岛开业，1910 年后转

赴北京，开办雷虎工程司行，承接建筑设计，土木工程和营造等业务。1917 年中国对德奥宣战后一度停业。1920 年初恢复，更名为“Leu & Co., Hugo”。其设计作品此前一直没有发现。根据德国建筑学者考证，地质图书馆楼具有典型的德国建筑风格，是 20 世纪初典型的德国前现代主义建筑作品，在北京仅此一处，是留存罕见的中国近代科学的标志性建筑，对建筑史学尤其是中德早期建筑文化交流史学研究是难得的实例，具有重要的历史意义和学术价值。

北京兵马司 9 号院旧址是中国近代地质学乃至自然科学的早期学术活动中心，是中国 20 世纪初期著名地质学家的聚集地和优秀地质学家的摇篮。外国学者，例如美国地质学家葛利浦（A. William Grabau）、中国地质事业的主要创始人章鸿钊、丁文江、翁文灏等均在此工作过。兵马司 9 号院因当时聚集了高水平的国际知名专家和组织卓有成效的学术活动，至今备受国际地质学史界的关注。许多专业学术团体和科研机构从这里诞生：如中国地质调查局、中国地质学会，中国矿冶学会、中国科学院北京古脊椎动物与古人类研究所、南京古生物研究所、南京土壤研究所、中国地质图书馆、中国地质博物馆等机构相继在这里建立起来，北京兵马司 9 号院旧址是现存罕见的、最早的中国近代自然科学机构旧址。

兵马司 9 号院旧址不仅是当时地质图书馆藏书所在地，而且还是很多重要学术会议的场所。1922 年 2 月，中国地质学会在这里成立，成为中国地质学史上的里程碑。1927 年，中国矿冶学会也在这里成立。中国地质学会的《中国地质学会志》及地质调查所的《地质汇报》、《古生物学报》等地学刊物均由地质图书馆代为发行，并与国外进行交换。

作为早期学术交流活动中心，北京兵马司 9 号院旧址保留至今，越来越引起社会的关注。曾为地质学家的温家宝总理对旧址的保护也极为重视。北京兵马司 9 号院旧址是中国近代地学史、科学史的历史见证，有关部门已将其纳入历史文化遗产保护计划。

自 1935 年后，地质图书馆经历了几次搬迁动荡。抗日战争，图书馆曾迁往长沙，后又迁往重庆，1946 年迁回南京。地质图书馆几度迁移，饱经沧桑。至 1949 年，地质图书馆共有藏书 12 万余册。1958 年，地质图书馆新馆在北京甘家口落成，作为国家专业图书馆，面向全社会开放。1996 年，为迎接第 30 届国际地质大会在北京召开，一座大型的现代图书馆大楼在中国地质大学（北京学院路 29 号）落成。至此中国地质图书馆藏图书已达 70 万册，各类地质图件 1 万多套，是亚洲地区最大的地学专业图书馆。

A Central Gateway to Heterogeneous Sources of Information:The Bavarian Regional Online Library

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Nowadays the World Wide Web offers an overwhelming amount of information which varies enormously in quality and is often presented in a very confusing way. More and more it becomes one of the new and important tasks of libraries to construct solid islands in this rapidly increasing endless ocean of knowledge, that offer proved and structured information for a special field of work. The project “Bavarian Regional Library Online” is an attempt to find a solution for the supply of literature to a German region (i.e. Bundesland) via the WWW.

What does “Regional library” (Landesbibliothek) usually mean?

“Regional library” is typically the central regional library of a German “Bundesland”, which collects all print media published in, or relevant for, its specific region.

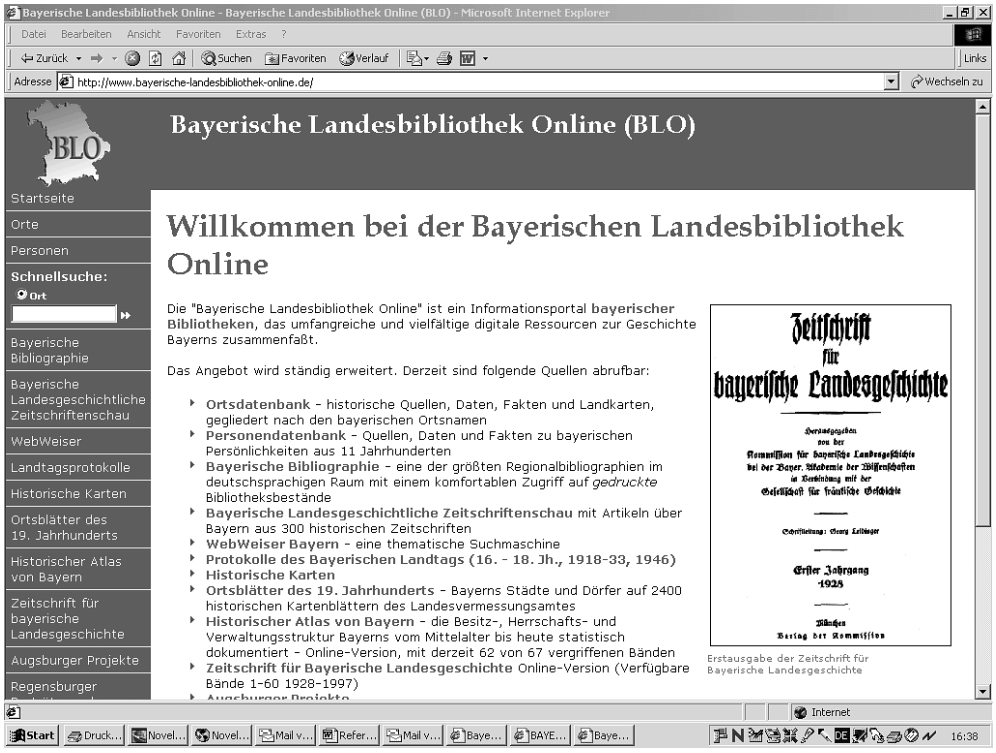
What is the “Bavarian Regional Library Online”?

It is a virtual library, a system of editing and connecting heterogeneous information. It shall give the traditional expression “Regional library” a new, virtual quality. This web portal exists since the year 2000 and is online since June 2002. For over two years it was the first virtual library specialised on a certain region in Germany.

Who are the partners?

The web portal is organised by the Bavarian State Library, the University Libraries of Augsburg, Regensburg and Würzburg and the Landesbibliothek Coburg. It is financially supported by the Bavarian State Ministry of Sciences, Research and the Arts.

Cooperations take place with numerous historical and other institutes, especially the Commission for Bavarian History of the Bavarian Academy of Sciences and Humanities.



What is the content of “Bavarian Regional Library Online”?

The “Bavarian Regional Library Online” is a mix between genuine online offers on the one hand and retrodigitised materials on the other. It has a special focus on history. Here you find historical sources, which include maps as well as portraits and secondary literature.

For example, you find

- The most important journal of regional history in Bavaria, the “Zeitschrift für Bayerische Landesgeschichte”. All volumes of this publication from 1928 till 1999 exist in digitised form.
- The “Historische Atlas von Bayern” (Historical Atlas of Bavaria) is a historic-topographical description of Bavaria that documents the structure of the entire country from the Middle Age up to now in statistics and on maps.
- More than 600 historical maps are contained in the “Bavarian Regional Library Online”. Further on, more than 2400 socalled “Ortsblätter” represent the first exact surveying of Bavaria in the beginning of the 19th century.

- The “Bayerische Bibliographie” (Bavarian Bibliography) is one of the biggest regional bibliographies in German-speaking countries. It is listing all titles which in substance are related to Bavaria. The “Bayerische Bibliographie” offers not only monographs in German and other languages including dissertations, but also articles in journals, yearbooks, commemorative and collective volumes and supplements of Bavarian newspapers. At present it contains more than 230 000 bibliographical references and is complete from the year 1995 on. Soon the “Bayerische Bibliographie” will offer references from 1928 on.

Several external databases like “Museen in Bayern” and “Archive in Bayern” are linked with the “Bavarian Regional Library Online”.

A central research entry for locations helps to find the information within the modules and leads you through the different offers of the “Bavarian Regional Library Online”. We are currently preparing a central search for persons as well.

At this moment, several offers, concerning persons, are included in this virtual library. One of those are the speeches, held in the Bavarian parliament between 1918 and 1933. Another one is a collection of more than 5000 portraits which belong to the royal house of Thurn and Taxis in Regensburg.

In the near future we plan to deepen the aspect of bavarian history, for instance with the digitisation of more important historical journals and newspapers, to enrich the collection of portraits and so on. A digital encylopaedia, concentrating on historical topics, is also being planned.

The focus of the “Bavarian Regional Library Online” will not be limited to bavarian history. We are planning to extend this web portal to a regional information portal for the humanities. That means that history of the art, ethnology and linguistics are to be included.

I hope this short summary gave you a good first impression of the “Bavarian Regional Library Online”. There are at least three ways to access this virtual library: The first is of course the homepage of the Bavarian State Library, the second possibility is the URL (www.bayerische-landesbibliothek-online.de) and, finally, a search engine like Google helps you to find it.