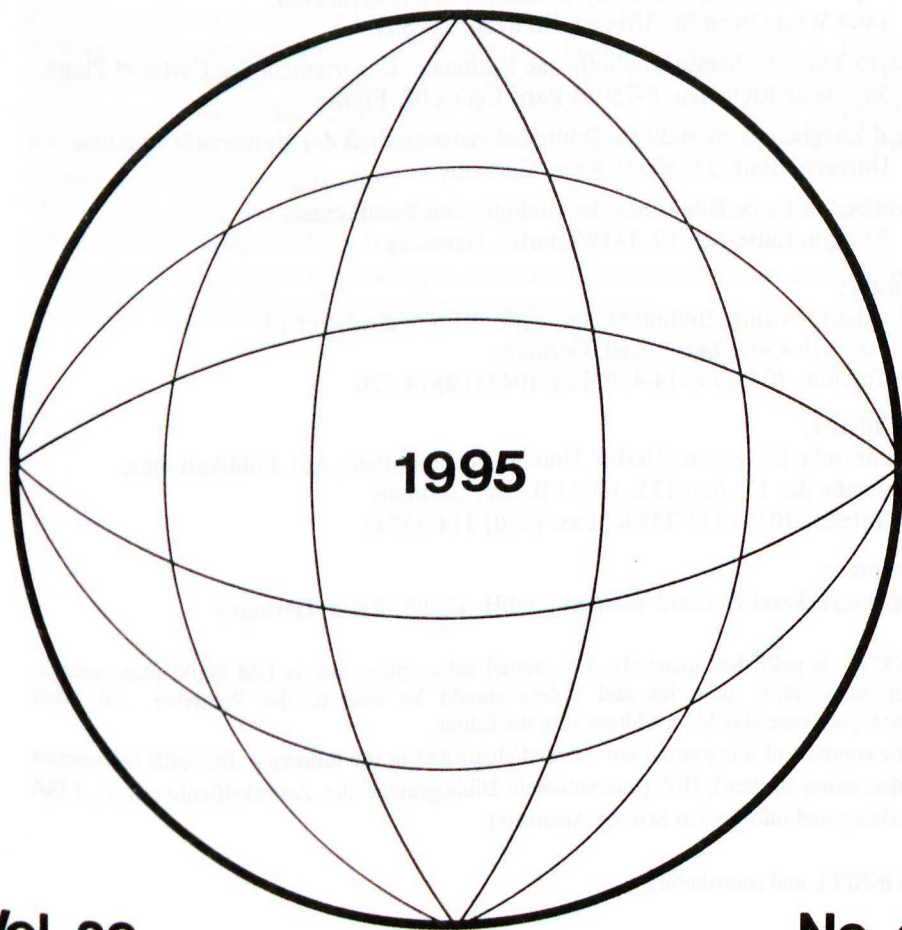


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The Journal is directed to an international readership among librarians in government and international agencies, as well as in universities and research institutions. Librarianship is a key subject in a rapidly changing world. Improved practice will help produce economic benefits, and special attention should be given to problems concerning libraries in Developing Countries.

Articles will be drawn primarily from activities conducted within IFLA. But on occasion the Journal will publish articles on specified topics by non-IFLA contributors. Any reader interested in preparing such an article is invited to submit the paper to the Editor. Material on all aspects of librarianship will be considered eligible for publication.

The views and interpretations in articles published are those of the authors and do not necessarily represent the policies of IFLA or ASpB.

Comments or brief notes responding to Journal articles are welcome and will be considered for publication to the extent that space permits.

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Editor's farewell

Dear readers,

This issue completes the fifth volume of my editorship of INSPEL. It is a good time to take stock and to thank all those who contributed to the Journal during the past five years: authors, Editorial Board members, the publisher and - most important - you, our readers.

But after five years it is time for me now to hand over the editorship to a new editor.

When I began my editorship I had two immediate goals. One was to have more contributions from developing countries, close readers will have observed when viewed from this point. Further I searched out for more authors from outside the IFLA - Division of Special Libraries. By broadening the input it was possible to make INSPEL better known to non-IFLA members.

The Journal maintained the level of subscriptions during the last five years but would be on a financially sounder basis if we had more. Anything any of you can do to improve INSPEL and to gain new subscriptions would be very welcome.

The mission of our non-profit Journal INSPEL is to publish the highest quality of original contributions covering the broad canvas that is librarianship as a key subject in a rapidly changing information world.

I would like to give my best wishes for our successful future to our Journal.

It was a great time to be the Editor of INSPEL.

Ekkehart Seusing

LINGUISTIC OBSTRUCTIONS TO SCIENTIFIC INFORMATION IN HIGH TECHNOLOGY AREAS

By Jagdish C. Agrawal and Saud Al-Mathami

Abstract: The rapidly advancing high technology area of Computer Science is dependent on language dependent tools and techniques. The literature for these tools and techniques is overwhelmingly concentrated in English. Well recognized bodies that make standards for these tools and techniques (ANSI, ISO, etc.) are heavily influenced by English. Third world countries that import these tools and technology as part of their technology import program face a large problem of technology transfer: training. Third world countries, where English is not the first language, the methods to filter and control the potentially unlimited flux of information must include methods to deal with the language issue. Universities like ours, are, through their faculty research and development are contributing heavily towards developing the methods to deal with the language issue. Our Computer Science degree programs have an active track in Arabization. Our student projects in overwhelming numbers concentrate on Arabization. At R&D level, our faculty colleagues actively pursue research in Arabization. Private industry is also contributing to this effort by offering tools and techniques (Arabic Windows, WYSIWYG Word Processors, Spread Sheets, Database Management Systems, etc.) There is also an effort for developing Standards for this Arabization. However, the solutions that we share with the reader of this paper are localized solution at the national level and do raise issues of portability, interoperability, etc. across national boundaries. There is a need to have "multi-lingual" tools and techniques as well as standards for a better solution, and the third world countries ought to collectively look at them. These needs are also discussed in the paper.

1. Introduction

In a recent paper, Belkin and Croft¹ discuss some important concerns about the importance of information and making it available to its receiving end users:

"The promise of the information age entails making information available to

This paper was delivered at 60th IFLA General Conference, Havana, Cuba, 21-28 August 1994.

people any time, any place and in any form. Realizing such a promise depends on innovations in areas that impact the creation of information service and their communication infrastructures. However, this realization can easily become a mixed blessing without methods to filter and control the potentially unlimited flux of information from sources to their receiving end-users."

Emerging new technologies in this information age are making a significant impact on the society as well as on the organizations within a society. As pointed out by Samarajiva², in developing nations in particular, external communication is essential to productive scientific activity. The external communication with the sources from where the technology is being imported or transferred must overcome any linguistic barriers. The literature for the technology being imported or transferred in to a third world country is overwhelmingly concentrated in English. Third world countries that participate in a technology import program face a large problem of technology transfer: training. Third world countries, where English is not the first language, the methods to filter and control the potentially unlimited flux of information must include methods to deal with the language issue.

2. Barriers to Technology Transfer to the Third World

Let us first examine what barriers to technology transfer to the third world countries have been identified by previous researchers and how does the language issue rank among these barriers. Al-Tayyeb³ wrote a Ph.D. dissertation on the subject of information technology transfer to Saudi Arabia. As part of his research, Al-Tayyeb identified several socio-cultural and technical barriers to successful information technology transfer to developing nations such as Saudi Arabia. Socio-cultural barriers included communication between vastly different societies in terms of culture and religion. Since languages are to some degree closely intermixed with the culture, linguistic barrier was to a partial degree identified. However, we will go into the linguistic barriers in detail.

In a recent paper, Al-Tayyeb and Wrenn⁴ identified an important barrier:

"The lack of internationally accepted standards can also be a barriers to effective transfer of technology."

We feel that if the language in which the training material, support material, and standards for the technology being transferred are expressed is a foreign language to the country importing the technology, then the language can be the a larger barrier, because it will be the first barrier.

Mandurah and Bakri⁵ surveyed the methods and techniques utilized to measure the transfer of information technology in the light of science and technology indicators. They suggested that such indicators should include: measurement of the use of computer literacy, measurement of the attitude towards computers, survey of applications of information technologies, and the influence of information technologies on productivity. The relative ease in transferring the emerging technologies could be visualized by combining the socio-technical barriers in a matrix. While such a visualization is subjective in nature and far from being quantitative, this approach allows one to see the relative strengths and weakness (in terms of transferability) of multiple technologies. Under the approach of Mandurah and Bakri, e-mail and Arabic computers were placed on the low end of the barriers line, while AI systems were on the high end. Our thesis is that e-mail users have reached a level of comfort in English, that they did not find difficulty in its use, and hence the low end placement of e-mail. AI systems required heavy use of English by users who were not as comfortable with it as the e-mail users.

3. Factors to Enhance the Success of Technology Transfer

Rogers⁶ found five factors in the successful transfer of technology:

- i. Relative advantage compared to existing technologies in terms of price, performance, capabilities, reliability etc.
- ii. Compatibility between existing technologies and the new technology in terms of interfaces etc. Language will play a very important role here for the interface, if in the past there was little or no dependence on English for performing the tasks that will now be performed with the new technology.
- iii. Complexity in terms of usability, maintainability, skills needed, training needed, etc. Language would play an important role here, if in the past the same work was being done without much English.
- iv. Observability of results by the end users is important to assess the success of the technology transfer.
- v. Trialability meaning that it is easier to abandon a technology after trying it, if the benefits expected do not occur.

Going over the success factors, we find the language playing an important role as pointed out above in the factors 2 and 3 above. One factor that needs to be added to the above list is the impact of the new technology on the importing nation's trade. Software Engineering technology transfer to India has shown its greatest payoff in increased trade and from the fact that many leading Software manufac-

turers have opened Software factories in India now because of availability of cheaper and highly qualified skilled labor for these factories.

4. Some Localized Solutions to Overcome the Barriers

Saudi Arabia is a big importer of the information and computer technology. The official language here is Arabic, and English is not the first language. Therefore, universities like ours, did, through their faculty research and development contribute heavily towards developing the methods to deal with the language issue. Our Computer Science degree programs have an active track in Arabization. Our student projects in overwhelming numbers concentrate on Arabization. At R&D level, our faculty colleagues actively pursue research in Arabization. Private industry is also contributing to this effort by offering tools and techniques (Arabic Windows, WYSIWYG Word Processors, Spread Sheets, Database Management Systems, etc.) There is also an effort for developing Standards for this Arabization.

As examples of the numerous student graduation projects and graduate theses related to the Arabization effort, we will cite some work to give the reader an idea about this effort. A team of three graduating seniors: A.G. Al-Tamimi, A.M. Al-Hedaithy, and I.A. Abu-Abat, as part of their graduation project under the guidance of Dr. Mohammed El-Affendi developed an Arabic WYSIWYG (What You See Is What You Get) Tool for Desktop Publishing⁷. Desk Top Publishing (DTP) and Word Processing (WP) software with graphic user interfaces was attracting a lot of attention, but its use in Saudi Arabia could be fruitful only if it provided Arabic interface. The major objective of this project was to design a WYSIWYG tool so that the user could write documents, edit them, print hard copies without any English.

Another example of such a useful project arose from the need of our College's Research Center (RC). RC receives many Arabic documents, letters, and reports on a daily basis there was no automated way of keeping track of these documents. Two graduating seniors, Omar Al-Sheikh and Abdullatif Al-Sheikh, under the guidance of Mr. Badiuddin Syed designed and implemented a DTS-Documents Tracking system⁸, using Mussaed's Alarabi as an interface for Arabization.

In scientific and business environments, writers often need to produce diagrams, charts, and shapes to be included in their work. Most of the available drawing, charting, and shapes producing graphic programs operate in Latin mode only. This isolates the Arabic author from the features provided by a high-tech graphic program. Thus a group of two graduating seniors: Abdulrahman A. Al-Borai then and Ahmed A. Al-Dayel, under the supervision of Dr. Mohammed El-Affendi

proposed and completed a project entitled: "Developing an Arabic Tool for Composing Diagrams and Graphic Shapes from Primitive Shapes,"⁹. In the project, these students designed and implemented drawing package that allowed the user to produce diagrams composed of simple primitives using simple script Arabic language. The diagrams included trees, flow charts, networks, graphs, etc. The Arabic script language was the main interface between the user and the package, and it freed the user from dependence on English.

However, the solutions that we have mentioned above are localized solution at the university level, and there are some similar projects at the national level. These projects do raise many issues including:

1. Resource limitations of the country trying to overcome linguistic barriers.
2. Export-import limitations in the efforts to overcome linguistic barriers.
3. Lack of portability, and interoperability, across national boundaries obstructing efforts to overcome linguistic barriers.

5. Overcoming Resource Limitations

Many of the third world countries have severe resource limitations. Sometimes, political decisions within a country may lead to severe deterioration of its currency as happened recently in Mexico. Resource limitations is one of the most difficult problems to solve. This requires serious efforts by the governments of these countries. They need to give extremely high priority to research and development by their educators and give liberal grants and awards for such effort, as the National Science Foundation and many other organizations in the U.S.A. do. Large corporations of the west that are most likely to benefit from NAFTA (North American Free Trade Agreement) and GATT (General Agreement on Tariff and Trade), need to examine the possibilities of developing similar programs, which will have big pay-offs for them.

6. Overcoming Export-Import Restrictions

NAFTA (North American Free Trade Agreement) and GATT (General Agreement on Tariff and Trade), were designed to overcome the export controls of the advanced nations, and in particular, those of U.S.A., and the import restrictions in various third world countries that create a significant challenge restricting information technology transfer to the third world countries. Hopefully, NAFTA, NAFTA and GATT will bring big rewards. But until that happens, the governments of these countries need to encourage imports by their citizens at their own cost of information technology tools and techniques duty free, provided these tools and techniques are imported for training, research and development. The

benefits from such relaxation of policy will far outweigh the revenue lost by eliminating import duty on these items.

7. Overcoming lack of portability, and interoperability across national boundaries

There is a need to have "multi-lingual" tools and techniques as well as standards for a better solution, and the third world countries ought to collectively look at them. There has been little effort world-wide to meet these needs. We believe that because of the economic interests, the third world countries will have to take initiatives in this regard. Many good quality software tools are giving a limited choice of script, rarely if ever including a script of a language from a third world country. We hope that this will change. Right now, almost every country that is having software tools developed in its native language, is developing its own standards (or in some cases, different vendors are forcing their own standards) and when a software tool needs to be taken from one environment to another, lack of standards require very expensive redesign and reimplementations of the tool. For a reader not familiar with the software standards, think of the electrical outlets. Throughout the U.S.A., there is a common standard of two-prong outlets for non-grounded, and three-prong outlet for grounded electrical connection. However, in Saudi Arabia, there are about a dozen different type of electrical outlets, and therefore, a family that buys an electrical appliance has to devote some time and money hunting for the right converter to connect the appliance to the outlet available in their house, and in many cases also buy a voltage converter as well, because both 220-V and 100-V appliances are sold and some houses have 100-V outlets, other have 220-V outlets (some have both). Software technology requires uniform standards, so that the software tools can be easily ported from one environment to another just like we can take a shaver on our travel and be confident of being able to plug it in any hotel's electrical outlet.

8. Conclusions

This paper we have presented problems related to information technology (IT) transfer to the third world countries such as self-dependence in (IT), linguistic obstruction, etc. We proposed possible solutions of these problems, and gave examples how these problems are being tackled in under-developing and developing countries such as Saudi-Arabia.

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10. Acknowledgement

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AR^v

GREY LITERATURE IN INFORMATION SCIENCE: PRODUCTION, CIRCULATION AND USE

By Vilma Alberani and Paola DeCastro Pietrangeli

Abstract: The hypothesis of the work was to evaluate the use of grey literature in information sciences on the basis of citation analysis. After a selection of a number of relevant journals in this field, the citations contained in scientific articles were analysed to evaluate the types of GL references (technical reports, proceedings, standards, theses, etc.), the languages used, the main producers (countries and international organizations), and the years of GL references. The results of the analysis are given with comments and reflections on the main producers and circulation channels.

1. Introduction

Grey literature (GL) belongs to the primary sources of information, and it has a very important role in the information transfer process in any field. This study is based on the consideration that one of the parameters which permits to assess the value of a document is given by the users' reference to that document in literature. The main objective of the research is to evaluate the actual use of grey literature in the field of documentation, information science and librarianship, as defined by SIGLE category 05B¹. This goal is realized through the analysis of citations appearing in the journal literature of the field which permits also to identify the originating countries and international organizations producing GL and its circulation channels.

2. Methodology

The method of analysis was already tested by the authors in a previous sample survey carried on in health sciences² and later discussed with colleagues during conferences³⁻⁴ and informal meetings.

In synthesis, the stages of the research can be summarized in the following steps:

1. selection of primary journals to be analysed;

The authors delivered a communication on this research at "First International Conference on Grey Literature", Amsterdam, The Netherlands, 13-15 December 1993.

2. definition of the types of publications (research articles, review articles, editorials, technical notes, etc.) to be considered within the selected journals; (only strictly scientific works were taken into account; interviews, letters to the editor, presentations not containing scientific reflections were excluded);
3. definition of the types of grey literature within the above types of publications: reports, papers presented at conferences, proceedings not commercially distributed, theses, standards, publications by professional organizations (that may be considered as half-conventional documents), etc.;
4. analysis of GL citations according to dates of publication, language, originating countries or international organizations.

Without going deep into the details of the methodology which is widely explained in the above mentioned works, we wish to point out some considerations which guided the selection of the journals.

The first criterion was to consider both journals devoted to all aspects of librarianship and information science and journals regarding only one particular aspect of the field.

The second criterion leading to the above selection was the authors' knowledge of the language in which the periodicals are written and therefore only journals basically written in Italian, English, French and Spanish were included.

The geographical origin of the journals was also considered in the selection. Three journals edited by international organizations were included such journals contain contributions from all countries, thus permitting to have a wider geographical coverage.

All this considered, the following journals (where the editors are also indicated) were selected to carry on the study:

Bollettino d'Informazioni AIB	Associazione Italiana Biblioteche - AIB (Italy)
Bulletin of the Medical Library Association	Medical Library Association - MLA (USA)
Documentaliste	Association Française des Documentalistes et des Bibliothécaires Spécialisés - ADBS (France)
IFLA Journal	International Federation of Library Associations and Institutions - IFLA (Netherlands)
L'Indicizzazione	Centro di informazione e Documentazione Automatizzata in Trieste - CIDAT (Italy)
Information Technologies and Libraries	Library and Information Technology Association - A Division of ALA (USA)
Inspel	IFLA Division of Special Libraries (Germany)
Interlending and Document Supply (UK)	British Library Document Supply Centre - BLDSC

International Classification

International Society for Knowledge Organization -
ISKO (Germany)

Program

The Association for Information Management -
ASLIB (UK)

Once operate the selection of journals, and once defined the years in which to perform the study (1990-1991), each single issue was separately analysed to see how many articles it contained, and how many articles had references. This proved that, considering all journals together (containing 537 articles as a whole), the percentage of all articles with references was 76.9% (413), while those without references were 23.0% (124).

Within the articles containing references (413), those with GL references accounted for 77.0% (318), while those containing only references to open literature were 23.0% (95).

Table 1 shows the more detailed data resulting from the general analysis of the above selected periodicals. The following step was the study of the references of the above articles to see how many of them were related to GL documents. Citation counting always presents methodological problems. Many articles cite the same sources more than once, and it was decided to count all the citations. The result was that 77.9% (4,852) of the entire amount of references considered (6,229) were related to documents of open literature, 22.1% (1,377) were of GL (Fig.1).

3. Results and discussion

The analysis was then performed on the GL citations to divide them according to the type, and this proved as expected, that reports prevail over the other types of GL (56.6%), followed by proceedings (32.3%, including also personal communications), standards (3.5%), theses (1.7%) (Fig. 2). The item "other" types (5.9%) includes some translations, official documents, articles in house journals, and all the other documents which are comprised under the term grey literature according to the definition given in the *SIGLE Manual*⁵.

The results of the study are synthetically given in Fig. 2, while Table 2 shows the more detailed data from each journal.

As data show, reports and proceedings always prevail over the other types of GL and their number greatly exceeds the other types in the journals dealing with more technical aspects of the field and/or with particular branches of librarianship (*Bull Med Libr Assoc*). They are followed by standards and theses which account for a very limited percentage over the total.

Some reflections should be made on the category of standards which are included in GL, but are not indeed so "grey" in so much as they are distributed by the standard organizations once they are published.

We wish also to point out that theses proved to be more cited by authors from countries having well organized bibliographic control for this material.

Fig 3 and 4 show data on languages and originating countries as taken from the references. English (76.0%) prevails over the other languages, as expected, although a detailed study on the authors' native language should be carried on to get to a more realistic view. Also the originating country, as reported in Fig. 4, refers to the citation and not to the author. A new research should be carried on to compare data referring to the author and to the citations. By the moment we can state that, according to the criteria followed in this research, as English prevails as a language so the USA and the United Kingdom prevails as originating countries, but the percentage of GL produced by the USA and the United Kingdom together (64.8%) does not match the total of GL written in English (76.0%). This means, as data confirm, that most documents are written in English although they are not produced by the USA, the United Kingdom or other English speaking countries. We refer mainly to international organizations, some African and some Latin American countries.

Fig. 5 shows GL produced by international organizations, including both inter-governmental and non governmental organizations (accounting for 18.5% of the total GL references). Amongh GL from international organizations, IFLA ranks first (40.0%) as expected in consideration of the subject of the selected journals. In particular, IFLA literature is presented by papers given at annual conferences that are not generally published except for some abstracts appearing in the IFLA Annual, or some articles in IFLA Journal. FID, as expected, accounts only for 2.7% of the GL produced by international organizations as a consequence of the selection of journals. Only *Documentaliste* and *International Classification*, in fact, contain citations from FID.

Fig. 6 shows the analysis of the years of the citation. The highest percentage of citations refer to the five years prior to the dates of the journals containing them. The period "1986-1990" accounts for 61.9%; the period "1981-1985" for 16.3%. Under the term "Other" all citations prior to 1970 were included. Therefore it is possible to state that GL is still cited with some relevance for ten years prior to the journals publication date.

4. Conclusions

Some final considerations point out the most relevant difficulties encountered in the study.

First of all it is important to stress that data were taken manually, directly from the selected journals and it was surprising to see a general widespread inaccuracy in the list of references. Many of them were incomplete and not correctly quoted. The layout generally caused a great difficulty in reading; sometimes a reference to the same work was even quoted with different standards within the same article! A certain degree of inaccuracy in the list of bibliographic references is generally present in all sectors, but what surprises most is that in the field of librarianship and information science this seems to be even greater than in other sectors, despite the presence of detailed "instructions to authors" to write correct bibliographic references.

In general, the results obtained in this study confirm the use of GL, mainly technical reports and the prevalence of English over the other languages. The analysis, however, should be continued and new parameters of evaluation should be added to have a more detailed and realistic view of the citation patterns, particularly as regards the languages used in GL citations and the originating countries. It should be also interesting to assess the obsolescence of GL from both synchronous and diachronous points of view, as well as the contribution of professional library organizations in the citations patterns.

These and other aspects of GL will be the subject of a future study that we hope to carry on in the next future.

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Table 1. - General data of the journals considered 1990-1991.

Titles	No. of articles	Articles with references	Articles with GL references	No. of references	GL references
<i>Boll Inf AIB</i>	25	20	17	677	115
<i>Bull Med Libr Assoc</i>	105	100	69	1518	240
<i>Documentaliste</i>	68	45	38	547	128
<i>IPLA J</i>	75	49	42	655	268
<i>Indicizzazioni</i>	23	18	16	236	54
<i>Inf Technol Libr</i>	62	43	31	552	102
<i>Inspel</i>	49	25	22	252	93
<i>Interlend and Doc Supply</i>	40	34	30	866	195
<i>Int Classif</i>	37	34	26	532	113
<i>Program</i>	55	45	27	394	69
Total	537	413	318	6,229	1,377

Table 2. - Types of GL in the references of articles of selected periodicals (1990-1991)

Titles	GL references	Reports %	Proceedings %	Standards %	Theses %	Others %
<i>Bull Inf AIB</i>	115	57 49.6	33 28.7	6 5.2	-	19 16.5
<i>Bull Med Lib Assoc</i>	240	148 61.7	71 29.6	-	1 0.4	20 8.3
<i>Documentaliste</i>	128	73 57.0	46 35.9	4 3.1	4 3.1	1 0.8
<i>JPLA J</i>	208	125 60.6	107 51.4	13 6.3	8 3.8	15 7.2
<i>Indicizzione</i>	54	17 31.4	17 31.5	4 7.4	-	16 29.6
<i>Inf Technol Lib</i>	102	64 62.7	26 25.5	7 6.9	1 1.0	4 3.9
<i>Inspeil</i>	93	66 71.0	20 21.5	1 1.1	2 2.2	4 4.3
<i>Instituti and Doc Supply</i>	195	124 63.6	66 33.9	2 1.0	1 0.5	2 1.0
<i>Int Classif</i>	113	61 54.0	39 34.5	9 8.0	4 3.5	-
<i>Program</i>	69	44 63.8	20 28.9	2 2.9	3 4.4	-
Total	1377	779 56.6	445 32.3	48 3.5	24 1.7	81 5.9

Fig. 1. - Grey literature references (1,377) and references to open literature (4,852) over the total number of references (6,229)

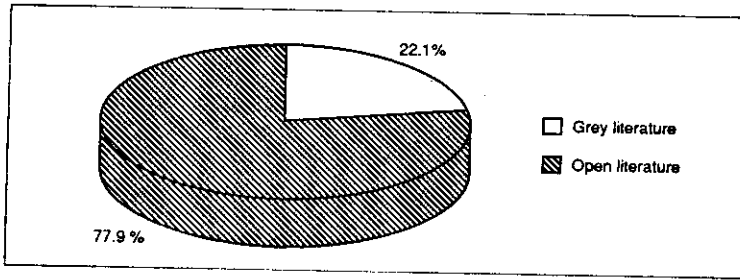


Fig. 2. - Total numbers (in brackets) and percentages of GL references according to the types of documents

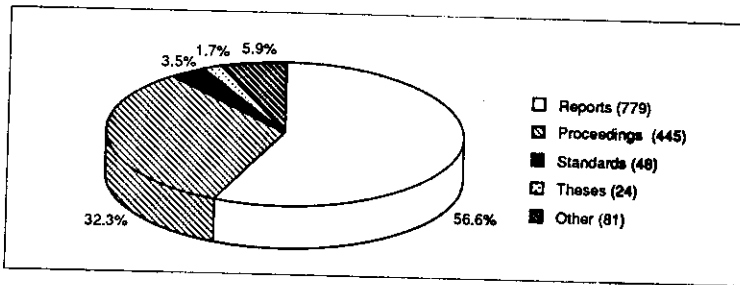


Fig. 3. - Total numbers (in brackets) and percentages of languages used in GL references

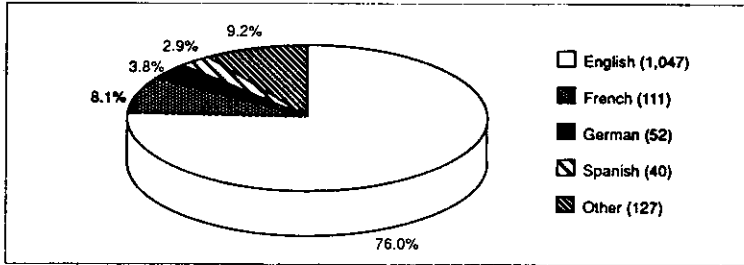


Fig. 4. - Total numbers (in brackets) and percentages of originating countries/ international organizations in GL references

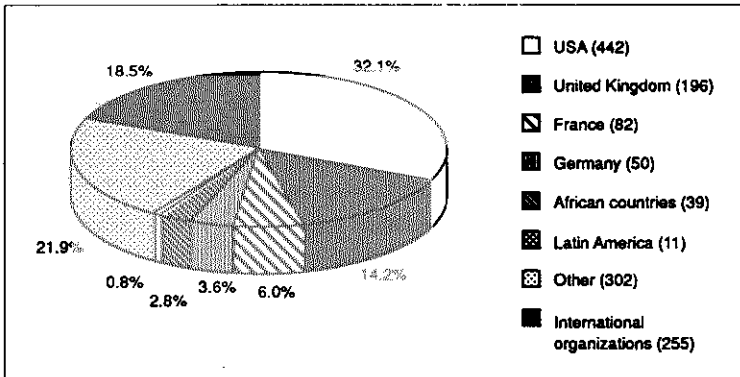


Fig. 5. - Total numbers (in brackets) and percentages of international organizations in GL references

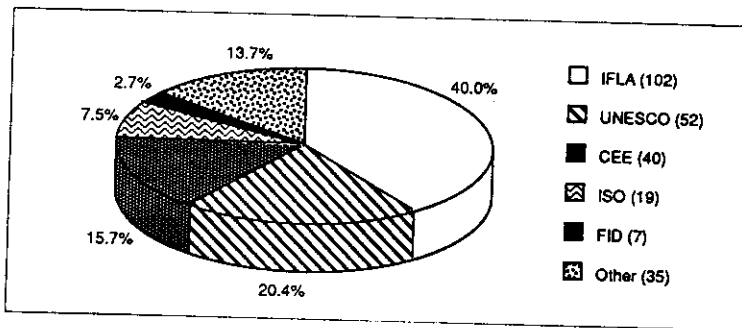
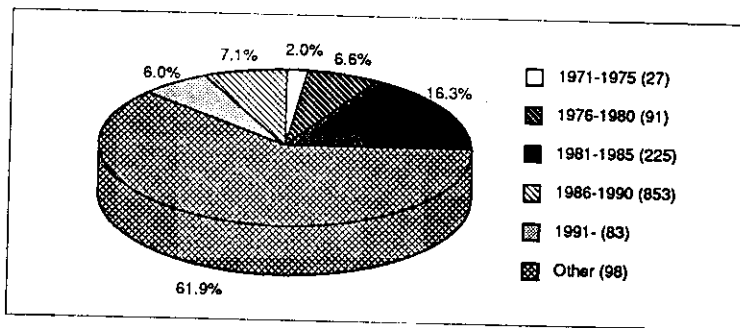


Fig. 6. - Total numbers (in brackets) and percentages of years in GL references



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THE INTERNET AND PERUSE: MC GILL'S HEALTH SCIENCES INFORMATION TECHNOLOGY FOR THE 21ST CENTURY

By Marcos Silva

Abstract: This paper discusses the impact of Internet services and resources on health science research and teaching. It also reviews McGill University Libraries' PERUSE Project and the advent of virtual libraries. Finally, it discusses the evolving role of health science librarians and information specialists.

Introduction

Rapid access to and dissemination of information are essential components of academic research and graduate studies. This particularly true in the health sciences sector where researchers must have access to the most recently published information. Given the above, it is not surprising that an entire publication industry based on electronic information is evolving, creating new opportunities in the organization and manipulation of information and knowledge.

Indeed, health sciences research and teaching community are arguably the most consistent users of new computer and telecommunication technology concerning the delivery and access of information resources. Health sciences researchers and students have had little choice in this matter; the information explosion in the health sciences has made medical decision making an extremely complex undertaking (Broering, 1993). It is essential that they have access to an electronic infrastructure where current information and knowledge are available.

Electronic publishing and indexing have led to the development of virtual libraries, whereby temporal and spatial constraints on information are eliminated. Virtual libraries have been defined as an environment with "an universal application of advanced high-speed computing and telecommunication capabilities to the access and delivery of information resources" (Rooks, 1993, p. 22). In other words, the virtual library of the future will act as a portal to archives of distributed

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information, regardless of format or computer platform. Cornell University's Chemistry Online Retrieval Experiment (CORE), where researchers are able to access the full text and graphics of articles from their office computers (Krumenaker, 1993, p. 1006), is indicative of the potential of virtual libraries.

The Internet

The convergence of telecommunication technology and computers has changed the means by which medical researchers access, manipulate and interpret data. Other developments include the ability to use high speed communications, to transmit text, binary files and graphics, and to access expertise regardless of where it may be located. These developments are possible because of investment in national networks such as the Canadian CA*Net and the American NSFnet which, along with other networks, are creating virtual communities of distributed information, expertise, and knowledge.

The Internet may be defined as a worldwide interconnected network of computer networks supporting a common suite of telecommunication protocols. Protocols are a set of rules that allow different computers operating under different systems to communicate with one another. Transmission Control Protocol/Internet Protocol (TCP/IP) has become the Internet de facto network standard (Lynch & Rose, 1993, p. 12).

In Québec, the link to the Internet is made via le Réseau interordinateurs scientifique québécois (RISQ). Essentially, RISQ is the regional network that connects Quebec universities and research institutions. In turn, RISQ is connected to the Canadian research network, CA*net, an initiative of the National Research Council. It interconnects all of Canada's regional networks (i.e., RISQ, BCnet, Sas#net, etc.) and acts as the national communications backbone. Connections to the American National Science Foundation Net (NSFnet) are made from Montréal to Princeton, New Jersey, Toronto to Ithaca, New York, and Vancouver to Seattle, Washington. This model, multiplied many times throughout the world, comprises the modern day Internet.

Internet protocols

Perhaps the two most widely used Internet protocols are telnet (teletype network) and FTP (File Transfer Protocol). With telnet, a researcher is able to manipulate interactively a remote computer and to access catalogues to collections housed at the U.S. National Institutes of Health, University of California or Johns Hopkins University. Furthermore, with telnet, researchers also have access to a wealth of specialized databases such as: Johns Hopkins Genetic Databases, INFAN:

International Food and Nutrition and National Family Databases, and GENBANK: The National Center for Biotechnology Information. McGill is part of this growing information structure, its online library catalog, MUSE, is accessible to anyone with a connection to the Internet.

Moreover, new telecommunication protocols such as Z39.50, a U.S. ANSI standard protocol for information retrieval, makes telnet a particularly useful research tool. Essentially, under Z39.50, a user with a computer operating in a client mode can access and perform information retrieval searches on another computer operating as an information server (Lynch, 1992). That is, it allows a user to search a remote database using the local interface and so eliminates the need to learn the remote computer's system. Thus, the Z39.50 protocol offers a uniform common means of access to different information resources linked to a computer network or Internet (Kunze, 1992).

Also, the advent of client/server systems allows for greater resource sharing among our research centres. In essence, the client is the user interface, the server indexes, locates and retrieves the data, and the protocol transmits queries and responses. Once these protocols are implemented by our research centres, any client will be able to access any server regardless of the system utilized. Even CD-ROM databases could be accessed under this system. Again, the possibilities for resource sharing are exceptional; a national catalogue that indexes Quebec or Canadian medical resources is a very real possibility.

Another valuable Internet protocol is FTP (File Transfer Protocol). With FTP, a user is able to send or retrieve ASCII (text) or binary files from a remote computer to a host computer. This has become an important development because of the advent of electronic publishing. Health science students or researchers are able to retrieve the full text of journals or reports. Lastly, FTP promotes greater resource sharing. Research centers are increasingly establishing electronic archive sites in an effort to share and disseminate knowledge and resources. For example, Center for Biomedical Informatic in Brazil, makes available software and reports relevant to health sciences research.

Medical researchers must disseminate data in the most optimum fashion possible and communicate with colleagues and other researchers. Electronic mail, perhaps the most widely used Internet service, gives researchers the ability to communicate with colleagues anywhere in the world. Given the phenomenal growth of the Internet - the user base is now estimated at approximately 35 million users and growing at 15% a month - use of electronic mail has become almost indispensable.

In order to keep abreast of developments in the field, medical researchers are able to join electronic discussion groups, or LISTSERVs, such as BIOMED-L, which deals with biomedical ethics or CLINALR, which offers clinical alerts from the National Institutes of Health. Through subscription to an electronic discussion group, researchers and students are able to post or share information and knowledge. Because of the speed of information dissemination, electronic discussion groups rapidly are becoming an official channel through which researchers announce new findings, share information, and discuss developments in the field. Also, subscription to electronic discussion groups is perhaps the most efficient method to discover new services and developments on the Internet. The growth of the network makes it almost impossible to create up-to-date catalogues and indexes to its resources and services.

Finally, resource discovery tools such as Gopher, Wide Area Information Servers (WAIS), Archie, and VERONICA, make the task of locating, indexing and retrieving information far easier for the user. For instance, WAIS is a system originally developed by Thinking Machines Corporation to aid users in retrieving information over the Internet. What makes WAIS so attractive is that users are able to access any type of data: Digitized pictures, text, voice, etc., and to use the WAIS interface implemented on their host machines independently of the software mounted on the remote host (Kahle, 1991). Naturally, this is because WAIS adheres to the client/server, Z39.50 approach.

Another application that has gained popularity is the World Wide Web (WWW). The WWW can be described as a client/server information system that operates under the HyperText Transport Protocol (HTTP). Information on the WWW server is stored using HyperText Markup Language (HTML). Users, therefore, are able to navigate in a hypertext-like fashion a wealth of interconnected documents that contain text, graphics, and sound. What makes WWW particularly interesting is that it is able to support other Internet protocols such as FTP, telnet, and WAIS. An interesting application of WWW technology is being made by the National Center for Biotechnology Information (NCBI), which is responsible for building, maintaining, and distributing GenBank, the NIH genetic sequence database that collects all known DNA sequences from scientists worldwide. Many of its electronic resources are being made available via a WWW server.

However, it has been the Internet Gopher that has revolutionized the means to access and to use Internet resources and services. The Internet Gopher, created at the University of Minnesota and named after its mascot, currently is one of the most popular and widely used public domain resource discovery tools. Gopher is a distributed information search and retrieval system that greatly simplifies naviga-

tion of the Internet. It is easy to learn and use. It is based on menus that eliminate the need to learn computer commands and allow novices to access information with little instruction.

Similar to WWW, Gopher provides intuitive access to both files (ASCII or binary) and Internet services. It functions as a search and retrieval tool, as well as an access tool for internet TELNET sites. Help screens and information files to assist new users are easily accessible. With Gophers, however, one cannot navigate the net in a hypertext like fashion.

A Gopher is a protocol composed of public domain software. Similar to WWW, it is based on client/server protocols. The client offers almost seamless navigation through "Gopherspace" using a hierarchical file system to find information. In addition, an indexing tool called VERONICA (Very Easy Rodent-Oriented Net-Wide Index to Computerized Archives) for Gopher menus is available. VERONICA was developed to provide keyword access to information on Gopher servers, VERONICA is tightly integrated with the standard Gopher protocol, and retrieves resource information in the form of a Gopher compliant menu. From the menu, the user can select and easily retrieve the needed data.

The future

During the 1980's, the U.S. Federal government initiated a number of programs related to national and international networking. Congress, under the sponsorship of former Senator and current Vice President, Al Gore, proposed the development of a high-capacity, high-speed telecommunications network named the National Research and Education Network. The stated purpose of the NREN is to help the U.S. recover some of its lost international competitiveness by linking universities, research centres, education and industry and so fostering greater cooperation and communication. The High-Performance Computing and National Research and Education Network Act of 1991, responsible for the creation of the NREN, was made law in December 1991.

In Canada, a similar project is called the Canadian Network for the Advancement of Research, Industry, and Education (CANARIE). The catalyst for CANARIE can be found in Industry, Science and Technology Canada's sponsoring of the Network Organization Conference in April 1991. At the Conference, an executive committee and four working groups (Business, Governance, Marketing, and Network Architecture) were given the mandate to establish plans for the creation of a high-speed network. The composition of CANARIE's working groups is reflective of its mandate to foster greater cooperation between research and indus-

try. Among its members are found representatives from major Canadian universities, industry, and government.

Similar to NREN, CANARIE hopes to: (a) To upgrade the capabilities of our existing R&D and educational national backbone network to progressively higher bandwidths, with the objective of expanding the network to gigabit capabilities; (b) To promote the use of the network and CANARIE services in conjunction with the regional networks; (c) To establish and operate a high-speed experimental test network; (d) To simulate the development of commercially viable, new networking technologies, products, applications, software and services; and (e) To support the migration to operational networks of new networking technologies, products, applications, software and services as developed, tested and used on the high-speed experimental test network, and on the R&D and educational network (CANARIE Associates, 1992).

McGill University Libraries Response

The advent of Internet is changing radically the means to undertake research. In an excellent report, written for university presidents, the President and Vice President for Academic Planning of Brown University, in conjunction with its University Librarian, argued that the information revolution will parallel the Industrial Revolution in its impact and consequences (Gregorian, Hawkins, & Taylor, 1992). Some possible benefits include: Greater interdisciplinary research, increased local or remote research collaboration, easier dissemination of and access to information, and increased participation by sectors normally excluded from the academic community. Some dangers include: Increased fragmentation of information, exclusion of disadvantaged sectors from information and expertise, and the elimination of free and unrestricted access to information. This is the environment faced by McGill University faculty and librarians.

McGill University serves approximately twenty thousand full time students. One in four is registered in the Faculty of Graduate Studies and Research, which is comprised of twenty faculties and ten schools. Continuing Education serves many thousands more. McGill's library system contains seventeen libraries divided into four areas: Humanities and Social Sciences, Law, Physical Sciences and Engineering, and Life Sciences. At present, there are approximately 78 professional librarians and 200 support staff.

The Life Sciences Area Libraries must offer research support to McGill University Faculty of Medicine and five affiliated teaching hospitals in the Montreal metropolitan area. It is comprised of subject libraries in Biology, agriculture, history of

medicine, and health sciences. Its staff includes approximately 12 professional librarians and 31 library assistants.

McGill University's response to the above trends is outlined in a report written by the Senate Committee on Computing. Of interest is the Committee's recognition that for McGill to meet its educational and research objectives, "it must be at the forefront of the evolution of knowledge and society" (McGill University, Senate Committee on Computing, 1992, p. 2). Moreover, the Committee recognized the pivotal role that libraries must play in the management of information and knowledge: "It is in the area of information management, and in particular in libraries, that the most significant changes are likely to occur in the next ten years" (1993, p.3). The libraries, therefore, were given an explicit mandate to reexamine and restructure the information and knowledge support given to our faculty, research, and student communities.

Even before the presentation of McGill's vision statement, the Libraries took a leadership role in the introduction of Internet services and resources. Internet seminars, for example, have been available to the entire University community since 1990. The Libraries invested scarce resources in efforts to increase user awareness of the Internet, promote user independence, and encourage greater use of Internet resources by all sectors of the University.

It was recognized that the Libraries needed to offer researchers and students local resources in addition to those found on the Internet. That is, the Libraries had to give its community access to databases and other information not freely available on the net. An additional problem was that the development or introduction of any new electronic resource has to be integrated with the existing information infrastructure. The growing reliance on Internet protocols by researchers means that new information products have to comply with Internet standards and protocols.

Under the direction of Fran Groen, former Head of the Life Sciences Areas Library, and current Associate Director, Public Services and Collection, a committee composed of faculty, Computing Centre staff, and librarians, was established to examine and to report on new technologies and their impact on traditional library services. Special emphasis was put on faculty and Computing Centre collaboration and support. During its first meeting, discussion centred on ways to improve research and the use our collection. It was decided to examine the possibility of acquiring an online bibliographic system which would index journals, conference proceedings, and reports from many disciplines.

A timeline of one year was set for the evaluation, acquisition, and implementation of the system. Note should be taken of the support received by the Committee

from McGill's health sciences area. This is not surprising, given that the Health Sciences Area pioneered the use of many new information technologies on campus. For instance, it was the first Library Area to implement fully CD-ROM searching in the early 1980s. As a result, the Committee understood that the chosen system had to meet the rigorous information needs of the health science research community. It had to be fully compliant with Internet protocols and standards. Furthermore, system had to offer as much searching capabilities, if not more, as present CD-ROM systems.

The Committee decided to evaluate several systems, of which two were invited to give public demonstrations of their product to McGill's community. The system had to conform to certain criteria including: Client/Server philosophy, adherence to Z39.50 protocol, support for multiple platforms, and speed of retrieval. An intuitive interface and online help and tutorials were deemed essential.

CD-Plus

CD-Plus was judged as the product that best met the research needs of the McGill community. Operating under its award winning search software, OVID, CD-PLUS is able to offer an intuitive and yet highly flexible interface that allows for sophisticated information searching and manipulation. OVID runs on a UNIX platform (CD-ROM DOS and Windows versions are also available). A Sun Sparc 10 Model 51 is used as the server. The initial contract allows for 40 simultaneous users. The data is received on CD-ROM disks and copied onto hard-drives.

An additional factor that led to the acquisition of CD-PLUS was that the databases required by the McGill community are available with the OVID system; namely MEDLINE, PsycINFO, ERIC, Compedex Plus, and the Wilson databases. The flexibility, manipulability, and intuitiveness of the OVID interface had to be exceptional; all of the above index databases were available at McGill on CD-ROM formats. In no possible way could OVID offer less flexibility than the existing CD-ROM databases. The McGill CD-PLUS/OVID system was named PERUSE.

OVID offers two search modes: Expert Full Mode or a menu-driven Easy Mode. While the Easy Mode is indeed uncomplicated and intuitive, it nevertheless offers the full searching capabilities available under Full Mode. This factor is appreciated by our reference staff because it eliminates the need for intensive training: Users are able to teach themselves the basic search commands. Consequently, learning how to search in Full Mode becomes far easier.

Furthermore, users find OVID's ability to map subject searches against a controlled vocabulary particularly valuable. For instance, in MEDLINE, a subject search for cancer will be mapped against the appropriate term Neoplasms and its subcategories. Should the terminology be too recent to have subject headings, OVID offers an alternative textword search which indexes the title or abstract of the citation. In this manner, in situations where few or no citations are found, users have an alternative search method that may provide the needed information.

Finally, OVID offers users the ability to limit searches as needed. The usual boolean operators (and, not, and or) are available in addition to a host of other possible limits such as: Human, language, publication year, publication type, animal types, etc. Although these additional limits are database specific, they are able to meet the strict searching standards required by the McGill community. What makes OVID's database limits invaluable is their ease of use; the user is presented with an extremely powerful search engine that is exceptional simple to learn and to use.

Novices, therefore, have the ability to make full use of a complex database like MEDLINE with only a minimum of instruction and guidance. That is why reviewers say that OVID has "... the most innovative searching feature, mapping, I've seen in a long time" (Clark, 1993, p. 232). Indeed, Jacsó, in a review entirely dedicated to OVID, supports Clark by stating that he wishes "... other medical abstracting databases would also be available with OVID, especially a cardiology subset of OVID, and even more important, full-text searchable image database versions of the medical journals with the highest impact factor ... please, just like in the magnificent OVID version of *The New England Journal of Medicine* ..." (1994, p. 38).

Implications for health sciences research

National policy makers cognizant of the impact that national networks comprising the Internet have on education, research, and industry, are investing resources for the upgrading of telecommunication lines and services. In the United States and Canada, plans are underway to extend network services to the general population, including the K-12 sector, public libraries, and the home (CANARIE Associates, 1992; United States; Office of Science and Technology Policy, Director, 1992). Of particular interest is that national policy makers believe the health science community is one sector that will most profit from the forthcoming gigabyte networks.

Internet access significantly increases the opportunities for interdisciplinary research, collaborative work, and resource sharing. These developments have accelerated the creation of virtual libraries and research centers. Universities have

been at the forefront of these trends. They were full partners in the development of Internet protocols, and they pioneered the use of the Internet in support of teaching and research. In fact, many of the new Internet resource discovery tools were created in universities. Archie, for instance, was created at McGill University (Deutsch, 1992) and Gopher at the University of Minnesota (Wiggins, 1993).

For these reasons to exploit optimally any new information management system, it is essential that it has the potential to be integrated fully with existing network services and resources. That is, any new information system must be able to offer remote access, resource sharing, and support collaborative research and work. These are possible the elements in an electronic virtual environment most needed by health sciences researchers and practitioners.

The McGill health sciences community has benefited from the use of the Internet and the implementation of CD-PLUS for several reasons. First and foremost is the ability of researchers to access remotely a wealth of distributed resources, either from their offices or homes. Any campus computer workstation connected to the McGill optical fiber telecommunication backbone has access to the Internet and PERUSE. Furthermore, any networked DOS computer with TCP/IP software, such as LAN WorkPlace for DOS, can also access PERUSE or Internet sites. Finally, access via modem or SL1 card is possible by connecting to a terminal server on campus.

Second, researchers, medical practitioners associated with McGill's teaching hospitals, and students appreciate that McGill Libraries can increase significantly the number of simultaneous users on PERUSE. Depending on the availability of funding, the system can be expanded to meet any new demands placed on it. Health sciences librarians, therefore, are able to offer greater support for interdisciplinary and collaborative work. For instance, one of the more interesting consequences of PERUSE has been greater use of McGill resources since the collection is more adequately indexed. Also, students are increasing the use of information resources that have been traditionally excluded from their domain of research; social sciences students are now searching MEDLINE to augment their research base.

Finally, because PERUSE is based on a client/server software, it is possible to link it with other resources and databases. Moreover, CD-PLUS is investing in Z39.50. Arguably, users would appreciate greatly a single interface to access a multiplicity of electronic resources. This would facilitate and promote the creation of and access to remote databases and virtual libraries.

The importance of the above to health sciences libraries should not be underestimated, especially since almost all major library automation vendors have announced that they will be implementing Z39.50 in either client or server mode or both. Furthermore, in September 1993, the National Library of Canada announced the availability of a suite of public domain software for the ANSI Z39.50 information retrieval standard (Turner, 1993). The initiative was to offer the Canadian and international information body a starting point for the implementation of Z39.50 (Turner, 1993). Therefore, McGill is able to join and contribute to the creation of virtual universities, libraries, and laboratories.

Conclusion

Access to and use of the Internet is indispensable to researchers in the health sciences. Indeed, it could be argued that access to the Internet is now a requisite for any university level research and work. Access to remote online catalogues and databases and the ability to retrieve or send information in the form of computer files, has revolutionized the dissemination and sharing of information.

Local systems, compliant with Internet protocols and services such as PERUSE, offer the McGill research community support in research and education. Moreover, PERUSE presages future development to distribute worldwide information systems. Its intuitive and exceptionally flexible interface allows for complex searches to be initiated by users with no previous exposure to the system. PERUSE more efficiently indexes the research collection and so offers the library greater research and education relevancy. Furthermore, it offers the entire McGill community unrestricted access from almost anywhere on campus, home, or abroad.

PERUSE also meets the new demands that arise from use of the Internet. If need be, PERUSE can be fully integrated with the Canadian and worldwide Internet. Moreover, CD-PLUS supports new standards and protocols that have created the foundation for a global distributed collaborative virtual university and library. It has created the potential for greater cooperative projects with developing areas, particularly in the health sciences sector.

Telecommunication and computer technology has changed radically the provision of information resources. Librarians increasingly are becoming knowledge managers as opposed to information providers. In the health sciences, these trends have been accentuated as a result of rigorous information and knowledge needs; the information must be accessed, disseminated, and classified in the most timely manner possible. The Internet and PERUSE have given McGill University

Libraries the means to gain greater academic research participation and relevancy, and perhaps lead in the creation of worldwide virtual universities and libraries.

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L'INFORMATION BIOMEDICALE AU FUTURE

By Jean-Philippe Accart

Abstract: This paper is the report of the activities of the Section of the Biological and Medical Sciences held during the last congress of IFLA in Barcelona, August 1993. It is a summary of papers and of the one-day workshop around the main theme. "Access to specialized information". Communications were given of the new technologies of delivering information, the growing of networks and the future of biomedical documentation within experiments: INIST-CNRS in France, FINMET in Finland, ION project in Europe, and the place of scientific editors in this new world of information.

L'information en chiffres et l'exposition des nouvelles technologies

Pour citer quelques chiffres probants en termes d'édition papier, prenons différentes sources: l'*Ulrich's Periodicals Directory*, dans sa 31ème édition (1992/93), dénombre 126000 titres de périodiques existants. The Serials Directory (EBSCO) cite 20 millions d'articles publiés annuellement, soit 80000 par jour!. D'autre part, *The Gale Directory of Databases*, dans son édition de 1993, donne les chiffres suivants:

- 5183 banques de données existantes (en 1972, 30 banques)
- et 2204 producteurs de données (30 en 1972)
- d'autre part, 1200 titres de CDROM (Compact Disc Read Only Memory) existent à l'heure actuelle.

En pourcentage, cela donne:

- en 1972, 83% de banques de données (BDD) scientifiques et techniques et 15% juridiques et économiques
- en 1990, 35% BDD scientifiques et techniques, 45% BDD juridiques et économiques, 15% social et actualités

Le marché européen est largement dominé par les services américains (à la fois, en chiffres d'affaires et en produits proposés):

- USA: 58% des BDD existantes
- Europe, 34,6%
- France: 12% de la production européenne

Il apparaît donc clairement que l'on assiste à une explosion de l'information, que ce soit sous la forme de documents primaires ou que ceux-ci soient traités et indexés, d'où la multiplication des banques de données. Comment accéder à cette information?: réseaux de télécommunication, satellites, nouvelles technologies type CD-ROM ou disque optique numérique (DON), disque inscriptible (WORM), digitalisation, numérisation, forme électronique, périodique consultable en plein texte, fibres optiques, compression de données, toutes ces nouvelles données technologiques bouleversent totalement l'accès et la fourniture de l'information, et plus particulièrement l'information biomédicale.

D'autres parallèles sont à prendre en considération:

- la montée en puissance des ordinateurs personnels dont les prix baissent et la capacité en mémoire augmente.
- de plus, les compagnies traditionnelles de téléphone travaillent de plus en plus ensemble en vue de créer des réseaux internationaux: rapprochement récents de ATT et Macaw Cellular aux Etats-Unis, British Telecom et MCI en Grande-Bretagne.
- Les logiciels permettant d'avoir un standard international pour les publications de développement. Un des plus récents est ADOBE ACROBAT.

Le rôle des bibliothèques médicales

L'équipement des bibliothèques médicales en nouvelles technologies est très inégal selon les pays et les continents. En France, les CDROM (Medline, PASCAL, Embase) s'implantent progressivement, surtout dans les bibliothèques universitaires et les bibliothèques hospitalières. Ce phénomène va aller en s'amplifiant. Aux Etats-Unis, 60% des bibliothèques médicales sont équipées en CDROM. Une autre technologie de pointe utilisée dans les bibliothèques médicales américaines est la scannérisation et la transmission des images de documents ainsi scannerisés. L'image est envoyée par ligne téléphonique: le receveur doit être équipé d'un logiciel spécifique, d'une imprimante laser et d'un ordinateur. Les bibliothèques utilisent le logiciel *ARIEL*, développé par *The Research Libraries Group*, qui compresse ou décompresse les images scannerisées afin de rendre la transmission plus rapide.

Les bibliothèques médicales restent cependant les principales utilisatrices des centres de fourniture de documents.

Les grands centres de fourniture de documents

Pour l'utilisateur final, en l'occurrence en ce qui concerne l'information biomédicale, le médecin, le chercheur ou l'étudiant, l'accès à cette information est primordiale; il lui faut trouver des réponses précises et immédiates sur des points précis tels que:

- répondre à un problème posé par un malade
- soigner une pathologie particulière
- connaître les interactions médicamenteuses
- être au courant de la littérature existant sur un sujet particulier
- rédiger une thèse, un mémoire, un article ...

De plus en plus, le bibliothécaire médical est sollicité en vue de fournir une information valable et vérifiable, ainsi qu'une délivrance rapide de l'article demandé. La proportion du budget dévolu aux périodiques dans une bibliothèque universitaire est d'environ 70%, amis avec la montée croissante du prix des abonnements, ce budget décroît de 3 et 4% par an. Le recours aux grands centres de fournitures de documents est de plus en plus fréquents.

De grands centres de fourniture de documents ont été créés. En Europe:

- l'INIST-CNRS (Nancy)
- The British Library Document Supply Centre (BLDSC) soit 3,4 millions d'articles fournis en 1991. Ce centre existe depuis une trentaine d'années.
- l'OCLC aux Etats-Unis
- et TIBDOC (Hanovre) parmi les principaux.

Des institutions, telles l'INIST à Nancy ou la Finnish Medical Association ont déjà misé sur le futur. D'autres projets, plus globaux, (le projet EDIL de la Communauté Economique Européenne) visent à ce que les grands centres de fourniture de documents collaborent.

L'exemple de l'INIST à Nancy

Les collections de l'INIST couvrent la littérature scientifique et techniques, les rapports, les actes de congrès, soit un répertoire de 27000 titres de périodiques. Parmi ces titres, 2000 ont été choisis afin de mettre sur pied le projet de fourniture électronique de documents. Les documents sélectionnés sont systématiquement scannés en mode digital. Cette digitalisation, commencée en 1990, représente un volume de 2 millions de pages par an: les images sont stockées sur un disque WORM (6,4 gigabyte), dont la capacité d'une face est de 70000 pages. Un chargeur contenant 131 disques est relié à trois micro-ordinateurs: ceux-ci sont

équipés de tableaux de télécommunication; la transmission sur les réseaux de télécommunication est ainsi possible pour la délivrance des documents (pour la France, via NUMERIS).

L'INIST reçoit des demandes de documents par l'intermédiaire des grands serveurs (Questel, Dialog, Esa, ...) ou par le prêt interbibliothèque électronique (PEB ou OCLC) ou le Minitel. Les autres formes classiques de demandes de documents (fax, téléphone, formes papiers) sont également possibles. Si le document demandé est disponible sous format digital, il sera fourni par fax (Groupe III ou IV). Ce système n'entraîne pratiquement pas d'intervention humaine. A l'heure actuelle, 45% des documents fournis par l'INIST sont stockés sous forme électronique.

L'exemple finlandais: FINMET, réseau médical finnois

L'Association Médicale Finnoise (FMA) a créé depuis le milieu des années 1980 un réseau d'information appelé *FINMET* (sur le modèle américain *AMANET*) afin de répondre aux besoins de quelques 600 physiciens. Ce réseau utilise la messagerie électronique, ce qui permet rapidité et confidentialité, et donne la possibilité de communiquer individuellement ou avec un groupe de personnes, ainsi que des accès télématiques à différents services (bancaires, transports, d'actualité): ceci afin faciliter les contracts entre physiciens. *FINMET* met ainsi à la portée de tout physicien et des bibliothèques universitaires hospitalières, les services de la FMA et des grandes banques de données biomédicales telle *Medline*.

Le projet EDIL de la Communauté Européenne

Le projet EDIL (Electronic Document Interchange between Libraries) a débuté en janvier 1993. Il doit rendre effectif l'échange de documents électroniques entre 4 réseau européens de bibliothèques:

- le système PICA aux Pays-Bas
- le British Library Document Supply Center en Grande-Bretagne
- le Ministère de l'Enseignement Supérieur et de la Recherche en France
- l'Universitätsbibliothek et le Technische Informationsbibliothek de Hanovre

Ce projet assurera à l'Europe un rôle majeur dans le développement du marché mondial de la fourniture de documents, marché qui doit considérablement s'amplifier dans les 20 années à venir.

Avec la crise économique, les bibliothèques cherchent des solutions et des alternatives à la fourniture de documents. Les moyens actuels de télécommunications et la technologie informatique permettent de transmettre l'information rapidement

et à coût raisonnable. Le prêt interbibliothèque s'est ainsi accru ces dernières années de façon irréprouvable. On estime à 20 millions les documents fournis par le prêt interbibliothèque dans le monde.

Cependant, les éditeurs scientifiques réagissent et utilisent eux aussi les nouvelles technologies.

La réponse des éditeurs scientifiques

Les grands éditeurs scientifiques mondiaux ont cherché une réponse au problème de l'accès à l'information. La forme électronique du périodique scientifique (c'est-à-dire en plein texte, consultable en ligne ou sur CDROM) semble être la réponse la plus appropriée. Parmi les principaux éditeurs scientifiques mondiaux, on peut citer:

- *Blacwell* en Grande-Bretagne
- *Cambridge Scientific Abstracts* (Bethesda-USA)
- *Elsevier* (Amsterdam) qui développe en mode électronique la possibilité de consulter 400 périodiques 2 semaines avant la version imprimée.
- *Springer-Verlag* (Allemagne-USA) offre le même service via INTERNET sur 30 périodiques 6 semaines avant publication
- *The Institute for Scientific Information* (ISI) à Philadelphie

Les éditeurs scientifiques collaborent de plus en plus. Voici quelques exemples:

- BRS Information Technologies avec *Comprehensive Core Medical Library* (CCML) qui propose, en ligne, le texte intégral de 80 périodiques médicaux courants et 16 ouvrages de références, et permet, grâce à la procédure LINK, de passer automatiquement à *Medline* et *Embase*, banques de données bibliographiques.
- Depuis 1992, un nouveau venu américain est apparu en Europe: ce sont les fichiers médicaux de Mead Data qui proposent en ligne des produits très divers:
 - le texte intégral de 14 périodiques depuis 1982
 - le text intégral de *FDC Reports Newsletters*: industrie pharmaceutique, équipement et matériel médical, cosmétiques, recherche, médicaments
 - des banques de données telles *DRUG INFORMATION FULLTEXT* à partir de deux publications de l'American Society of Hospital Pharmacist; PDQ en oncologie; *Medline*

- **les bases de données de Micromedex:** Micromedex a créé depuis 1974 des BDD qui sont des instruments professionnels, des systèmes d'aide à la décision pour le médecin dans l'exercice de ses fonctions. La rédaction est assurée par plus de 350 experts, avec une équipe rédactionnelle interne et mise à jour les trimestres. Cela comprend:
 - **POISONDEX:** BDD toxicologique
 - **EMERGINDEX,** écrit par et pour les médecins ayant à pratiquer une médecine d'urgence et à surveiller des affections à risque, pour les aider à faire rapidement un diagnostic exact et procéder à un traitement efficace des patient en phase aigüe. La base est formée de deux fichiers: "Clinical Reviews" et "Clinical Abstracts" et s'interroge grâce à un thesaurus inspiré du Mesh.
 - **DRUGDEX** donne des informations sur les médicaments, à l'intention des pharmaciens, médecins qui ont à prescrire.

Ces 3 bases (POISONDEX, EMERGINDEX, DRUGDEX) sont construites sur le même modèle rigoureux, très détaillé. Il est possible d'aller chercher directement à l'intérieur d'un texte sur une affection, un médicament. Des centaines d'hôpitaux utilisent ces bases depuis des années.

Un dernier exemple est celui de l'éditeur scientifique britannique Blackwell qui a créé depuis 1988 une "joint venture" avec CARL systems INC afin de développer un produit UNCOVER à un niveau international. Il s'agit de délivrer en ligne le sommaire de 10000 revues. Ce service est ouvert aux particuliers et aux bibliothèques. Le document choisi parmi ces sommaires peut être commandé en ligne; il est faxé dans les 24h à un prix de dollars. UNCOVER projette de couvrir 14000 à 25000 titres de revues. Cela représentera dans le futur une banque de données exhaustive s'adressant aussi bien à l'utilisateur lambda aux Etats-Unis, qu'en Europe et en Asie.

L'information biomédicale au future

Le future de l'information biomédicale est donc dans la délivrance immédiate du texte intégral de l'article recherché soit sous forme électronique, soit grâce au CDROM, soit par l'accès en ligne. Et ceci directement sur l'ordinateur personnel du chercheur.

La meilleure forme (la plus employée à l'heure actuelle et qui le sera dans le future) est la forme électronique via les grands réseaux de communications (INTERNET, satellites).

Les CDROM en texte intégral sont eux aussi de plus en plus nombreux: la *National Library of Medicine* (USA) commercialise les principaux hebdomadaires en médecine (*Lancet*, *New England Journal of Medicine*, *British Medical Journal*, *Annals of Internal Medicine*) en texte intégral sur CDROM sur 5 années. Un autre exemple est *ADONIS* qui contient 500 périodiques biomédicaux (150000 articles) provenant de 50 éditeurs.

Les éditeurs, dorénavant, proposent l'accès, non plus à une banque de données dans son intégralité, mais par spécialité (Gynécologie, Cardiologie etc.), avec également la possibilité d'accéder en ligne à une autre banque de données à partir d'un CDROM.

Pour l'accès en ligne, d'autres réalisations sont en cours: la société européenne INFOPRO a élaboré *ORBIT*, soit 10 banques de données scientifiques interrogeables simultanément.

A Montpellier, le projet de l'Anté-serveur est développé; c'est un système autonome qui met l'utilisateur, par l'intermédiaire direct de son micro-ordinateur (PC, Macintosh) ou de son minitel, en contact avec l'ensemble des banques de données disponibles. L'utilisateur pose sa question, celle-ci est traduite par l'*Anté-serveur* (interface intelligente qui décrypte et analyse la question, interroge les banques de données): la réponse peut provenir de plusieurs banques de données interrogées simultanément, en ligne et sur vidéotex.

L'avenir de la documentation médicale, de par les progrès réalisés par les nouvelles technologies, s'annoncent donc riche et prometteur. Il prend totalement en compte les souhaits de l'utilisateur final: l'utilisateur désire l'accès à l'information de quelque lieu où il se trouve et à n'importe quel moment. Le bibliothécaire doit lui fournir les moyens d'accès à cette information.

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THE LIBRARY AND SOCIAL DEVELOPMENT

By Yolanda Ricardo

Abstract: Since the early establishment of libraries in the world, the embryo of social sciences was an unvaluable driving force. The humanistic quest of knowledge, conceptually assumed in its widest sense, became a powerful incentive. On the other hand, in the same manner that research work has consubstantially co-existed with the self-development of these sciences, also the repercussion of their scientific results in the contemporary world's bibliographic patrimony has become a system. Particularly in Cuba research work is an unexcusable condition in this type of institution and libraries dedicated to social sciences are closely related to different research centers with their own profile.

Likewise, at the same extent that social sciences recognize that their "raison d'être" is its contribution to a multilaterally conceived social development, specialized libraries are helpful to the permanent transmission of its achievements through the introduction of their scientific results in the social environment and widening the knowledge of the scientific community and people in general, as well as the multiplying affluence of actions orientated towards the culture of spiritual needs.

On the basis of my work "The role of libraries in the development of social sciences", published in IFLA/94's, booklet 2, page 5, I will refer to some of its fundamental statements, so as to tackle their close relation with the central theme of the last IFLA Conference held in Havana: The library and social development.

Since the early establishment of libraries in the world, the embryo of social sciences was an unvaluable driving force. The humanistic quest of knowledge, conceptually assumed in its widest sense, became a powerful incentive, based on the early bibliographic sources of Oriental and Greco-Latin cultures, in addition to the treasures gathered in abbeys and monasteries and those of the Renaissance, also comprehending the work of encyclopedist and the whole of contemporaneous thought. The endless search for researching and enriching wisdom led to a

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bibliographic patrimony as expression of an irreplaceable universal heritage which contributed to consolidate both the definition and the sounding of each and everyone of the present social sciences and, in turn, the latter throughout their own self-development have constantly provided a valuable legacy to libraries and archivistic patrimony.

On the other hand, in the same manner that research work has consubstantially co-existed with the self-development of these results in the contemporary world's bibliographic patrimony has become a system. Particularly in Cuba, this type of institution and, frequently, libraries dedicated to social sciences, are closely related to different research centers with their own profile. Some of them are documentation centers, as in the case of the centers of philosophy, psychology, sociology, anthropology, the Center of Martian Studies and Cuban Board of Central Planning, and those institutions of library sciences of a complex and wide methodological structure such as the JOSE MARTI National Library and that of the Institute of History; also the branches of social sciences of university libraries, CASA DE LAS AMERICAS' library and the first public library in Cuba, that of the SOCIEDAD ECONOMICA DE AMIGOS DEL PAIS, which site is the cuban INSTITUTE OF LITERATURE AND LINGUISTICS, which recently reached its bicentenary anniversary.

In these research centers, monumental works that constantly consolidate and enrich Cuban cultural identity are being carried out with a direct assistance of their specialized libraries and the support of the rest of the network of social sciences. An example of this is the preparatory work of the edition of a critical review of the Complete works of Jose Marti by the Center of Martian Studies; the Cuban History, an exhaustive conception by the Institute of History; the Cuban Ethnographic Atlas, by the Center of Anthropology; the Atlas of Cuban identity, by the Ministry of Culture; and the five following scientific works are being prepared by the Institute of Literature and Linguistics: History of Cuban Literature, Atlas of Cuban Linguistics, Dictionary of Phraseologisms, Dictionary of Cuban Phraseology, and Cultural Identity in America.

During the last three and a half decades this documentary patrimony of the development of Cuban scientific contemporary thought has reached important levels and has permitted a sustained increase of this bibliographic funds of Cuban specialized libraries in social sciences and of those with specialized services in this branch.

Precisely an inseparable duet in Cuban work is "the library and social development" with the field of the preservation and restoration of the universal heritage constituted by the bibliographic patrimony in its most diverse manifestations.

Much has been said on the latter in the last few years. Several countries have been carrying out valuable work such as the international projection of the Getty Institute of Preservation, in California, and other European centers. In this sense, in Cuba, advances are being made in the National Center of Preservation and Restoration and in the National Archives. In Cuba, though the essential considerations in this regard, initially stated a few years ago by the specialist Duncan Cameron, who foresaw, in the field of preservation, sophisticated installation - even free of living organisms - these are by itself a complex project tackled in reasonable ways and steps according to the perspectives permitted by material conditions of the country. Nevertheless, a sustained effort has been carried out in several directions:

- the best use of natural environmental conditions with an adequate emphasis in storage;
- the organization of an inventory of the documentary patrimony;
- the prioritized selection of documents for their restoration.

The preservation of documentary patrimony of several centuries, without even thinking of restoring it globally at national scale, is a gigantic quest, both due to the dimension of this work and to the valuable resources it demands. Consequently, there is an urgent need of perfecting the mechanisms or organization and hygiene in each one of Cuban centers and libraries; an effort exerted day by day aiming at a permanent betterment in the midst of complex material handicaps.

In regard to a large-scale technological development - whether it is feasible or not in Cuban libraries - this is a matter which deserves to be tackled separately, but we can not avoid, but considering that in the world there is a substantial impairment regarding the resources invested in science and technology. International organizations coincide in pointing out that widely different sums are assigned to such activities. For example, in Latin America and the Caribbean \$10 (usd) are assigned per inhabitant; in the Asian countries \$16; in the Mediterranean zone \$32 and \$ 343 in the countries of the Group of the Seven. This implies that the inclusion of the economic expectation cannot be disregarded in our analytic platform.

We must ask ourselves: how can we make our administration and management more efficient with such an uneven universal distribution of resources? How can we compensate the high cost of expenses in our centers without disregarding the essence of the social function they are intended to fulfill? For instance, think that the ideal automatization of Cuban information services that could provide them with celerity and precision cannot be extended even in significant proportions in

Cuba throughout the country. Undoubtedly, these and other problems of development will be omnipresent in Cuban near future.

Likewise, at the same extent that social sciences recognize that their "raison d'être" is its contribution to a multilaterally conceived social development, specialized libraries in this field are helpful to the permanent transmission of its achievements through the introduction of their scientific results in the social environment. To this end, activities leading to the promotion of the development of social sciences and that of their own specialized libraries are being accomplished. Among these activities, an important role is played by campaigns that promote reading, the preparation of increasingly suggesting exhibitions related to scientific research, the divulging of propagande aimed at widening the knowledge of the scientific community and people in general, as well as the multiplying influence of actions orientated towards the culture of spiritual needs and its relation with the world of science and technology.

Considering that since their inception, all along different stages of the history of mankind, libraries avoided that backwardness got hold of men, at present with the globalization of the menace of the planet's destruction, libraries also, as well as every worker inthe field of information, are urged with a very special call to contribute to promote consciousness aimed at saving the world. This is a task for all of us and particularly for social sciences, and the promotional activities of their libraries paly a most essentially important role. It is men's own survival that is waiting for us.

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LIBRARIES AS A BRIDGE BETWEEN ARTIST AND SOCIETY

By Deirdre C. Stam

Abstract: The relationship of artists to art libraries is explored for the purpose of gaining better understanding of artist's needs. Discussed here are use patterns in art libraries, artist's frustrations with these institutions, major tools utilized by artists or on their behalf, accommodations made by staff to serve the unique needs of artists, and suggestions for co-operative action by art librarians that would improve service to this special group. Data were gathered through a survey mailed to selected librarians in art schools and public libraries in the United States, and through inquiry on the Art Libraries Society of North America electronic discussion list, ARLIS-L, in the winter and spring of 1994.

As is true for any group of library patrons, artists' use of libraries is something of an enigma. This paper attempts to investigate artists' use of libraries in order to improve service to this special group. Patterns of use are described, and accommodations made by librarians to serve these users are reviewed in order to provide a deeper understanding than now exists of how artists interact with libraries, and to make better known the solutions to artists' information problems that librarians have found effective.

The obvious way to determine use patterns is to ask artists directly about their needs and activities in libraries. Unfortunately, artists are not easy to get hold of, especially for an exercise of this sort, and even when they are cornered, they, like other users, seldom can provide the kind of reasoned information on their needs and use that translates directly into improved service. A more indirect approach is needed. In this case, the help of art librarians was elicited. Art librarians they are extremely helpful with this kind of inquiry, and their analytical approach is exactly what is needed in order to understand and ultimately improve service to this special clientele. This inquiry used mailed questionnaires addressed to

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selected librarians in public and art school libraries, and the electronic discussion list ARLIS-L, as sources of data. Responses gathered in March and April of 1994 were all from North America, with the preponderance from the United States.

Artists' research

Broadly speaking, artists use visual means to express and communicate ideas about mental, physical and emotional spheres. This characterization assumes that artists begin with abstract ideas - that they have ideas - either self-generated or suggested by clients. It implies too that their interests can be wide, including political, social, psychological concerns, among other topics. Somewhat unkindly but nonetheless convincingly, Derek Toyne describes the artists' realm as made up of "manias, quirks, insecurities, and beliefs which drives the artist to make his art."¹ One might add wit and humor to Toyne's list.

Artists' research, in addition to questions of technique, might include extensive immersion in the realm of ideas gained through reading, popular media, conversation, or contemplation. Artists typically report that their general reading is omniverous and eclectic; they devour books, magazines, advertisements, and ephemera.² By their own admission, chance and accident play a significant role in this process.

Asked how art libraries might satisfy these broader interests, one group of artists replied in 1986 that they cannot. These artists suggested that money would be better spent on books for the local public library than on books addressing general topics for art libraries. One of these, artist Lawrence Weiner, suggests hiring librarians in art libraries who would point the way to general materials in other collections.³ Many artists reportedly develop their own collections of reading material, or do their "research" in bookstores. The need for intellectual stimulation is met, both artists and librarians seem to agree, by a wider culture than the world of art.

That is not to say that art libraries do not play an important part in the lives of artists. But it is not for general reading, or even to a great extent the art press that artists use libraries; rather, it is for very specific information relating to the transformation of their ideas into visual form and material.

Among art librarians there is some speculation that designers and illustrators are particularly assiduous users of libraries. For graphic artists specifically, the library is not only a fount of information, but also an archive of graphic design.⁴ Painters and sculptors, in contrast to designers and illustrators, seem to rely more on their own memories and imagination than on libraries for their sources.

What do artists see?

In many ways, artists' needs are like other patrons of the art library. They, like others, are interested in artists and their work, art movements, art forms, iconography and criticism. Some of their needs, however, are unique.

Most characteristic of artists is the need for images, images, images. "Where can I find an image of ..." is their most common question, in contrast to other patrons who might ask, "Where can I find information about ..." The images sought might be of things in the real world, or events, and not necessarily of art. Color is paramount.

Their needs for images are usually very specific. Examples provided in this survey were: widow's walks in New England seaside villages, '50's diners, a school bus, or Madonna (the rock star, that is). Zoological or cartographic materials are frequently sought. The commonplace images sought by artists often function as cultural icons with strong symbolic potential.

Other typical queries can be eclectic, such as these examples provided by respondents: I want to see works of art in which the artist uses color for emotion, especially red. Who does depictions of women's bodies? Who are some environmental artists? What is Post-Modernism? I want to see figure painting, casting techniques, and art made of cut paper. Where do I find a book on the artist who now has a show at a local gallery (or has been featured in this month's magazines)? Where can I find reviews of contemporary shows and artists? And, I'd like to see something in the same style as this picture in my hand.

Often artists' need shift as they become aware of what is available by way of imagery or more general information. They follow paths of association and creativity, with one thing suggesting another. Thoroughness is not characteristic of their approach in the way that it is in other scholarly endeavours. Artists are compulsive browsers.⁵ They need to "paw through" materials.

More practical needs are for information on competition opportunities, grants, fellowships, residencies, and the "business" of art. Advice on art materials, and in some cases on the hazards presented by them, is occasionally sought.

Artists in North America often maintain extensive collections of their own informational materials in studios and homes. Some come to the library only for more obscure or newer materials. One artist reports using the library mainly for foreign or high-priced periodicals dealing with his medium.

Frustrations

Artists expect to be presented with the "perfect" answer to their queries, reports on art librarian. Others observe that artists have little patience for reference tools. They do not know how to use indexes and they have little interest in learning; they don't have the time, they don't come with the skills, and some artists can't even read well, aren't particularly verbal, and might even have reading disabilities. They sometimes can't pronounce or spell or fully remember an artist's name that they may have heard mentioned. Frequently they do not understand the nature of the information given them.

Catalogs are more of a hindrance than help to artists who just do not think of art they way that the Library of Congress does. LC classifications are particularly inappropriate, and this disjuncture is significant in open-stack libraries where artists go directly to shelves if they can, usually bypassing the catalog altogether.

Other catalog problems are the limitations in tracings, lack of item-specific indexing to illustrations in print sources, inadequate treatment of media sources (video is becoming a preferred mode for learning art history), the treatment of "artist" as "author" and not as "subject" in standard catalogs, the elimination of some participating artists' names in cataloguing data for group shows, and lack of indication of artists' personal characteristics such as gender and ethnic origin.

Artists complain of time constraints and deadlines. In any cas, they are not willing to take time to learn how to use the library more effectively.

On the subject of time, artists find the usual dayleight hours of libraries a severe limitation. Much of their studio time is spent at night. If they don't have access to libraries then, they at least want to be able to take material to their studios for prolonged periods of time, including evenings.

Essential library tools

The list of vital reference tools in most art libraries begins with the old stand-by periodical index, *Art Index*, which is used in part by artists to locate reproductions, and the well-known guide to reproductions, *World Painting Index*. Illustrations are sought as well, though less frequently, through the *Illustration Index*, *Sculpture Index*, *Index to Reproductions of American Painting*. Another index that gets occasional use is the *Design & Applied Arts Index*. Other periodical indexes that get very occasional general use are *ArBbibliographies Modern*, *Répertoire international de la littérature de l'art/Bibliography of the History of Art*, and *Arts & Humanties Citation Index*.

Images are sought in the *World Book Encyclopedia*, in various visual dictionaries, and in "clip art" books (collections of reusable graphic images in public domain). The *National Geographic Index* is also used for this purpose. The *Encyclopedia of World Art* is consulted both for illustrations and text, as are textbooks by H.W. Janson and by Helen Gardner and the handbook *Oxford Companion to Art*. Iconographic guides and dictionaries of the type represented by the *Oxford Guide to Classical Mythology in the Arts* are less frequently consulted.

Occasional use is reported for *Worldwide* catalogue of exhibition catalogues and the series from St. Martin's Press including *Contemporary Artists*, *Contemporary Architects*, *Contemporary Photography*; the comparable *Contemporary Designers* is issued by Gale Research Company. Biographical tools include *Artist Biographies Master Index* and other biographical indexes, *ArtSpeak/Art SPoke*, *Who's Who in American Art*, and other works of the "Who's Who" genre.

Other standard tools include gallery guides, museum directories, registers of grant support and financial aid, career guides, legal advice for artists, and information on health hazards faced by artists. Local newspaper are useful for regional art events.

Special services: material, services, and physical facilities

Among library materials supplied to artists, image banks in all formats including print are of high priority. Art libraries serving artists commonly have picture files, even little special accommodation is made for their artist-clients. These picture files are usually housed in vertical file arrangement, and contain general materials clipped from magazines, books, calendars, advertisements, photo stock books, and ephemera. Some libraries have slides and photographs available, but access is usually restricted to professional in-house staff, such as faculty. This restriction is especially true of media collections. The provision of images in electronic form, though still novel, is described as "absolutely intoxicating" for artists. Access to images in network is still unusual, but described as extremely desirable.

Other special materials might include files containing announcements of shows and other timely events from museums and galleries; these are seldom catalogued or retained permanently. A few libraries maintain vertical files on individual artists. Additional files might contain announcements of grants, awards, competitions, and other financial opportunities.

Among services provided to artists, the subject specialist is frequently cited as the most important aid. In addition to reference duties, this person provides instruction, at least in the art school library. Other services that artists might encounter

include generous loan periods, and flexibility policies for temporary removal of reference material.

In one setting where the university art library is far from the art studios, the art librarian distributes monthly lists of particularly interesting new materials and "hot topics". He also displays materials relating to visiting artists and events in the studio program.

In a few instances, in-house indexes improve access to materials such as slides videos. In rare instances, the catalog records are enhanced with identification of images, et al., but this practice is unusual in automated catalogs.

A very few libraries report adding supplementary data to their standard cataloging records. A category of material that requires such information are artists books, where type of binding, materials used, and method of printing might interest the library's clientele. Specific headings for clip art, graphic design topics, and logos might be added to cataloging records.

As for physical facilities, open stacks are the norm, and most librarians consider such access an essential part of their service. In a few institutions, books and exhibition catalogues on individual artists are separated from the general stacks, and arranged in alphabetical order, reflecting the way artists approach this material.

The survey reported, predictably, that new book shelves and display areas are common in art libraries. Clear signage indicating the subject areas of book shelves is seen as an important access mechanism. Browsing bins for covers and for material enclosed with audio-visual materials are mentioned. Video displays areas and video monitors are becoming more common. Microform and attendant equipment are very rarely mentioned in these circles.

Almost every art library has a photocopier, and many of these produce color images. Where only black-and-white copies are available, this situation is lamented. Copy stands and even scanners are common. Even large library tables are seen by some art librarians as vital to facilitating the artist's use of the library and its collections, in Toyne's words, "to ensure that the student is at ease."⁶ The space is needed for accumulating material, consulting several works at once, and making notes and sketches. This detail relates to "library as place" as well as source of information.

Cooperative projects for art librarians

Better access to images is the first priority. Image indexes are needed, both for printed and for electronic sources, including those available via networks. Clip art could be distributed this way. Image banks themselves are an obvious need; these should deal not only with art, but also with general subjects, such as people, food, plants and animals - even the Bettman Archive. As for reproductions of art works, image banks based on individual artist's work are most essential. And design sources are greatly desired. In all cases, the ability to copy images - by downloading electronically and/or printing - is essential.

Other primary materials needed include complete, scholarly, full-color catalogs of museums collections, in either print or electronic form. Videos depicting artists' work and artists-at-work would be welcome.

An index to *ArtSpeak* and other well-illustrated journals documenting contemporary art would be useful if it indicated the way in which artists work, such as mentioning rough textures, empty backgrounds, transparent subjects, and so forth.

Another index of great practical value would be a guide to the locations of art works. Such information could be found easily if museum registration data were generally available in electronic form and distributed through the network, a prospect that has been discussed for decades. In this endeavor, librarians could provide moral suasion in the form of encouragement in their institutions to make such data available, and in form of example demonstrated by the traditional sharing of library data. They can also make known to museums considering such issues the Clearinghouse on Art Documentation and Computerization at the Watson Library, Metropolitan Museum of Art, in New York city.

Exhibition directories are needed. A database of ephemeral exhibition notices and small catalogs, including scanned images, would be very helpful. It is far too expensive for individual libraries to control these materials, and they are constantly sought.

Artists' practical needs for information about exhibitions, competitions, and instructional opportunities could be met via electronic bulletin boards, as could information about artists and computers. Some of this information is already available through networks, but relatively few artists have convenient access to it. Even where electronic information exists and physical access is possible, additional guidance is needed to aid artists in finding material and in putting it to use. The new electronic Art Source on the Internet may prove a useful index and guidepost for artists.

Information and advice on copyright issues could be cooperatively developed and distributed in convenient form. This topic is particularly important in relation to the copying and adaptive reuse of images in all formats.

The agenda for cooperative action is clear. Many items involve new media. Needed here are primary materials, chiefly imagery; directories to primary material; and learning packages, especially for new electronic media. But collections of printed material - "hard copy" - will not go away soon, especially for visual artists, persons whose reality is most often a manipulation of physical materials to encode abstract ideas and passions.

Notes

1. Derek Toyne, "An art school librarian's philosophy", in Philip Pacey, A Reader in Art Librarianship, IFLA Publications 34 (Munich, New York: Saur, 1985), p. 57.
2. Russell Ferguson, "CAA/ARLIS Joint Session: 'What do artists read?'" Art Documentation 5, no. 2 (Summer 1986): 72.
3. Ferguson: 72.
4. Philip Pacey, "How art students use libraries", in Pacey, p. 54.
5. Pacey, p. 53.
6. Toyne, p. 58.

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TWENTIETH CENTURY LATIN AMERICAN WOMEN ARTISTS, DISCOVERY AND RECORD: A WORK IN PROGRESS

By Cecilia Puerto

Abstract: The paper identifies the need for a bibliographic apparatus that brings together readily available sources in the United States on twentieth century Latin American women artists. The author describes a work in progress which attempts to accomplish this goal and, in the process, highlights the resources of the Art Exhibition Catalog Collection housed in the Arts Library at the University of California at Santa Barbara. The paper draws upon some of these resources to present descriptive and visual information on two exiled Cuban artists.

It became readily apparent to me early in my career as librarian that scholars wishing to investigate the artistic production of women in and from 20th century Latin America were greatly hindered by their relative inaccessibility in so-called international reference sources, not only rendering research in the field a time consuming and expensive proposition but, more importantly, greatly hindering our knowledge about the universe of these artists. A cursory search of works such as *Contemporary Artists*, *World Artists 1950-1980: an H.W. Wilson Biographical Dictionary*, *Oxford Companion of Twentieth Century Art*, and *Contemporary Art and Artists: An Index to Reproductions* for example, yielded among them entries for ALicia Peñaöba, Lygia Clark, and Marisol Escobar, accomplished artists from Argentina, Brazil and Venezuela, respectively. The *Handbook of Latin American Art* provides references to artists active for the most part during the first part of the 20th century, the majority of Mexican origin, such as Lilia Carillo and María Izquierdo. Nevertheless, the bibliographic citations refer to materials which, for the most part, are not easily accessible in the United States.

As I reflected on the virtual invisibility of this group of artists in mainstream reference sources I pondered the impact this lack has on the understanding and appreciation of world art. During the 20th century women from the region, many

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with outstanding international reputations, have made significant contributions in the plastic arts in such mediums as painting, printmaking, sculpture, photography, and ceramics and they have begun more recently to incorporate approaches encompassing mixed media, as well as installation and performance art. Although their work has been shown in the U.S. on and off throughout the century, it has been only in the relatively recent past that interest in art by Latin America women has "taken off," due mainly to a groundswell of exhibitions in museums, as well as public and private galleries, dedicated to promoting a general awareness of art produced in Latin America.

While art from "south of the border" (chiefly of Mexican origin) has sporadically been the focus of major exhibitions during this time period, critics agree that for the most part it has been undervalued in the past, if not in terms of monetary value, certainly with regards to the relative lack of attention given to it by curators. New York gallery owner Nohra Haime reflects on the consequence which have ensued to artists of both genders as a result, noting that "You can't collect something that you do not know exists" (Stellweg, 30). And - remarking on the recent flurry of activity taking place - she notes, curiously, that "much more is happening artistically than what is ... included in catalogues or books" (30).

From a librarian's perspective Haime's statements pose a challenge. Certainly a direct corollary to not knowing what exists is not being able to study it. In 1991 when I began to survey the literature, and the activity of Latin American artists in general, I discovered that women were then riding high on the waves of prominence and - to judge from the sustained interest - there is little chance that attention to their work will diminish any time soon. Facilitating the research process while at the same time raising the visibility of 20th century Latin American female artists has, as a result, become for me a double-pronged imperative. Exhibition catalogs, critical reviews and profiles in art journals, general interest periodicals and newspapers document well their artistic production, more often than not being rich sources of biographical and illustrative details. Access to the literature, nonetheless, is scattered and in need of systematic organization. My objective is to control this information via an annotated bibliography of sources readily available in the United States to assist not only in identifying who these women are but also, it is hoped, to provide a stimulus for further research so that we may learn more about them.

A rich source of information has been the art exhibition catalog which, frequently, is the only extensive study on a particular artist. In this regard, the Art Library at the University of California at Santa Barbara has been a valuable resource, thanks to its extensive collection of art exhibition and museum catalogs. The Art

Exhibition Catalog Collection at UCSB presently boasts holdings of some 80,000 pieces, making it the largest of its kind in the United States. The inspiration for establishing this unique collection was UCSB's acquisition in the mid 1960's of rare 18th and 19th century catalogs from the collection of Marcel Nicolle, a Perisian bibliophile. Since that time the collection has grown significantly principally through private donations, gifts, and exchanges with museum libraries.

To celebrate our coming together on this beautiful island, as well as the almost near finish of this work in progress, I would like to highlight the work of two artists who were born in Cuba, but who became separated from the country at a very early age. A review of the available literature on these artists indicates that the great sense of loss and alienation they experienced as a result of exile impacted significantly on their artistic production. My presentation this afternoon will consist of a brief synthesis of some of the biographical and critical materials I have found related to these women during the course of my work, as well as an offering of slides I have produced which I hope serve as window into their creative worlds.

The first artist, Ana Mendieta, has been called the "high priestess of performance work" (Rauch, 44). Ana was born in Havana in 1948. Her life took an unexpected turn when she was 13 because of political difficulties experienced by her father at the time. Along with her older sister Raquel, Ana was sent to the United States where she spent her early years in a foster home in Iowa. She later undertook the study of art at the University of Iowa where she received a B.A. in 1969 and, three years later, an M.A. Her sister Raquel relates that Ana did not find painting "real enough for her purposes" (38) and shortly thereafter she began work on a M.F.A. in the Multimedia Department of the School of Art at the University of Iowa. This decision was pivotal in the development of Ana's aesthetic since it allowed her to explore the myriad creative possibilities of performance, multimedia and video, all of which were to play a major role in the crystallization of her artistic vision.

A common thread woven throughout the literature on this artist indicates that her feelings of dislocation from culture and family served as enervating force for her artistic production. The artist herself validated the impact which enforced exile had on her life and clarified why she was drawn to develop the highly original and individualistic artistic voice which she did:

"I have been carrying on a dialog between the landscape and the female body ... I believe this has been a direct result of my having been torn from my homeland during my adolescence. I am overwhelmed by the feeling of having been cast from the womb. My art is the way I re-establish the bonds that unite me to the universe. It is a return to the maternal source. Through my earth/body sculptures I become one with the earth ..."
(Perreault, 10).

Ana's profound need to return to her origins via the earth went beyond mere metaphoric representation, however. Rauch notes that she approached her performances with ritualistic fervor (45), emphasizing her relationship with the environment by utilizing natural elements which others might consider starting, even strange, but which she considered life-giving forces. Her primary vehicle of expression became her own body which she used in combination with blood, fire, earth, water, leaves, flowers and other materials to create images of herself on trees, on the ground, and on beaches. Uruguyan artist Luis Camnitzer, a close friend of the artist, writes that in so doing "she expressed her mystic belief in a force which flows through everything" (134). Seeking links with her Cuban culture and the spiritualization of her performance art she incorporated principles of Santerfa - a merging of African religious traditions and Catholic beliefs - in numerous of the works she executed, among them elements of animals sacrifice. Rauch says that in making "no concessions to the standard ideal of beauty, her potent, sometimes crude statements urge the viewer to go beyond the confines of the conventional" (47).

Ana's journey of self-discovery and reencounter with the earth led her perform and execute her pieces throughout the 1970s and early 1980s in Iowa, Miami, Mexico and, ultimately, her beloved Cuba in 1982. Writing in Spanish Geraldo Mosquera emphasizes the significance of Ana's return to her native country, pointing out that the etchings and carvings of female figures she created in the Escaleras de Jaruco near Havana represented more than merely a return to *la tierra*, the earth - it was a return to *su tierra*, her homeland (55).

The impermanence which characterized much of her work, perhaps, has much to do with the fleeting quality of life itself. Given the nature of her death Camnitzer remarks that the ephemeral form she gave to her ideas became a "chilling metaphor of her life" (134). Using video and photography Ana, nevertheless, was able to capture for the viewer the essential meaning of her imagery - her need to reunite herself, if not physically, at least spiritually with the life-generating aspects of our universe and with her homeland. At a collective and more universal level critics have interpreted the sexual symbolism present in much of her work to be a representation of "prehistoric beliefs of an omnipresent female force whose body parts made the earth a living creature" (Rauch, 47).

Recipient of a Guggenheim Fellowship, a National Endowment of the Arts award and the 1983 Prix de Rome, Ana died an ambiguous and premature death in 1985. It is unclear whether at the peak of her career and in the midst of a marital quarrel she jumped or was pushed out of a 34th floor New York apartment window by her artist husband, Carl Andre.

The second artist, María Martínez-Cañas, has, like Ana Mendieta, distinguished herself in her career not only in the individualistic approach she has taken towards her subject matter, but also in the articulation of "nostalgia" for a culture which, unlike Ana, she never knew firsthand.

María's family left Cuba for Puerto Rico in 1960 when she was only three months old. In 1978 María sought a new path, leaving the island to pursue studies at the Philadelphia College of Art and, after receiving a B.F.A. in 1982, she enrolled at The School of the Art Institute in Chicago where two years later she earned an M.F.A. Of this time in her life and the conflictive feelings she experienced as a result of being caught between cultures María says.

"In reality, I feel much more Cuban than Latin American; although I grew up in Puerto Rico, I always felt like a foreigner there. Later in Philadelphia, I experienced a great culture shock with American life. I didn't have any Latin or Cuban friends there; it wasn't until I moved to Chicago that I began to realize the many values my culture had to offer" (Fuentes-Pérez, 312).

María's area of concentration in school was photography, the medium which she uses to craft her highly original compositions. In the process of seeking her own artistic voice and style she was drawn to explore the creative possibilities of combining negatives of photographic images with other materials using a variety of techniques. The aesthetic she developed eventually allowed her to articulate in a fresh and unusual way the embeddedness of Cuban culture in her life, as well as the conflict and enigma associated with culture contact.

A six-month stay in Spain on a Fulbright-Hays grant in 1985 served as catalyst for the development of the body of work which to date has gained for her international recognition.

Her discovery of Cuban maps in the Archivo General de Indias in Seville dating from the Spanish conquest proved significant, giving tangible presence to her longing for a cultural past she did not encounter directly but which, nevertheless, was psychologically very much a part of her. When she returned from Spain she began to develop images based on what she had seen during her study in Seville. Utilizing sheets of amberlith, a knife and negatives of assorted images, María created compositions which reverberated with "Cubannes", as in "Isla nada más (a mi padre) [Only an Island (to my father)]" and "Plano de Ciudad" produced in 1986-1987. Elisa Turner describes the technique she used to produce her images:

"With incisive cuts in the amberlith, Martínez-Cañas drew forms echoing the long-ago maps, outlining the contours of Cuba itself and the plans of colonial Havana, placing her images on stark white fields. The grids of streets and the protruding arrow-shaped watch towers of fortresses became favorite forms, to be repeated and interrupted" (85).

More recently María's concern with the effects of culture contact inspired such works as "Dos Mundos" (1992), a composition filled with forms and shapes suggestive of land masses surrounded by water which encase photographs of textual material and other images.

María's art embraces and has been influenced by her Cuban culture in other ways. Those familiar with the work of Wilfredo Lam will recognize the impact of his style reflected in works such as "Los fantasmas: lamento" (1991) and "Tres Totems (Serie Negra) [Three Totems (Black Series)]" (1990). Terence Pitts, Director of the Center for Creative Photography in Tucson, comments on this work in the exhibition catalog *María Martínez-Cañas: Encounters* in the following way:

"The natural world is represented by photographic imagery of deserts and jungles and by graphic representations that suggest cactus and thorns. The pre-Columbian world is shown in photographs of the extraordinary monuments and structures of the Yucatan peninsula. The Spanish conquest becomes apparent in images of Spanish colonial architecture, the recurring theme of the European city grid, and images of Catholicism. Finally, María adds yet another component: travel photographs of places like Venice and Arizona that seem unrelated to the works as a whole, but which serve as a kind of testimony to the life of an exile. All of these chaotic and contradictory elements are held together in an intuitive balance, in a sort of triumphant, artistic juggling act that reflects the artist's hard-won but tenuously held vision of the way in which history and individual destinies intersect" (Martínez-Cañas, 3).

These are but two of the approximately 200 artists whom I have "discovered" to date in the literature. Originating from twenty Latin America countries they represent truly only a fraction of the total number since my work, limited as it is by travel and time constraints does not - indeed, cannot - take into account all of the literature and art exhibition catalogs published in the region. An exciting, collaborative project would be the harnessing of all of these resources so that we can achieve a more complete picture of women's achievements and contributions to the Latin American 20th century artistic scene!

Notes

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UNE BIBLIOTHÉCONOMIE POUR LE VULGANISATION SCIENTIFIQUE

By Francis Agostini

Abstract: It becomes more and more obvious in our societies that sciences do only play a less important role in public libraries. For scientific information of the public the libraries should point out their role in adjusting their offer regarding collection building and reference services, i.e. in particular

- special acquisition policy
- systematic selection
- different processing in cataloguing different types of documents
- dynamic services for the public

This paper illustrating the experiences made in the Médiathèque de la Cité des Sciences et de l'Industrie (Paris) presents the above mentioned points, and instruments for evaluation and development.

A l'"Age de la science"¹, la communication des savoirs s'organise dans trois sphères distinctes: Recherche, Enseignement, Communication publique.

Communiquer ses résultats à ses pairs est un passage obligé pour le chercheur. La transmission institutionnalisée des connaissances hors de la communauté scientifique s'effectue par la voie pédagogique.

Par les voies de l'"éducation informelle", le publique entre en contact avec les connaissances produites par la recherche et avec les savoirs pratiques.

Quelle place revient aux bibliothèques dans la diffusion de la science dans la société?

Si la recherche et l'enseignement scientifiques s'appuient largement sur les bibliothèques, la lecture publique n'a guère investi le domaine des sciences et des techniques.

Pourtant, les musées scientifiques se sont multipliés depuis les années 60.

Mr. Agostini's paper was delivered at 59th IFLA Council and General Conference, Barcelona, Spain, 22-28 August 1993.

L'édition de vulgarisation a connu un renouveau spectaculaire en France à partir de 1970. On a vu se créer de nouvelles structures: boutiques de science, centres de culture scientifique et technique, associations régionales, écomusées.

La place acquise par les médias en fait aujourd'hui le principal véhicule d'information scientifique du public, avec les limites qu'on leur connaît. Les médias "émotionnels", comme la télévision, se contentent de mettre la science en spectacle, à partir des craintes et des espoirs qu'elle suscite en nous. Leur souci n'est pas, en général, d'apporter des connaissances et de rendre compte des démarches de la science.

Les questions qui préoccupent le plus le public (santé, environnement, emploi-formation) ont une composante scientifique ou technique. S'adapter à cette demande impose aux bibliothèques de faire évoluer leur offre de lecture publique.

Dans leurs objectifs généraux, elles doivent se fixer de permettre au public:

- de s'initier aux savoirs scientifiques
- de s'informer auprès de différentes sources
- de mieux appréhender la place des sciences et des techniques dans la société.

La science et le public

Un français sur quatre pense que le soleil tourne de la Terre.² 80% des français considèrent l'astrologie comme une science. Mais ils rejettent l'écologie hors du champ scientifique.

Lorsqu'on leur demande si l'homme et la vache ont des ancêtres communs³ seulement 21% des sondés reconnaissent un lien entre deux espèces qui appartiennent pourtant au même groupe: les mammifères.

Des enquêtes effectuées dans d'autres pays d'Europe et aux Etats-Unis révèlent que l'univers de la science reste pour une bonne part étranger au public.

Si l'on demande aux gens quel intérêt ils portent à la science et s'il ont l'impression d'être correctement informés, on s'aperçoit que le niveau d'information n'est pas du tout à la hauteur de l'intérêt manifesté⁴. Même si une sorte de timidité devant la science s'installe assez tôt - la curiosité est à son maximum chez les jeunes de 10 à 12 ans - le public exprime nettement son désir de comprendre les phénomènes naturels et de maîtriser son environnement technique.

Intérêt et adhésion ne vont pas nécessairement de pair. La conviction que "la Science apporte plus de bien que de mal" n'est pas aussi répandue qu'il y a 20 ans.

La crise de l'âge de progrès s'accompagne d'une régression de la technoscience.

Les bouleversements que la science apporte à notre représentation du monde, la floraison de nouvelles techniques - et donc de nouveaux pouvoirs - dépassent les capacités d'absorption de la société. Désormais les objets de la science se dérobent à la perception immédiate et notre environnement quotidien est peuplé de "boîtes noires".

Les bibliothécaires, à cet égard, se trouvent aussi démunis que leur public. Mais il ne s'agit pas pour eux de devenir des savants; plutôt des curieux de science, capables de semer des "graines de curiosité"⁵.

Le champ de la vulgarisation

C'est au 19^e siècle que la vulgarisation scientifique connaît son âge d'or. Le triomphe du scientisme s'accompagne d'une diffusion massive de la science par le livre, la revue, le feuilleton, la conférence, l'image et le spectacle⁶. La vulgarisation - dont le nom est popularisé par Emile Zola - devient une activité professionnelle autant que militante: répandre dans le public (- vulgare) les lumières de la science.

La 2^e moitié du 20^e siècle est marquée par l'intrication de la science et de la technologie, l'hyperspécialisation et la massification de la recherche. Des sociologues, des psychologues et des linguistes se penchent sur le phénomène *vulgarisation*, rajeuni sous l'appellation de **communication scientifique publique**.

Alors que pour certains, le divorce entre science et culture est consommé, d'autres lancent le concept de **culture scientifique et technique (CST)** qui va bientôt s'adjoindre le qualificatif *d'industrielle (CSTI)*. Plus que la description d'une réalité, il faut y voir un programme. Programme ambitieux qui mobilise des compétences variées: scientifiques, réalisateurs, journalistes, animateurs, etc.

On pourrait parfois solliciter les bibliothécaires. Ne sont-ils pas un peu les héritiers des encyclopédistes qui cherchaient à rassembler les savoirs épars et à les populariser?

Mais ne pouvant plus prétendre embrasser l'ensemble des connaissances, les encyclopédies d'aujourd'hui visent une tranche d'âge ou un niveau déterminé. L'entreprise encyclopédique se déplace des résultats de la recherche vers les contextes de la science contemporaine: enjeux sociaux, politiques, économiques, culturels.

Cette évolution associée aux nouvelles attentes du public, les contraintes économiques, la diffusion des technologies de l'information et de la communication, tout cela conduit à modifier les finalités de la bibliothéconomie.

A abandonner une logique d'accumulation au profit d'une logique de service passe par une recomposition des tâches autour de la médiation.

De la production à l'offre: une restructuration

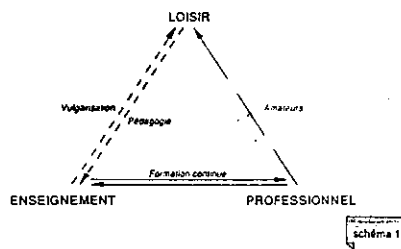
La production éditoriale se caractérise par un déséquilibre entre secteur universitaire et secteur général et par une répartition très inégale de la production selon les sujets et selon les propos.

Il faut donc adopter, dans le domaine de la vulgarisation scientifique, des critères de sélection spécifiques.

L'obsolescence qui guette les publications scientifiques amène à délimiter, dans chaque domaine, un fonds de référence, plus pérenne et un fonds d'actualité fréquemment renouvelé. C'est leur mise en valeur et leur cycle de vie qui les distinguent et non leur localisation.

Dans un domaine fortement productif, on pourra comparer les différents titres disponibles sur le marché à l'aide d'une grille d'évaluation (un exemple est fourni en annexe).

Dans un domaine faiblement représenté, il s'agira de favoriser les "migrations d'usage" entre les documents disponibles, suivant le schéma suivant:



Le recours aux médias audiovisuels ou informatiques, indispensable pour certains sujets, demande une intégration des différents supports plutôt qu'une simple juxtaposition (Cf infra).

Enfin, l'hétérogénéité des publics place la bibliothécaire devant une alternative:

- répondre à la pression du public déjà initié, et spécialement des étudiants (cas d'un environnement déficitaire en bibliothèques universitaires).
- favoriser les usages non universitaires des collections, par un effort de médiation et de mise en valeur.

S'orienter vers la vulgarisation, en bibliothèque publique, suppose d'analyser les usages possibles d'un document auprès de tel ou tel public. La variété des niveaux, des styles, des propos des documents scientifiques rend nécessaire les catégorisations.

La Médiathèque de la Cité des Sciences et le l'Industrie a mis en place un système de "qualifications" pour mieux maîtriser le développement des collections. Il s'agit d'affecter chaque document d'un code caractérisant à la fois le public visé et le type de document (la liste des qualifications pour les livres et pour les audiovisuels est fournie en annexe). Pour chaque qualification, il existe un mode d'emploi avec des exemples.

L'opération de qualification a lieu au moment du catalogage, dans une zone libre du format UNIMARC. Plusieurs développements sont envisagés:

- Qualifier les ouvrages au moment de la commande permettrait d'affiner la gestion budgétaire.
- Effectuer des extractions par discipline et par qualifications permettrait de valoriser certains fonds ou d'élaborer des listes de nouveautés orientées vers des publics déterminés.
- Donner en clair au catalogue (accessible sur minitel) la qualification d'un document aiderait le public pour choisir une référence.

Mettre la science en bibliothèque: une problématique

La problématique de la vulgarisation en bibliothèque tourne autour du rapport entre accumulation et médiation. On peut schématiser l'activité suivant 2 modèles.

Dans le modèle traditionnel, le service de base est la mise à disposition des documents et les activités de médiation viennent "enrober" l'acquisition et le traitement des documents. C'est un modèle centré support (Cf schéma 2) avec d'abord les imprimés, ensuite les audiovisuels, les disques optiques, les didacticiels, etc. Il n'y a pas de structuration des acquisitions par public et la médiation se trouve à la périphérie des activités.

Dans le modèle centré *public* (Cf schéma 3), on segmente le public en s'appuyant sur des enquêtes réalisées sur place. Les différentes cibles ne représentent pas nécessairement la même importance stratégique pour l'institution.

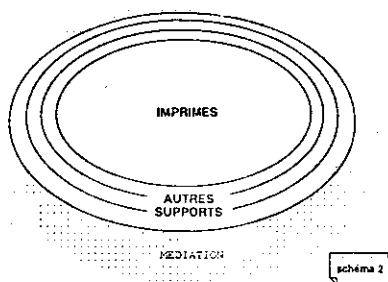


schéma 2

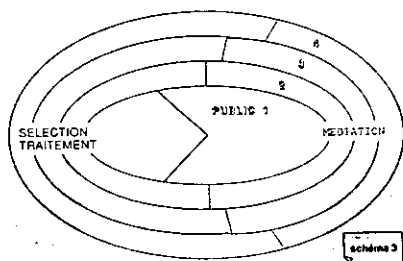


schéma 3

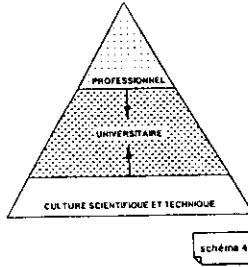
Dans un centre dédié à la vulgarisation, comme la CSI (Cité des Sciences et de l'Industrie), la bibliothèque doit privilégier le public qui n'a pas accès aux canaux traditionnels de l'IST (Information Scientifique et Technique). Viser un public profane, suppose de mettre à contribution tous les supports disponibles. La bibliothèque ne peut plus construire son offre autour du livre.

La part réservée à la médiation varie d'une cible à l'autre de manière que les priorités de public se traduisent bien dans l'ensemble des activités. La bibliothèque doit traduire son rôle de médiation dans son mode d'organisation.

Un système d'acquisition différencié par usage et public

Pour rapprocher le système d'acquisition du modèle centré *public*, il est utile de structurer les acquisitions en une pyramide à 3 étages (Cf schéma 4):

- à la base, les documents destinés à un large public ou utilisables par un large public
- au dessus, l'étage universitaire (1er et 2ème cycle)
- au sommet, l'étage professionnel qui vise, non les chercheurs, mais les ingénieurs, techniciens, professionnels de la santé, etc.



Pour un nombre donné de volumes dans une discipline, on peut jouer sur les hauteurs des 2 "plafonds".

La pyramide compte autant de faces que de supports nécessaires et rien n'empêche que les hauteurs des plafonds, et donc les volumes relatifs, diffèrent d'un support à un autre, à l'intérieur d'une même section, donnant une image concrète de la *complémentarité entre supports*.

Par exemple, nous pouvons compenser la faiblesse de notre offre "*livres de vulgarisation en chimie*" en proposant, moyennant une médiation adaptée, des audiovisuels didactiques ou des logiciels éducatifs de niveau scolaire auprès d'un large public.

L'unité de domaine de la pyramide est par exemple une subdivision de la classification de Dewey, ou éventuellement un regroupement de subdivisions.

Continuons la construction de la face *livres*:

- à la base (Cf les qualifications "grand public")
 - Les ouvrages d'initiation
 - Les ouvrages pratiques
 - Les beaux livres
 - Les essais
 - Les ouvrages de référence non spécialisés
 - Les manuels scolaires
- à l'étage intermédiaire, les ouvrages universitaires pour étudiants;
- au sommet
 - Les ouvrages professionnels
 - Les traités de spécialité

En poursuivant la construction des autres *faces* (périodiques, audiovisuels, supports informatiques et optiques, microformes) on délimite 3

"macroprogrammes" autonomes dont les objectifs peuvent être clairement identifiés:

- Base: offrir à un large public la *base culturelle* des sciences et des techniques sur tout support documentaire.
- Etage intermédiaire: offrir aux étudiants une sélection limitée en titres et en volumes de documents de qualité reconnue.
- Sommet: offrir aux professionnels une information généraliste à partir de documents de synthèse

Chacun de ces "macroprogrammes" comporte des programmes spécifiques par genre ou qualification, par exemple les *répertoires professionnels*, au 3ème étage.

A chaque étage sa politique d'acquisition et de traitement; à chaque étage sa *politique de circulation* et de *mise en valeur* et d'exploitation en service public.

politique d'acquisition:

- mode de repérage
- sélection, exhaustivité
- titres en langue étrangère
- nombre d'exemplaires
- rapport prêt/consultation
- renouvellement (actualisation-élimination)

politique de traitement:

- traitement en urgence
- exploitation documentaire
- enrichissement de la notice
- politique d'indexation

A chaque étage également, ses *modes d'acquisition*, son suivi et son évaluation.

Par exemple, les grandes collections généralistes de vulgarisation de la base peuvent donner lieu à acquisition en commande permanente en 2 exemplaires. A réception un exemplaire au moins est traité en urgence et mis en valeur à proximité des rayons. On peut décider de recommander des exemplaires selon différents critères (pérennité ou caractère consommable, rôle de produit d'appel, etc.).

A l'inverse, les acquisitions d'ouvrages universitaires pourront être regroupées (par ex. 2 fois par an à une période différente pour chaque domaine), de manière à être mieux encadrées.

Développer l'offre scientifique suppose de suivre l'actualité et notamment de commander les numéros spéciaux en monographie, pour rééquilibrer la production au profit du grand public.

Un service public "à la carte"

Face à l'éparpillement des savoirs et à la diversité des niveaux, les bibliothécaires construisent des outils structurant leur offre de service. Mais c'est la médiation humaine qui permet au profane de trouver un sens à cette offre.

On compte 4000 entrées par jour en moyenne à la Médiathèque de la Cité des Sciences et de l'Industrie. Une partie importante des visiteurs ne fréquentent pas les bibliothèques et ne soupçonnent pas ce qu'il peuvent en attendre.

Faire découvrir ces ressources en proposant des parcours multimédia de la science, transformer les visiteurs en utilisateurs autonomes, tel est le rôle des "médiathécaires". Une attitude passive favoriserait de fait le public initié.

Un service public pour la vulgarisation demande aux bibliothécaires d'accorder un soin particulier à la communication interpersonnelle: ouverture à l'autre, écoute attentive, mobilité, disponibilité.

La mise à disposition des documents et des catalogues n'est plus un aboutissement mais un commencement. Susciter le contact avec le public, recueillir son avis, évaluer l'activité "face public" deviennent des impératifs. Un relevé systématique des transactions permet de dégager une typologie, de confronter les pratiques en vue d'améliorer la qualité de réponse.

Des sondages fournissent des données quantitatives (flux, nombre de transactions et distribution horaire).

Les bibliothécaires peuvent donc se donner des objectifs qualitatifs et quantitatifs en nature de service public.

Une formation permanente à 3 volets doit accompagner cette évolution:

- dimensions culturelles de la science
- techniques documentaires
- communication.

Le désir de connaître

Le documentaire de vulgarisation intéresse un public très large. Le succès d'une collection comme *Découvertes* (Gallimard) en témoigne. Un même livre, un

même film peut être mis à profit par un jeune d'âge scolaire, un adulte en activité, un retraité, voire étudiant.

Moins connoté culturellement que d'autres productions, il joue un rôle d'"accroche" pour un public qui se sent extérieur à la "culture légitime".

Un bon équilibre entre texte (ou commentaire pour un film) et image, une densité d'information et une lisibilité satisfaisante, un style de qualité, méritent un intérêt égal à celui qu'on accorde aux oeuvres littéraires ou artistiques.

Le bibliothécaire, à l'écoute de ses publics, saura promouvoir cette production, pour susciter leur curiosité et attiser leur désir de connaître.

Notes

1. Gilles-Gaston Granger, *la science et les sciences*, PUF, 1993.
2. Sondage réalisé en 1985 pour la revue *Sciences et avenir*.
3. Sondage réalisé en 1987 par l'IFOP.
4. Enquête menée en Grande Bretagne et aux Etats Unis en 1988. Enquête menée en France en 1991 à la demande de la Cité des Sciences et le l'Industrie.
5. Opération *graine de curieux* (Ministère de la Culture, 18-24 novembre 1985).
6. Daniel Raichvarg et Jean Jacques, *Savants et ignorants: une histoire de la vulgarisation*, le Seuil, 1991.

Référence Bibliographique

TITRE	
AUTEUR	
EDITEUR	DATE
TITRE DE LA COLLECTION	

Caution Scientifique

--

Lisibilité

NOMBRE DE MOTS PAR PHRASE
VOCABULAIRE
DEFINITIONS
ACCROCHES
STYLE; TON

Structure

PARTIES AUTONOMES	ENCADRES	
PLACE OCCUPEE PAR L'IMAGE		
APPORT INFORMATIF DEL'IMAGE		
INTEGRATION TEXTE-IMAGE		
LEGENDAGE		
GLOSAIRE	INDEX	BIBLIOGRAPHIE

Aspect matériel

FORMAT	RELIURE
QUALITE TYPO	QUALITE IMAGE

Synthèse

LECTURE ALEATOIRE/LECTURE SEQUENTIELLE	
PREVEQUIS	PUBLIC VISE
AVIS GLOBAL	

QUALIFICATION POUR LES LIVRES

Ouvrage de vulgarisation	L11
Ouvrage de sensibilisation	L12
Guide pratique	L13
Ouvrage pour amateur	L14
Ouvrage de référence	L15
Ouvrage de réflexion générale ou de réflexion personnelle	L16
Ouvrage journalistique	L17
Livre de témoignage	L19
Beau livre	L21
Livre d'images	L22
Bande dessinée	L23
Livre de jeux	L24
Livre de fiction	L25
Ouvrage classique	L26
Livre-objet	L28
Ouvrage à usage professionnel supposant un prérequis technique	L41
Ouvrage à usage professionnel supposant un prérequis universitaire scientifique ou technique	L42
Répertoire professionnel	L43
Catalogue de produits	L44
Guide d'utilisateur	L45
Etude ou enquête (marché, économie, prospective)	L46
Statistique	L47
Norme	L48
Réglementation	L49
Manuel scolaire (enseignement général)	L51
Manuel scolaire (enseignement professionnel)	L52
Ouvrage universitaire	L61

Manuel d'exercices (niveau universitaire)	L62
Livre de recherche	L70

QUALIFICATION POUR LES DOCUMENTS AUDIOVISUELS

Documentaire audiovisuel d'intérêt général	A11
Audiovisuel de sensibilisation	A12
"Guide pratique" audiovisuel	A13
Documentaire audiovisuel d'information spécifique	A14
Document d'intérêt historique et interview de personnalité	A15
Audiovisuel de voyages, expéditions, aventures	A17
Reportage audiovisuel	A18
Audiovisuel de témoignage	A19
Reconstitution historique	A23
Audiovisuel de jeu	A24
Film de fiction	A25
Documentaire d'auteur	A26
Audiovisuel de prévention	A27
Emission de plateau ou avec présentateur ou débat enregistré	A28
Films d'archives (exclusivement)	A29
Audiovisuel pour la formation professionnelle	A41
Film à usage professionnel	A44
Audiovisuel didactique niveau scolaire	A51
Cours filmé ou enregistré niveau scolaire	A52
Audiovisuel didactique niveau universitaire	A61
Cours filmé ou enregistré niveau universitaire	A62
Audiovisuelle de recherche	A70

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UNE BIBLIOTHEQUE PAS COMME LES AUTRES

By Dan Stoica

Abstract: In this paper about the Library of the Seminar of Mathematics, founded by Professor Alexander Myller in 1910, the author presents history and present time of this special library which inspite of short financial support, political restriction and lack of trained librarians has developed in one of the most important libraries in its field.

Pour comprendre comment le professeur Alexandru Myller est arrivé à trouver impérieusement nécessaire de fonder une bibliothèque de mathématique à Iasi, il suffit de considérer la question en principe. On se posera donc le problème sous la forme: "comment arrive-t-on à fonder une bibliothèque strictement spécialisée?" Eh bien, c'est toujours pareil: on voit naître un groupe de recherche plein de force et d'appétit qui se voit limité dans son évolution par le manque de documentation: on assiste ensuite à la prise de conscience des membres du dit groupe quant à l'impossibilité d'avoir, chacun, chez soi, une bibliothèque complète. C'est le moment où le fondateur intervient. Pour le Séminaire Mathématique de Iasi, ce moment a été le 18 octobre 1910 et le fondateur a été le professeur Alexandru Myller.

Dans ses mémoires - gardées en manuscrit au Séminaire - le professeur Myller explique qu'il avait déjà remarqué la valeur de l'école mathématique de Iasi, capable non seulement de "produire" des enseignants de mathématique pour l'enseignement secondaire, mais aussi de former des chercheurs susceptibles de contribuer au progrès de cette science divine. L'avenir allait prouver qu'il avait juste: la valeur du groupe de chercheurs de Iasi a toujours été très élevée et, grâce aussi à leur merveilleuse bibliothèque, ils ont pu se maintenir aux premiers rangs de la recherche mathématique mondiale, là où on les retrouve à présent aussi.

Le long des années, la chance du Séminaire a résidé en ce qu'on a toujours eu quelqu'un d'impeccable (de tous les points de vue) qui ait sacrifié sa paix et une grande part de son énergie pour le bien de tous.

En plus, l'esprit du Séminaire veut que chacun ait un apport au bien-être et à l'évolution de la bibliothèque. Les mathématiciens travaillent, paient et souffrent pour leur bibliothèque. Et la bibliothèque le leur rend au centuple!

Peut-être, est-ce la situation économique qui engend ce souci profond et permanent pour la bibliothèque. En sachant strictement limités pour ce qui est de l'achat des livres et des périodiques, les mathématiciens du Séminaire ont une mentalité différente quant aux livres de celle des Occidentaux, qui peuvent s'offrir, eux, à peu près tout ce qu'ils veulent des documents qui les intéressent et même refaire le geste si, des fois, quelque chose "disparaît".

Il serait intéressant de préciser que le fonctionnement de la bibliothèque a été assuré pendant les 45 premières années de son existence sans l'intervention d'un bibliothécaire professionnel. La règle voulait que le plus jeune assistant de la Faculté couvre aussi les tâches de bibliothécaire. Cela était tout à faire possible vu que chacun des bénéficiaires "mettait la main à la pâte" pour la correspondance, pour l'enregistrement des nouvelles entrées, pour la vérification périodique du fond de livres. Du rang des "assistants-bibliothécaires" il suffirait de nommer celui qui allait devenir l'académicien Octav Mayer, et aussi celui qui devait prendre la relève à la tête de tous, après la mort du professeur Al. Myller: le professeur Adolf Haimovici qui a dirigé le groupe de chercheurs et la bibliothèque depuis 1965 jusqu'à sa mort, le 2 janvier 1993.

La bibliothèque a été organisée sur le modèle de celle de l'Institut de Mathématique de Göttingen que le professeur Al. Myller a bien connu lors de la préparation de sa thèse de doctorat. Les 67.000 documents sont considérés comme appartenant à des catégories diverses: monographies (ou collections d'articles édités par quelqu'un); périodiques; travaux des congrès; livres anciens et matériel de référence. Les monographies sont rangées alphabétiquement, en prenant pour repère le nom du premier auteur (éditeur); le même principe s'applique pour les livres anciens et le matériel de référence. Les périodiques sont groupés par pays et alphabétiquement, d'après l'initiale du titre, dans le cadre du pays. Les actes des congrès sont ordonnés selon l'année où les travaux ont effectivement eu lieu.

Cet arrangement permet à chacun des membres du Séminaire de se sentir à l'aise dans la bibliothèque, comme si c'était une bibliothèque personnelle pour chacun d'eux. Ils bénéficient, grâce à une clef que chacun a, du libre accès au fond 24 heures par jour, 7 jours par semaine. Ce le suppose, bien entendu, un esprit de solidarité, de respect pour les livres et pour les autres, une discipline très stricte. On avait même demandé au professeur Al. Myller son avis sur la chance de voir une greffe prussienne fonctionner sur un porte-greffe moldave. L'allusion ne manque pas de transparence: l'esprit rigoureux des Allemands n'a pas trop de

points communs avec celui relâché des gens des Portes de l'Orient. Le professeur a répondu affirmativement et a prouvé qu'il avait raison, que son idée - sa volonté aidant - allait porter ses fruits.

Il fallait donc une personnalité très puissante qui prenne en main la direction du groupe et de la bibliothèque en même temps.

Comme dans tous les cas similaires, le Séminaire Mathématique "Al. Myller" produit un périodique scientifique: *Analele Stiintifice ale Universitatii "Al. I. Cuza"*. Les mathématiciens se sont toujours donné pour tâche d'en faire un journal important, de haut niveau scientifique, en dépit de son "look" qui n'a jamais été à la hauteur du contenu. Cela a fait que l'on ait pu échanger ce journal contre d'autres périodiques de spécialité du monde entier. De nos jours, la bibliothèque du Séminaire compte, parmi ses 320 partenaires d'échange de publications scientifiques, les plus renommés centres de recherches et universités de 45 pays du monde.

On peut voir là une des sources d'acquisition, valable même pendant l'époque noire, où personne ne pensait à investir pour la science. Ça n'a pas été la seule source. Pour les livres, on a pensé à offrir aux éditeurs du monde ce que l'on appelle "service de presse commandé". c'est-à-dire qu'on publie dans nos Annales des comptes rendus critiques des ouvrages que les éditeurs nous envoient, sur notre choix. Ce genre de promotion a intéressé, le long des années, des maisons d'édition renommées telles que Springer Verlag, Elsevier, Cambridge University Press, Dunod, Longman, John Wiley, Walter de Gruyter et encore beaucoup d'autres.

Les dons ont aussi contribué - constamment sinon largement - à l'accroissement du fond de publications du Séminaire. Il y a toujours en plusieurs catégories de donateurs: d'abord ceux qui offrent sans poser de question préalable; viennent ensuite ceux qui consultent d'abord les responsables de l'acquisition pour la bibliothèque du Séminaire et il y a ceux qui créent un crédit en banque, au nom du Séminaire, et laissent le libre choix aux membres du Séminaire quant au moment de l'achat, aux titres à acheter, au nombre d'exemplaires à acquérir et aussi pour ce qui est du libraire à contacter. Certes, de toutes, la dernière catégorie est préférable, mais on ne se rappelle aucun moment de l'histoire de la bibliothèque de Séminaire Mathématique. "Al. Myller" où on ait refusé un don (à moins que ce ne fût quelque tentative d'immixtion dans les affaires internes du groupe en vue d'un changement quelconque des règles de fonctionnement). Des collections que cette merveilleuse bibliothèque abrite, nous pensons traiter dans une étude à part qui porterait sur un autre niveau - le deuxième, en profondeur - de sa structure. Toutefois, on ne saurait faire une présentation - si sommaire qu'elle soit - de la

bibliothèque du Séminaire "Al. Myller" sans préciser qu'elle a pour acte de naissance l'enregistrement des 100 premiers volumes de *Crelle's Journal für die Mathematik*, publications dont il serait superflu d'apprécier la valeur. Ce titre a été acquis ensuite, volume par volume jusqu'en 1978. Malheureusement, des problèmes de budget - aussi bien chez nous, que chez nos partenaires d'échange, en Allemagne - ont provoqué - l'interruption de l'acquisition pour ce qui est de ce journal et de beaucoup autres. Parmi les plus résistants titres maintenus, par échange de publications scientifiques, depuis 1978, nous sommes fiers de signaler les *Comptes Rendus de l'Académie des Sciences de Paris* (collection complète, commençant par le tome I/1835). Le fond de livres anciens de mathématiques - un des plus valeureux du monde - comprend des ouvrages qui tiennent aux débuts de l'imprimerie, et aussi des collections d'oeuvres complètes parues il y a des centaines d'années. Pour ce qui des secteurs d'usage, il n'y manque rien de ce qui a été et reste fondamental dans les domaines des mathématiques: de Gauss à Poincaré et à Cartan, des *Principia* de Russell à Hadamard et de Carnap à Manin, pour ne rapeller que quelques noms, sans compter les Roumains, lesquels font figure de taille à côté des noms que je viens d'énumérer.

Comme toute institution dont l'histoire compte déjà plus de 80 ans, la bibliothèque du Séminaire Mathématique de Iasi a connu des moments parfois difficiles, mais l'humor des mathématiciens et le caractère neutre de leur science ont diminué les "secousses" de l'histoire. Ainsi, n'y a-t-on jamais retiré aucun livre de l'accès libre courant, même si les auteurs, en tant que personnes, étaient officiellement mis à l'index. Pendant une courte période, quand même, on a imposé le contrôle des lectures des mathématiciens: certains auteurs ne devaient être accessible qu'après avoir obtenu la signature du directeur du Séminaire sur la fiche d'emprunt. La solution allait prouver l'esprit ouvert du directeur, l'esprit d'équipe régnant dans le groupe de chercheurs, l'esprit de la science des mathématiques et l'humour de tous: on faisait signer toutes les fiches, une fois par jour, sans discrimination!

Il nous semble intéressant aussi de signaler le fait que, du point de vue du Séminaire de Iasi, l'Allemagne n'a jamais été divisée, c'est-à-dire que les collections de périodiques allemands n'ont jamais été séparées entre 1945 et 1990, les titres suivant dans leur arrangement le principe général employé chez nous, celui de l'ordre alphabétique dans l'espace destiné à un pays. C'est ainsi que, après 1990, il n'y a eu rien à modifier dans la position des périodiques allemands. Une autre modification que nous n'avons pas eu à faire tient à la nature du fond de publications. On est les seuls en Roumaine à avoir résisté à des "implants" honteux spécifiques à l'époque communiste: les ouvrages de l'idéologie du moment et le fameux portrait du dictateur. De sorte que, après la Révolution de Décembre 1989, on n'a rien jeté! On a toujours eu (et nous espérons continuer de

la même sorte) que des ouvrages de mathématiques, soigneusement empreints de notre "tampon de propriété" aux pages 3, 31, 314, 3141 en suivant le célèbre π , si cher aux mathématiciens.

Pour compléter l'image de cette bibliothèque, nous disons qu'elle est unique en Roumaine par sa structure et par son fonctionnement, qu'elle est la plus grande - de son espèce - du Sud-Est européen et qu'elle est comparable à celle de l'Institut de Göttingen et à celle de l'Institut "Mittag-Leffler" de Stockholm.

C'est dommage de voir que le modèle de Iasi n'a pas servi aux autres, dans d'autres grands centres de recherche de Roumaine. L'explication ne peut en être que celle basée sur la chance d'avoir une personnalité au bon moment qui fasse que les merveilles se passent. A Iasi, les mathématiciens ont eu cette chance extraordinaire il y a 83 ans. Il revient à nous autres, ceux de la fin du siècle, à continuer ce que les grands hommes du début du siècle ont si généreusement créé. Comme l'avenir semble être aux bibliothèques spécialisées, nous pouvons envisager des temps formidables à venir pour les unités telles que la bibliothèque du Séminaire Mathématique "Al. Myller".

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THE COLONIAL FACTOR IN LIBRARY EDUCATION IN ENGLISH-SPEAKING WEST AFRICA

By Anaba A. Alemna

Abstract: This paper is a brief attempt to trace the development of library education in West Africa from the pre-independence days to the present time. The writer tries to provide a historical perspective of evolution while attempting to show the influence of the colonial masters at each stage of the development. It has been found that right from the early days of library training in West Africa to the present time, Anglo-American influences have dominated library school programmes. The writer concludes by suggesting that some of the contradictions on African librarianship can only be eliminated through an interchange of ideas and the introduction of workable adaptations.

Background

The education and training of libraries in Africa as in all other colonial areas, for any years followed the British tradition, with regard to their motivation and method. There were many reasons for this development, but the most significant one is that libraries were established on a permanent basis in Africa by British librarians and educationists, hence the transfer of British theories of library practice.

Before library schools were established in African countries, most of the students from the British colonies were trained abroad mainly in Britain. There was no alternative but to award overseas scholarships to deserving students. The students often went to Britain to qualify to be Library Association (LA) Associates or Fellows.

Advantages of overseas education

Arguments put forward in favour of overseas education may be summarized as follows:

1. Scholarship could be obtained without much difficulty from Governments and cultural foundations. It was also assumed that the public would gain confi-

dence in the knowledge that their librarians held qualification that were internationally recognised.

2. It was at that time cheaper to send a few students abroad, than to recruit highly-paid expatriate staff, put up an expensive building, and provide facilities for students in a local set-up.
3. The content of a local syllabus had not been given sufficient thought.
4. In ideal situations indigenous lecturers should be preferred to expatriate ones. But indigenous staff were not available. It was also realised that even if foreigners were to be employed, they need a long period of adjustment to local conditions before they could communicate meaningfully with students.
5. Equipment for teaching and technical aspects of librarianship - book production, printing and data processing was lacking in all parts of Africa. If these subjects were taught in theory only, students would not fully understand them.

Disadvantages of overseas education

1. It was difficult at that time for metropolitan library schools to fully comprehend the priorities of African libraries and provide tuition accordingly.
2. The alien culture of Europe did in fact induce unhealthy psychological conditions in students who did not have too resilient a mental and emotional constitution. Whatever benefits are gained by travel were therefore negated by these adverse conditions.
3. Some governments were reluctant to release their best students for overseas study because if they did not return, as happened all too often, there would be more serious problems for the African countries.
4. Education abroad is expensive in terms of foreign exchange.
5. In terms of quantity, foreign education is not very productive. Local schools produce more students, although prolific student production may not necessarily be a good thing.
6. Prolonged foreign education may lead to professional alienation. Infused with great professional ideals, the young librarians are determined to overthrow the established order without delay, but this reforming zeal is often in excess of the remedy required to correct faults in the organisation.
7. A local school, offering local qualifications, is better able to integrate teaching with the examining process, and can make use of local experts for fringe subjects.

Despite the overwhelming evidence in favour of education at home, and despite the various incongruities noted by British visitors themselves as being the effect of foreign education, scholarship awards and local training schemes continued to follow the British direction.

Comparative librarianship

In order to counteract some of the disadvantages in the education of African librarians abroad, comparative librarianship was introduced as a major subject in some of the Library Schools in Britain. The formation in 1967 of the International and Comparative Librarianship Group (ICLG) of the Library Association, was perhaps the first collective expression of interest, in evaluating library theory and practice in countries outside the United Kingdom.¹

A number of British Library Schools teach comparative studies involving developed and developing library systems. There have also been a number of FLA theses on African subjects. Impressive though these comparative studies may appear, they contain some weaknesses which should be pointed out.

First, some of the lecturers involved can only give students technical assistance of a purely bibliographical kind. They may also give guidance in methodology, but mostly by reference to the methodology of other disciplines. This is to say that the methodology of comparative librarianship is not sufficiently developed to enable either supervisor or student to properly evaluate the results of his work.

Secondly, despite the recent upsurge of library literature about Africa,² the quantity is still insubstantial. What is more, library systems in Africa do not really compare with Britain's, in terms of service, facilities or use. As the library institution and the concept of librarianship are more developed in Britain than in any individual African country, most comparative studies will tend to be lopsided. The basic and more fruitful approach in all comparative studies is to analyse systems on a similar basis. In other words, the two systems much have dimensional identities.³

Thirdly, a few of the lecturers appointed to lecture African students often do not have a deep professional experience of Africa. Their knowledge of African library problems was either gained from fleeting impressions acquired during short visits to the continent or from reading articles in professional journals. This is not meant to deride, but to comment on the nature of comparative studies in some of the schools overseas.

On the credit side the comparative approach to librarianship gives the profession a cosmopolitan character. It is an antidote to parochialism, a habit which for several decades was threatening to become an occupational hazard. Comparative studies are of value also as purely an academic exercise, as it offers opportunities for integrating librarianship with varying determinants.

Africanisation of the L. A. Syllabus

For the past several years Ronald Bengé⁴ had been an implacable critic of the British structure, particularly the separation of examinations from teaching. It would be recalled however that the first ever attempt to adapt the LA syllabus to African needs was made by Michael Jolliffe, the then Librarian of Khartoun University College Sudan.⁵ He reported to a 1957/58 session of his library committee that he had designed a syllabus related in standard to the LA's but smaller in content and limited in application". It would be a purely local examination to provide a channel of advancement to Junior Staff.

The main concession made by the LA to overseas African candidates did not appear until the new 1964 syllabus came into being. But it was governed by regulations which gave it a reception of mixed feelings. It required six months' notice of a candidate's intention to sit. Although administratively necessary, this condition, together with obligatory attendance at a full time school, caused despair in those countries where there were no library schools.

University departments

After several years of preparing and writing the LA's certificate examinations, some African countries found it necessary to establish Departments or Institutes of Library Studies in their Universities. A university course was justified on the following grounds:

- a. It would conform with modern trends in library education; library graduates will compete on an equal footing with their colleagues in other professions and this would raise the status of librarianship.
- b. It is important that librarians should have an appropriate general education. Libraries in Africa would be unable to recruit high quality staff if librarians' qualification were not made equal to university degrees.

British and American theories

Before any significant number of library schools had been established in Africa, there was a heated controversy as to the kind of education more suited to West African needs. The main point at issue was the level (post-graduate or professional). The controversy came to a head at Ibadan in the course of the Unesco Seminar for Public Library Development in Africa, held in July, 1953.

In a review article on the Seminar, Jessie Carnell⁶ emphasised that the basic need for African Libraries was not "leaders" but "workers". At any rate leaders were not

made in schools. The essentials for leadership were certain innate qualities such as character and a high level of intelligence; quality of leadership evinced themselves through discipline of work and the experience of responsibility.

The director of the Gold Coast (Now Ghana) Library Board, E.J.A. Evans was even more forthright in denouncing the idea of a post-graduate leadership course. She expressed a total disagreement to the whole idea.⁷ Meanwhile, the two main large library systems in West Africa at that time, namely those of universities of Ibadan and Ghana (led by John Harris, the Librarian at the University of Ibadan) supported the leadership idea and encouraged its development.

It is significant that Unesco did not invite American Librarians to the Seminar, presumably because their system was not considered appropriate to African public libraries. The theme of the Seminar itself suggested that Unesco was more interested in professional training than education, at higher level. If this deduction is correct, then it would explain the Assistant Director-General's intention to found a professional course on the British, rather than the American pattern, despite the seminar's recommendations to the contrary.

The Lancour report of 1958

A request by members of the West African Library Association (WALA) to the Carnegie Corporation for funds to establish a library training school, led to the arrival of Harold Lancour in West Africa to make a reconnaissance survey of the library situation, to assist the Corporation evaluate each request for funds. In his report Harold Lancour stated his preference for a school in a local institution of higher education, "with the resources, personnel and prestige to develop a high quality professional training agency".⁸

After a careful appraisal of the universities in the subregion, he came to the conclusion that Ibadan had better accommodation and bibliographical facilities than the rest. Upon his recommendation to the Carnegie Corporation, a post-graduate Institute of Librarianship was accordingly opened at Ibadan in October, 1960 on a grant of \$88,000 for the first five years after which the university would take over financial responsibility.

A prospectus was published by the Institute the same year, which announced among its main objectives, the investigation of "problems of librarianship and bibliography, and with particular attention to the leadership level".⁹ In the implementation of this objective however, the institute for a number of years operated a curriculum which gave it very little scope to exercise its African prerogatives.

Initially, from 1960-1963 the Ibadan Institute recruited both graduate and non-graduate students and awarded them the same diploma after a course lasting one academic year.¹⁰ Non graduate entrants who passed two parts of the ALA could proceed with the rest of the papers under the tuition of the Institute (Nongraduates have since been eliminated from the programme).

Incidentally, no student outside of Nigeria applied for a place at Ibadan in the first few years. This was due partly to the fact that the authorities in the other West African countries preferred to send their trainees abroad. Nigerian graduates themselves did not clamour for places at Ibadan because there were limited opportunities in library work for graduates, as compared to opportunities in other professions.

Critics in Ghana would have looked upon the first few years of Ibadan with consternation. Its adoption of the ALA syllabus and qualification was a contradiction of the much vaunted leadership idea. The fact that there were more non-graduate than graduate students confirmed the view that workers, not leaders were more in demand at that time.

To conclude the controversy, it seems that each faction (led on the one hand by John Harris and on the other by Evelyn Evans) advocated the system best known to themselves, and which seemed to conform with hallowed practice in university and public libraries respectively. If this is so, then their attitudes were more subjective than objective, and their inability to find a compromise probably stemmed from circumstances beyond their control.

Present situation

When one takes stock of the staff situation of the 1950's, the greater need in quantitative terms, was for workers, and not leaders. However, the situation has now changed. As time went on and libraries in West Africa grew in size and complexity, the need for more mature persons with university education became apparent. More library schools have therefore been set up in the various countries, that are offering post-graduate and middle-level courses.

Currently, there are about twenty library schools in English-Speaking West Africa, with a large majority of them in Nigeria. Apart from the Ibadan library school, all the other schools in Nigeria have first degree programmes in operation.¹¹

The Department of Library Studies at Fourah Bay College in Sierra Leone offers undergraduate certificate and diploma course. The Department of Library and Archival Studies at the University of Ghana has undergraduate diploma, post-

graduate diploma, and masters programmes. All the library schools have structured their courses along the Anglo-American models although attempts are continuously being made at modifications.

Conclusion

Many of the issues raised in this paper have not yet been clearly articulated, much less documented in the form of textbooks. It may be necessary to treat them at seminars and conferences so that different points of view can be collected into coherent, meaningful theories. In so far as library education in West Africa was based on foreign systems, and continues to be operated on those premises, it should be necessary also to exchange views on persistent contradictions of African librarianship with experienced practitioners from the older countries, so that workable adaptations can be introduced. To this end, current studies in comparative librarianship, which take into consideration the diverse streams of world dimension should be encouraged.

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THE PREDICAMENT OF SCHOOL LIBRARIES IN NIGERIA: A STUDY OF THE JOS METROPOLIS

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Abstract: The educational sector appeared to have been worse hit particularly after the introduction of the Structural Adjustment Programme in 1986 and the deregulation of the economy in 1992. In this particular situation it is desirable to assess the present condition of school libraries. In this empirical study of schools in Jos, Plateau State, a general picture of school libraries in Nigeria should emerge.

The situation most probably accounts for inadequate funding of the libraries. This development leads to the need for more inter-library cooperation. Apart from materials sharing one relevant area of resource sharing is personnel training. The government is not left out in the library development process since it is the main sponsor of more than 80 per cent of secondary schools in the country.

Introduction

Nigeria, the most populous black nation on earth, has been experiencing some difficult times since the introduction of economic austerity measures in 1980. The educational sector has not been spared in this. In fact, it appeared to have been worse hit particularly after the introduction of the Structural Adjustment Programme (SAP) in 1986 and the deregulation of the economy in 1992. These government policies have translated into exorbitant foreign exchange rates and placement of books and printing materials under high custom duties at various times. The effect of these on institutions of learning is a drastic cut in or outright stoppage of books importation, local book publishing and journals subscriptions. (Jegede, 1993).

It also led to a drop in school enrolment as many parents could no longer afford the increasing cost of education. For instance, 19 per cent of school-age children were in 1980 enrolled in secondary schools, increasing to 29 per cent in 1985 (a year before the introduction of SAP), and dropping to 20 per cent in 1990. (GCA 1993). The purchase of recommended texts by students dropped significantly as the economic power of most students and parents was severely weakened with a

runaway inflation of about 400 per cent. This was accompanied by social unrests and a general paralysis of all sectors of the nation's life.

Thus, in the particular situation of school libraries, it is desirable to assess their present condition in the new dispensation. This is primarily because of their crucial role in the educational process, and, the pressure that perceived socio-economic trends could put on school libraries. Therefore in this empirical study of schools in Jos, Plateau State, a general picture of school libraries in Nigeria should emerge.

Jos a capital city (political and economic) with a population of 622,873 (NPC, 1992) has a total number of 60 secondary (High) schools, one Polytechnic, a College of Agriculture, and a University. A historical tin mining town, it has recently grown to be an urban centre with thriving commercial businesses, industries, and educational institutions. The population is heterogeneous with English language as the lingua franca and no less than ten Nigerian languages spoken by the respective ethnic groups making up the population. Coupled with good climatic conditions, Jos, which is on a Plateau, is 5,000 ft above sea level and has suddenly found itself as a satellite town of the new Federal capital territory which is about three hours drive (by road) away.

In responding to the needs of the various groups in the society libraries have emerged in Jos meeting their social, cultural, leisure, educational and information need and with varying degrees of accessibility to secondary school students. An outline of these libraries follow, after which there is a brief discussion of School libraries in Nigeria, Methodology for the present research, Results and Interpretation, Discussion and Conclusion.

Library services in Jos metropolis

The most prominent of the libraries in the Jos metropolis fall within the broad categories of Public, National, Special, Academic and Research libraries, viz:

Public library services

The main sponsor of public library services in Jos is the State Government through the Bureau of Information. It is called Plateau Library Services. Established in 1976, it has a total stock of 45,331 volumes. It is opened to the public from 8.00 am to 6.00 p.m. Mondays - Fridays and 8.00 am-1.00 p.m. on Saturdays. An earlier study of Use Pattern (Akintunde, 1984) in both the Plateau Library services and the National Library branch in Jos showed that 77 per cent of users were students; with workers and applicants scoring 16 and 3 per cent respectively, and 4 per cent not responding. However, more curiously is the find-

ing that the libraries were used for the following purposes: leisure 6 per cent; preparing for examinations - 73 per cent; and class work - 21 per cent. But more interesting is the finding that, among the students, 52 per cent were boarders while 48 per cent were day students; which suggests that either the school libraries were so small that the students found it more convenient to use the facilities of both the State and National libraries, or, the libraries were just not there. Indeed, the same research, referred to above, revealed the following distances covered by patrons (Table 1).

Table 1: Distance (in kilometres) covered by patrons of the state and national libraries in Jos.

DISTANCE	%
1. Kilometer radius	33
2. Kilometers	24
Above 2 kilometers	38
Total:	100

This finding is corroborated by Nwokocha in his study of public libraries utilization in Eastern Nigeria (Nwokocha, 1993). In that study, he found that majority of public library users were students preparing for examinations.

National library

The national library branch in Jos was established in 1975 and holds 15,434 titles of bound volumes, 134 serial titles and 1,410 titles of official of publications. It is more of a reference library with good furniture which makes it even more attractive to students. It opens from 9.00 a.m to 8.00 p.m. mondays to fridays and 9.00 a.m. to 10.00 p.m. saturdays. As mentioned above, it is well used by secondary school students.

Special libraries

A good number of other libraries exist in Jos meeting peculiar needs of their institutions. Such libraries include those of the National Metallurgical Development Centre, Steel Rolling Mill, Industrial Training Fund, and The Nigerian Mining Corporation. They are exclusive to secondary school students.

Academic and research libraries

By connotation, academic and research libraries serve the information needs of tertiary education. So secondary school students do not benefit much from their

facilities which are not even accessible to them. The academic and research libraries in Jos metropolis include those of the University of Jos, Plateau State Polytechnik, National Veterinary Research Institute and, National Institute for Policy and Strategic Studies. The stock of these libraries is barely sufficient for their own clients in a period of austerity and almost dormant growth rate.

The above periscope of libraries in Jos therefore suggests that apart from the national and state library services, students in secondary schools will have to depend mainly on facilities available in their respective schools. The status of these facilities is the problematic of this research and would be discussed shortly after a brief report on the general situation of school libraries in the country.

School libraries in Nigeria: a brief survey

In an earlier paper, Ojoade (1993) aptly summarized the state of school libraries in Nigeria, thus: "Libraries do exist in secondary schools, but many almost in name, because all the elements required for them to operate are not put in place ... Such services and facilities include the provision of recorded knowledge relevant to their academic and recreational needs and available in various formats. These are in book and print form, as well as non-book form like maps, audio and video cassette, tapes, slides, films, microforms, and in more recent times, computer software. Also included are museum items, archival materials, kits and packages produced by the institution, or larger organisations, local, regional and national." But it is not sufficient to stop here. Specific studies of school library situation in different parts of the country are quite instructive. Elaturoti (1983) reporting a study of the western part of the country found the situation 'regrettably poor'. There were very few or no staff to manage existing school libraries. This situation is similar to that of Eastern Nigeria in terms of staffing. However, almost all the secondary schools in this part of the country (Eastern) had libraries of some sort. In the Northern part, development of school libraries has been described as "accidental", even though almost all the secondary schools had libraries. The major problem was in book selection by the teachers who were not particularly trained as school librarians. (Muogilim, 1984). The general situation of school libraries in Nigeria is therefore pitiful especially when it is realized that about 80 per cent of the schools are substantially government funded. And government has not faithfully released due grants to the schools in recent times resulting in strikes by both teachers and students especially in the last five years. Also, the nation is generally slow joining the international network of information through the use of computers, thus depriving secondary school students of potential learning resources.

Methodology

The social survey method was used. Questionnaires, interviews and observations were the main techniques employed to gather data. The study was limited to Jos metropolis. Since the schools have different ownership patterns - Government and voluntary agencies, (missions and private individuals) attempt was made to have a representative sample of these. Thus, the most prominent of these schools in terms of academic achievements and popularity were selected. They are more or less models of the various categories of schools in the metropolis. Twelve schools were identified but two did not complete the questionnaires. A general statistic of the schools that responded is found in Table 2 below.

Table 2: General statistics of the school

Name of School	Year Est.	Ownership	POPULATION	
			Staff	Student
1. Hillcrest	1942	Private	28	400
2. Commonwealth College of Comm.	1959	Private	33	820
3. Baptist High School	1961	Mission	34	460
4. St. John's Col.	1965	Mission	45	1,141
5. Naraguta Grammar Sch.	1967	Private	35	800
6. Government Col.	1969	Govt.	104	1,300
7. Govt. Secondary Zaria Road	1972	Govt.	74	2,047
8. Fed. Govt. Col.	1973	Govt.	250	1,700
9. Govt. Sec. Sch. Gangare	1983	Govt.	200	3,000
10. Bethany Christian Acad.	1982	Mission	15	460

Abbreviations:

Acad.	-	Academy	Fed.	-	Federal
Col.	-	College	Govt.	-	Government
Comm.	-	Commerce	Sch.	-	School
Est.	-	Established	Sec.	-	Secondary

Research questions focused on Personnel, Funding, Collection Development, Other Library Facilities/Equipment, and use of the Libraries, as reported below.

Analysis and interpretation

The analysis and interpretation which follow attempt to bring out the picture of the schools as discovered by the researchers.

Personnel

Only 40 per cent of the schools had trained librarians. These are one government, one mission and two private proprietorships. In 60 per cent of the schools, teachers were appointed as 'librarians' to oversee the affairs of the library as one of their routine duties. Such teachers had no previous training in any aspect of librarianship. However, 90 per cent of the schools had other categories of staff mainly student assistants, and cleaners. The inability of most of the schools to employ librarians is attributed to an apparent lack of the importance of libraries to the school authorities and poor funding.

Funding

Apart from funding by sponsors of the various schools, other sources of funding are by donation - 70 per cent and Parent/Teachers Associations - 50 per cent. However, the funds have not been free flowing as expected. Only 30 per cent (one each of private, mission and government schools) affirmed that they had received funds for their libraries 'regularly'. Forty per cent (one mission, one private, and two government schools) reported 'irregularly': while 30 per cent reported 'most irregularly'. This result tends to show that funding of school libraries has never been a priority of the secondary schools in the Jos metropolis. Furthermore, there is no difference in the pattern or level of funding between the ownership structures of the schools.

Collection development

Collection development in all the schools is apparently dormant. Whereas all the schools had books and monographs formats numbering up to 2,500 volumes per school, only 50 per cent held journals and 40 per cent holding newspapers of between five to ten titles.

Only two schools - mission schools, had audio-visual aids in forms of radio cassette players, tapes, and television sets. One private school has some computer sets.

The condition of most of the book holdings is particularly pathetic as in 90 per cent of the schools they could easily pass for archives. Sixty per cent of the schools had not received new additions to their holdings in the last ten years. This is attributable to inadequate funding, which has also affected the serials holdings

which are mainly gifts and do not come as frequently as published. However, the most sorry aspect is the virtual lack of audio-visual resources which are most necessary in the secondary school learning process, facilities which are taken for granted in most advanced countries and, even, some developing countries.

It does appear, therefore, that collection development is non-existence in almost all the libraries. Yet, these are libraries of the most prominent schools in one of Nigeria's few metropolitan centres.

Other library facilities/equipment

Other library facilities investigated include space, sitting capacity and classification scheme in use. On space, an average of 120 square meters room has been made available in the schools for libraries with no significant difference between government, mission and private schools. There is an average of 46 seats in 80 per cent of the libraries. One has only 8 seats while another had no provision for seats. With a proportion of one seat to 27 students in the schools, the sitting capacity is apparently grossly inadequate. And since the libraries are not well funded as earlier discovered, it seems that it would be difficult to improve on both the space for libraries and sitting capacities available, in the near future unless there is a radical review of present funding levels in the secondary schools.

The classification tool in use in 50 per cent of the libraries is the Dewey Decimal Classification scheme while 50 per cent of the libraries have no classification scheme whatsoever. When placed in the context of a virtually dormant collection development program in the schools, it is perhaps understandable why 50 per cent of the schools possibly have had no need to have a classification scheme. Moreover, the collections are quite small and archaic.

Use of libraries

Use is made of the school libraries by teachers and students. Most teachers that used the libraries did so only when they were asked to lead their classes to the library to observe library hours. Library hours is the distributed time for each class in a school to visit the library and consult library materials. During this period, students are allowed to carry any text into the library except their note books to jot down important phrases, make notes or new vocabulary. Serials are not borrowable in all the schools, though in 40 per cent of the schools books are borrowable at set times other than the library hours. The Student Library Assistants keep the records of the circulation of books under the supervision of the school librarian or appointed teacher 'librarians'.

Because the libraries are shared equally by the classes in the schools, a student might not have more than 40 minutes (the library hour) in a week to make use of library facilities. Thus, students are severely limited in their use of school

libraries. Yet another constraint is the hours of opening which range from 6.20 a.m. (GMT) to 2.30 p.m. (GMT) in 90 per cent of the schools. Only one school - a mission school, has its library opened up till 8.00 p.m. (GMT). The school has a trained librarian and allows final-year students to make use of the library during evening hours - for class assignments and self-development.

Of all the schools, only four - three mission and one private have boarding facilities and these are those that have relatively longer library opening hours than the rest, which are day-schools. It does appear, therefore that use of the libraries by both staff and students is severely affected by the type of system run by a school i.e. day or boarding, and lack of adequate facilities including current books and journals, space, and library hours.

Discussion and conclusion

In discussing the results of this research, it is important to uphold the fundamental need of libraries in the learning process in creating a 'whole' man; i.e., an educated man that combines "moral, intellectual and physical excellence" (Ojoade, 1993). Findings in this study have shown that there is an acute shortage of professionals in school libraries in Jos metropolis. When placed in the national background - the situation appears normal and is even not limited to Nigeria. In a study of Hungarian school libraries, Dan (1993) identified a similar trend: only 30% of staff in charge of school libraries were professionally qualified. Similarly Takiko Asai (1991) in Japan reports a situation in Yokohama which suggests that the importance of school libraries and trained librarians is yet to be appreciated. So, the issue of appropriate personnel to look after school libraries appears to reflect a universal trend. The problem seems to be that of a lack of proper understanding of the pivotal role that libraries play in the educational process (Tawete, 1995).

This situation most probably accounts for inadequate funding of the libraries. It is plausible that a well-equipped school library or media resources centre with trained and adequate staff will tremendously serve the knowledge and information needs of both staff and students. It could also make up for inadequate teaching staff and poverty of students who are unable to purchase required texts in the prevalent austere economic times.

However, this development leads to the need for more interlibrary co-operation. Whereas public libraries in Jos presently appear to support the schools in their provision of reading rooms/facilities, the special, academic and research libraries could contribute to the provision of books and serials in the secondary schools through a well planned 'gifts' network. While it is understandable that tertiary

education texts might not be easily relevant to secondary school students, this might not be the case with students in the higher classes of secondary schools who are already aspiring to higher education. So far, there has been very little areas of inter-library cooperation between secondary and tertiary institutions in Jos, the state, and, nationally. In periods of austerity and in an age where the new information superhighway is breaking down library walls, it is imperative for all levels of libraries in Nigeria to come together in order to respond to their common need - current, relevant and timely information in a new world information environment. Discussion on resources sharing so far has been limited to libraries other than secondary school (Ugbogu, et al. 1992; Banjo 1985; Rosenberg, 1993).

Apart from materials sharing, such as books, journals, shelves, desks etc. one relevant area of resources sharing is personnel training. Professionals in public and tertiary institutions could organize workshops and seminars for teacher 'librarians' in order to make them more competent in the administration and management of school libraries. Teacher 'librarians' could also be invited to respective tertiary libraries for training attachment. Such librarians can even be taught, and, encouraged, to mount user-instruction programmes in their respective secondary schools as this has been found to have a positive effect on students' attitudes and performance (Goodin 1991).

Thus, library hours in the schools may have to be stretched beyond the present in order to provide each student with sufficient time to not only use, but, exploit, library resources.

The present trend in which the library is used mainly for class assignments and in preparing for examinations needs to be reversed such that students would be made to develop a reading culture that transcends reading for examination purposes and, in order to merely pass through the formal learning process.

The government is not left out in the library development process since it is the main sponsor of more than 80 per cent of secondary schools in the country. Through a central acquisition programme, the Federal government had in the past, distributed books to public (government sponsored) secondary schools through the National and State Libraries. Under this programmes, some schools got no more than 10 volumes per year while non-government schools received nothing. The government need not discriminate on the basis of ownership of schools in carrying out its primary role of providing for the reading needs of its citizens.

And whereas private and mission secondary schools have had levies for libraries, public secondary schools in the country may have to consider this option as a way

out. Even though parents and guardians may be economically deprived presently, it is imperative that a measure of cost-sharing between school proprietors and parents be implemented for the sake of the survival of secondary school libraries in Nigeria. One other way of cost-sharing is for alumnus of schools to see the development of school libraries as priority project for their respective associations.

Nevertheless, the contribution of international organisations and the more developed countries in the establishment and growth of school libraries in Nigeria might still be very necessary. This could be in the form of sending volunteer workers and/or library materials to the schools. Audio-visual resources would be most helpful as well as personal computers many of which are already being phased out in the more developed countries but would be most welcome though very costly to purchase in Nigeria. They are effective in getting students here familiar with basic learning resources and processes. However, it is important to uphold that text-books sent to Nigerian/African schools should be culturally relevant (Akintunde, 1992) if the ultimate is to help build up nationals that will be able to conquer their economic, geographical, social and political environments and not grow to be liabilities to themselves and the world. Schools, institutions and libraries abroad can also adopt secondary school libraries in Nigeria for mutual development. The encouragement of local writers and local publication of secondary school texts through grants etc. is most needful (Nweke, 1995). From this study, there appears to be no difference between the condition of government, mission and private schools. An urgent solution is needed to save the near-unconscious but hopeful state of school libraries, and, indeed secondary school education in Nigeria.

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