
VIRTUAL LIBRARY AND THE THIRD WORLD COUNTRIES: CHALLENGES AND OPPORTUNITIES

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People may or may not agree, but the virtual library is not a myth but a grim reality of our times. The information, communications, and networking technologies have made a considerable impact on the traditional libraries and information centres. Information has become fluid and is separated from its container in the electronic media, particularly, the matter is more delicate in case of the digitized information available on various computer networks. It is appropriate to take note of a hard fact put forward by Caberceiras. He emphasises that, the librarian must realize, the library itself is in a constant state of metamorphosis. Often, change and innovation in the library occur almost imperceptibly, and as a result, trends too often are assimilated but not appreciated. Frequently the librarian is aware only of the present time frame, the here and now. Such a myopic perspective tends to obscure the fact that the library of even the recent past is not the library of today; and library of the future will be quite different from today's. It is clearly valuable for the librarian to take the time and effort to analyse the phenomena of change in the library and the demands it places on the library profession(1).

Not to speak of the libraries and information centres, even the basic character of scholarly communication is changing very rapidly. The academics are trying to regain control of scholarly communication, and emergence of the network-based journals is a clear manifestation of this trend. The monopoly of the commercial publishers and an unprecedented increase in the price of scholarly journals, not based on the cost of production but on the added value of the service has forced the library and information specialists to think of new cost-effective alternatives. Net work- based electronic journal is one such alternative immediately available to the academics to regain the control of scholarly communication. In the words of Thomson,....."the sleeping giant of higher

education is about to wake up to this problem, and that long-term solution will be mandated by the faculties and chief administrators of universities and colleges, and by professional societies. After all, scholarly information originates from here in the academy; there is no reason why it shouldn't become a financial asset for education rather than a liability.....Academic librarians and their colleagues in higher education need to sit down and devise a long-range solution to the journal cost problem, together with serious academic publishers and booksellers who have as much to lose as we do if no solution is found (2).

Thomson is showing the right way to the public as well as the private sector. After all, both the sectors are dependent on one another. Public sector provides market to the commercial sector with a view to improve the quality of education and research in the academic institutions, and the commercial sector provides the value added services. If the journal subscriptions are slashed then the commercial sector is to lose the market and suffer. Hence it is a high time that both the sectors initiate a dialogue and see how the situation can be improved with the help of the enabling technologies which are the elements of the virtual library. Virtual library is a boon for the Third World countries as it is bridging the gap between the developed and the developing countries of the world. Space and time constraints are not there and levelling of services is taking place. An individual or institution connected to INTERNET, a network of networks, is able to access resources and services available in 120 countries of the world round the clock. Both scholars and commercial publishers are making use of the INTERNET. Text, image and voice transmission has made a considerable impact on academic and research libraries throughout the world. There is a trend away from "just-in-case" to "just-in-time" approach to collection development. Human resource contact has improved considerably and the structure of scholarly communication is changing rapidly. Academics are becoming publishers and quality of networked information is also being improved.

Lancaster has predicted the following sequence of events in the evolution of the print-based publications to the electronic media:

1. Dual-mode publication applied to the secondary services (i.e. electronic databases existing side by side with their paper equivalents).
2. New secondary services emerging in electronic form only.
3. Dual-mode publication applied to the primary literature.
4. New primary literature emerging in electronic form only.

5. Disappearance of printed secondary services with total reliance on distribution of databases in electronic form.
6. Disappearance of the printed journal.
7. Disappearance of secondary databases as we now know them(3).

We have almost reached the fourth stage of Lancaster's prediction and we must realize that the Virtual Library is going to play a significant role during the twenty-first century in the field of scholarly communication. Since the information is being digitized at a very fast rate in the developed countries, new problems will have to be faced now.

The role of the librarian as network navigator, consultant, instructor, intermediary and searcher will accelerate since end-users will continue to be mostly people with low knowledge of or little interest in search techniques. They could well become more aware of information overload, and as prepared as ever to rely on librarians to search for and deliver information to them. Some libraries or librarians will even become publishers in partnership with their editorial colleagues within the institution.(4)

Online catalogues, bulletin boards, computer conferences, gophers, hypertext databases, electronic journals and newsletters are amazing developments. E-mail, FTP(File Transfer Protocol), Telnet, FTP mail, Gophermail, Mailarchis and Fax via INTERNET are new openings for researchers and have made electronic cottage a near reality. Organization and searching of networked information has improved considerably with the help of navigational tools, such as, Veronica, Jughead, Mosaic, Archie, Wais, WWW, Gopher, etc. But inspite of all this, virtual library has thrown new challenges and opportunities to the network-users, particularly in the Third World countries. It is becoming difficult day by day to know, what is available on the INTERNET, where is it located, and how to access it in a timely manner? Quality of digital information is another area of immediate concern. Lack of awareness, funds, computer hardware, software, trained manpower, and inadequate telecommunication system are a few basic problems in the Third World countries.

In this era of the rapid growth of publications, declining library budgets, monopoly of the commercial publishers, increasing diversifications, rising prices of publications, and ever growing expectations of users, the virtual library is opening new horizons for the developing countries in a cost-effective manner. Cabereiras has beautifully described the developments in the information age. He writes, an

interesting corollary has emerged with the advent of the information/computer age, resulting in three inverse ratios. First, as computers have increased in power, they have decreased in size. Second, as computers have increased in capability, they have decreased in price. Third, as they have become more sophisticated, they have also become easier to use. With these advantages, the librarian will increasingly use the computer for controlling information. The librarian has expertise related to organization, content, retrieval, circulation, and use of information; the computer is a tool to expedite this expertise and all the services concomitant with it (5).

The above mentioned developments, issues, and problems are highlighted in this paper and an inventory of networked resources and services for library and information specialists has also been prepared. ERNET (Education and Research Network) established by the Department of Electronics, Government of India and connected to INTERNET has been used to collect data for this paper. The basic focus of this paper is on the impact of network-publishing on the scholarly communication and the implications of the networked environment for the academic libraries in the Third World countries. The most difficult part of aspect of the Virtual Library is to know about what is available on the networks, where is it located and how to access it. Hence first of all a few useful directories and lists have been discussed to enhance users' awareness of the networked resources and services.

Directories and Guides

For library and information professionals, the following directories are very useful:

<Special Internet Connections>, by Scott Yanoff. This list gives INTERNET addresses of various computers and tools, on which information of special interest is made available. It gives addresses of various gophers and anonymous FTP sites also. To get this list regularly send an E-mail message to Scott Yanoff at the following address:

<Yanoff alpha2, csd.uwn.edu>

This list is available on various gophers and the BUBL (Bulletin Board for Libraries) in the U.K. also.

<December List>, by John December. It is a list of pointers to information describing the INTERNET, computer networks, and issues related to computer-mediated communications. This list is frequently updated and is available via anonymous FTP from <csd4. csd.uwm.edu>

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in the directory <pub> and in the file <inet.services.txt>.

<Directory of Scholarly Electronic Conferences>, by D.K. Kovacs and others. This directory is a very useful tool for getting instructions for subscribing to various academic discussion lists, computer conferences and mailing lists. The arrangement of the entries is alphabetical under various subject headings. This directory is available via FTP to :<ksuvxa.kent.edu> or gopher to: <gopher.useak.ca>. To get this directory via E-mail send the following E-mail message to: <listser "kentvm or listserv" kentvm.kent.edu>

Get Acadelist readme f=mail

Get acadelist file1 f=mail

Get acadelist file7 f=mail

There are eight files in this directory including the <readme> file in all. The files 2 to 6 can also be retrieved by giving the similar E-mail messages in the body of the message.

<Directory of Electronic Journals and Newsletters>, by Micheal Stragelove. This directory is a very good tool to get subscription instructions for various electronic journals and newsletters. It contains instructions for about 240 electronic journals and newsletters available via INTERNET and the BITNET. It can be got from Ann Okerson by sending an E-mail message to the following address:

<ann@cni.org>. The other source for the directory is the compiler himself. Send the following E-mail message to :

<listserv@acadvm1 or listser acadvm1.uottawa.ca>

Get ejournal1 f=mail

Get ejournal2 f=mail

The preceding two directories are also available as <Directory of Electronics Journals, Newsletters and Academic Discussion Lists> in printed form. It has been published by the Association of Research Libraries (USA) in 1993. It contains the contents of both the electronic directories mentioned above and is very useful for the professionals without access to computer network. An electronic version of this directory is available from the anonymous FTPsite <KSUVXA.KENT.EDU>in <LIBRARY> directors as <ACADELIST.FILE XX.>XX here means the concerned file number from file 1 to file 7.

Charles w. Bailey Jr. also maintained a directory entitled <library - oriented Lists and Electronics Serials> It is the best tool for the LIS professionals as it provides the much needed information in a compact form. It can be retrieved by sending an E-mail message to <Lib3

@uhupvm1 earn >. This list is available on the BUBL also. Although these are the six basic tools to facilitate access to the network based resources and services, yet the guides by Krol (1992), and Kehoe (1992) and a few other authors are very useful. A list (6-14) of these guides is given at the end of this paper. <Internet Resources Guide> produced by National Science Foundation (1993) is available on the INTERNET. It is available via anonymous FTP from <ds.internic.net or 192.31.103.6> in the directory<source guide>it can also be get freely by sending an E-mail message to: <mailserv@ds.internic.net>. CARL provides keyword index to this guide. To get latest information about INTERNET directories, send the following E-mail message to:

<listserv@unmb.bitnet>

<subscribe cnidir-1 your name>

Online Service

Now it would be appropriate to discuss a few OPACs, BBSs, Usenet Newsgroups, electronic journals and newsletters. As many academic research and national libraries have mounted their OPACs on the INTERNET, it is possible to browse them via various routes, such as, hytelnet, gophers, bulletin boards, and various other gateway. HYTELNET (Hypertext browser for TELNET-accessible sites) is a utility that allows access to TELNET sites on the INTERNET. TELNET sites includes OPACs, BBSs, CWISs, FreeNets, full-text databases, electronic books, etc. It can be got from Peter Scott by sending an E-mail message at the following address :

<scott@sklib.usask.ca>.

The other way to access these online catalogue is to enter your local gopher and browse the concerned catalogue. There are a few good online guides to get the TELNET address of these online catalogues. For example, <Art St.George and Ron Larson's guide to library catalogue and databases> is probably the most complete and up-to-date guide to these libraries. To access this guide send the following E-mail message to: <Listserv@umnv.bitnet>. Body of the message should contain: <get library package>. This guide can be searched on the WAIS also. The place to be looked on the INTERNET is: <WAIS online - libraries -st-george.src>.The FTP access is also available at: <ftp.ariel.unm.edu>. It is in the directory <library> as the file<internet.library>. With the help of OPACs, it is possible to make collection development, online searching, technical processing, reference service, and bibliographical services more effective.

We all know that distance education is playing a significant role in human resources development. The Open University at Milten Keynes in the U.K. has maintained a database, namely <Distance Education Database>. It offers a lot of information pertaining to distance education programmes throughout the world and numerous documents on distance education. This is a very useful service on the INTERNET for a country like India, where distance education is imparted as a priority area. To access this database use the following instructions:

<telnet acsvax.open.ac.uk>

user name<icdl>

Account code<usa>

Password <aaa>.

CARL (Colorado Association of Research Libraries) <telnet pac.carl.org.or 192.54.81.128>>, MELVYL in California <telnet melvyl.ucop.edu>, Library of Congress gopher in Washington, DC and the BUBL in the U.K. are wonderful sources of information for library and information professional on the INTERNET. Besides a catalogues of every academic library in Colorado, CARL offers a wide assortment of online text, indices of model school programmes, online book reviews, and a lot of more information. MELVYL is serving as a union catalogue in the region of California, Such regional union catalogues cab be very useful in cooperative collection development.

Library of Congress gopher is a very good source of information for library and information community. To access this gopher, you may enter it either through your local gopher or TELNET to: <marvel.loc.gov> or <140.147.2.69> login as<marvel>. After this you get the first screen and then start selecting and entering the screens of your choice. <Library without Walls> at the North Carolina State University Library gopher is a wonderful place to look for LIS electronic documents including journals and newsletters. Similarly, <Virtual Reference Desk> at Irvive, California is very good place for reference materials. Both these sites can be accessed via your local gopher or any other public gopher.

<Consultant.Micro.umn.edu>or <uxi.cso.uiuc.edu> are very useful public sites as they provide further routes of information available on INTERNET. While telnetting to these places use <gopher> as login.

The BUBL (Bulletin Board for Libraries) in the U.K. at Bath is a very good source of one stop information hunting. It has a special section on electronic journals and news letters. It is accessible via various gophers and gateways. Direct access to it can be ensured by telnetting to:

<sun.usf.ac.uk> or <128.86.8.6> logging in as <janet> and at the password prompt by simply pressing the return key and finally at the host prompt by typing <uk.ac.bath.bubl>.

NISS (National Information on Software and Services) gateway in the U.K. provides access to many commercial services and European and American networks and database. DIMDI (a German online service with several bilingual biomedical databases and unique expert-system menus for end-users): ECHO (the European Community Host Organization's online service): and ESA-IRS (European Space Agency Information Retrieval Service) are the main services available via the NISS gateway besides various OPACs, commercial databases, and regional American networks, such as, CARL and MELVYL. Another important feature of the NISS is that it is possible to search BUBL files via the NISSWAIS. To access the NISS gateway use the following instructions: <telnet sun.nsf.ac.uk or 128.86.8.7> and type <janet> at the login prompt, press the return key at the password prompt and type <uk.ac.niss> at the hostname prompt.

Electronic Journals and Newsletters

Another important development is the emergence of electronic journals and newsletters on the computer networks. Many of these journals are peer-reviewed and distributed freely via various mailing lists. These are available on various gophers, bulletin boards, and anonymous FTP sites also. <PACS Review>, <PACS News>, and <Current Cites> are the three examples of this phenomenon. PACS Review, PACS News are published from Houston and Current Cites is published from Berkeley in the U.S.A. Whereas PACS Review is a peer reviewed journal, Current Cites is an abstracting journal, but PACS News is simply a newsletter. There are many more E-journals and newsletters. Details of these journals and newsletters can be got from Strangeloves directory on Bailey's list discussed earlier in this paper. The above three publications can be subscribed by sending the following E-mail message to: <listerv@uphupvm1.bitnet> Subscriber PACS-P your name. Almost all the free LIS electronic journals are available in the directory <library without walls> on the North Carolina State University Library Gopher. This gopher can be accessed via your local gopher. FTP site <dewey.lib.ncsu.edu> is another very useful place to look for LIS electronic journals and newsletters. To browse archives of INTERNET-based serials, gopher to: <gopher.cic.net 70> choose <electronic serials> and then go through the

alphabetical listing "L". You can browse or retrieve all the issues of the available LIS e-journals and newsletters.

Computers in Teaching Initiative (CTI) Centre for Library and Information Studies at Loughborough University of Technology, Loughborough in the U.K. has mounted www software at the university gopher to run a <Training Electronic Journals> to train LIS students to produce and distribute electronic Journals. Materials for this journal will be mounted from Australia, U.K., and Sweedan LIS department and university libraries. It can be accessed through the Loughborough University gopher by entering your own local gopher. Infact, with the advent of electronic journals the structure of scholarly communication is also changing. Publish or purchase are the two main options with LIS professional now. Scholars and librarians are becoming electronic publishers and the monopoly of the commercial publishers is shaking now. Even OCLC, a non-profit body has started distributing the following electronic journals.

<Online Journals of Clinical Trials> (1992-), published by the American Association of Advancement of Science.

<Online Journals of Knowledge Synethsis for nursing> (1994-), by Sigma Theta Tau International, Honor Society of Nursing.

<Electronics Letter>, by Institution of Electrical Engineers (IEE)

<Applied Physical Letters Online> (to be made available in January 1995-), by The American Institute of Physics.

All the above journals are priced and available on the basis of annual subscription.

Scholarly Discussion Lists and News Groups

Electronic mailing lists and computer conferences are methods of discusson on selected topics among the interested E-mail users. These are moderated as well as unmoderated. Moderated lists are certainly better as these ensure quality control. LIBRES is a very good computer conference, as it is serving as peer-reviewed journal as well as a moderated discussions list. There is no clear cut line of demarcations in the scholarly discussion lists and electronics serials. But serious efforts are being made to incorporate the qualities of printed serials in these new format. Today it is possible to transmit images and broadcast oral messages via the INTERNET radio talk. Superhighway networks are ensuring speedy transmission of even multilingual data with the help of new interfaces,

www software is one such tool to facilitate non-sequential browsing of information available on the INTERNET. To subscribe to the LIBRES, send the following E-mail message to:

<listerserv @ kentvm bitnet>
<subscribeLIBRARIES your name>.

LIS-LINK in the U.K. covers computer-based information services, reference services, bibliographic instruction, and networked service. To subscribe to this list send the following E-mail message to:

<mailbase@UK.AC.Newcastle>
(Subscribe LIS-LINK your name>.

All the major services being provided by the OCLC, are also available via INTERNET. Like FirstSearch-L, the OCLC has created a new list named EPIC-L. Since the FirstSearch-1 gives information about First Search database, the EPIC-L will provide information about OCLC's online reference service for Library professionals. To get more information about this list send the following message to:

<listproc@oclc.org>
<info epic-1>

To subscribe free of charge to EPIC-L send this INTERNET mail message to: <listproc@oclc.org>

<subscribe epic-1 your name>, for example,
<subscribe epic-1 jagtar singh>.

Other useful lists for library and information professionals are as under:

BI-L@BINGVMB.BITNET	Bibliographic Instruction.
COLLDV-L@USCVM.BITNET	Library Collection Development List
NETTRAIN@UBVM.BITNET	Internet/Bitnet Network trainers Discussion List.
STUMPERS-L@CRF.CUIS.EDU	Difficult Reference Questions
VPIEJ-L@VTVM1.BITNET	Publishing E-Journals: Publishing, Archiving, and Access. —

To subscribe to the above lists send the following E-mail: message to the respective listserve or mileserv:

Subscribe list first name second name, for example: <Subscribe VPIEJ-L jagtar Singh>

Archive of NETTRAIN, PACS-L, etc. can be searched inactively by telnetting to: <a.cni.org> and logging in as <brsuser>.

There are hundreds of other such lists. For more information consult Kovacs's or Bailey's directories.

In mailing lists all the subscribers get the same message and there is always heavy load on the link. On the other hand, Bulletin Board Systems reduce this load by receiving a single copy of the same message. In other words, a mailing list distributes the message to all the subscribers, while a bulletin board mounts a single copy of the message at a central place and the network user access the bulletin board according to his convenience. USENET is an electronic bulletin board system with a large number of newsgroups. <soc.libraries.talk> is a useful news group for library and information professionals. It can be accessed on a computer which receives it. Almost many computers on the INTERNET receive these newsgroups.

Conclusion.

Network information is more important for the Third world countries, as the printed publications take a long time to reach the libraries in these countries. There are many problems to be overcome before realizing the full benefits of the multimedia Virtual Library. There is continuous need to find solution to the economic, technical, sociocultural, legal, political, physical, functional, lingual, educational, commercial, and attitudinal barriers to the free flow of information. Computer networks will make significant impact on e-publishing and distance learning. Libraries and library and information specialists are going to play an important role by directing the profession, responding to the needs of the end-users, and predicting the future of the profession. The developing countries can realize the full benefits of the Virtual Library only by modernizing their telecommunication infrastructure and adopting a policy of promoting the network culture and subsidising access to these networks. Libraries also need to shift their priorities from ownership to access. In other words, Library and information specialists are required to act as intermediaries and libraries as gateways to the networked resources and services. Imparting training in online searching will be another important activity of the professional along with the job of accessing, retrieving, organizing, and disseminating information to the end-users. They will have to cooperate also with the computer specialists and academics to promote the publishing of e-journals to face the challenge of the unrelenting inflation in case of the print-based scholarly journals. Copyright protection, no fee or low fee-based services, integration of the print and

electronic media, and tailoring of information products and services according to the needs of the end-users will be the other significant issues to be addressed by the professionals. The multimedia Virtual Library will be more effective via "Information Superhighways" and ultimately help in bridging the gap between the "information rich" and the "information poor" countries of the world.

References

1. CABERCEIRAS (J). The Multimedia Library, etc. Ed.3. San Deigo, CA: Academic Press, 1991.p.2.
2. THOMPSON (JC). Journals Costs: Perception and Reality (Guest Editorial). College and Research Libraries, 49, September 1988.p.483.
3. LANCASTER (FW) Indexing and Abstracting Services in Theory and Practice. London: LA,1991. p.256.
4. JONES (K) Network publishing:A Librarian's perspectives Networking and the Future of Libraries, etc. Ed by John W.T. Smith. Westport, CT., Meckler, 1993.p.134.
5. CABERCEIRAS (J) Op.cit.,p.200
6. ESTRAD (S). Connecting to the Internet: A Buyer;s Guide. Sebatropol, CA: O'Reilly & Associates, 1993.
7. FALK (B). The Internet Roadmap. San Francisco, CA: SYBEX, 1994.
8. GILSTER (P) The Internet Navigator, New York: John Wiley & Son's 1993.
9. HAHN (H) & STOUT (R). The Internet Complete Reference. Berkely, CA: Osborne McGraw-Hill, 1994.
10. HARDIE (ETL) & NEUN (V), eds. Internet: Mailing lists. Englewood Cliffs, NJ: PTR Prentice-Hall, 1994.
11. HEHOE (BP). Zen and the Art of the Internet: A Beginners Guide of the Internet. Englewood Cliffs, NJ: PRT Prentice - Hall, 1992.

12. KROL (ED) The whole Internet: Users Guide and Catalogue. Sebastopol, CA: O' Reilly & Associates, 1992.
13. ROSE (MT) The Simple Book: An Introduction to Internet Management. Eaglewood Cliffs, NJ: PRT Prentice-Hall, 1994.
14. RUTTEN (P): BAYERS (AF111) & MALONI (K). Netguides: your map to services, Information and Entertainment on the Electronic Highway. New York: Random House Electronic Publishing, 1994.