

REDRESSING THE BALANCE ACCESSING LATIN AMERICAN DATABASES

SHIRLEY AINSWORTH*

RESUMEN

Aún habiendo un creciente interés en utilizar las bases de datos latinoamericanas, que contienen información valiosa no disponible libremente en otras bases, es difícil identificar las que existen y averiguar como accederlas. Esta ponencia pretende analizar las características, examinar el desarrollo y discutir algunas de las dificultades involucradas en acceder estas bases de datos. Se hace mención de temas tales como la industria editorial, la infraestructura de telecomunicaciones, control de calidad y el problema del idioma. Para el caso de las bases de datos bibliográficas, se describen los sistemas regionales de préstamo interbibliotecario como medio para obtener los documentos originales.

ABSTRACT

Although there has been an increasing interest in Latin American databases, which contain valuable information not freely available elsewhere, it is difficult to identify what is available and how to access it. This paper attempts to analyse their characteristics, examine their development and discuss some of difficulties involved in accessing these databases. Issues such as the publishing industry, telecommunications infrastructure, quality control and the language barrier are mentioned. For the case of bibliographical databases, regional interlibrary loan systems are also described as a means of obtaining the original documents.

The role of information is assuming a greater importance than ever before, stimulated by political and economic factors, and also by more widespread use of technology. Economic integration and the North American Free Trade Agreement, NAFTA, are resulting in an increasing interest in Latin American information produced in the region, particularly databases which are available remotely. The flow of information has hitherto been predominantly north to south, but the expanding use of electronic communication opens up the possibility of redressing the balance somewhat. This information dependency has affected adversely not only Latin Americans but all others, depriving them of much vital information which could permit a deeper understanding of questions of mutual concern.

*El Colegio de México, México, D.F.

This paper attempts to describe the characteristics of Latin American databases, placing their development within context, as well as discussing some of the difficulties involved in accessing them. With special reference to the Mexican experience, attention is drawn to the strengths and weaknesses of each medium, whether online, CD-ROM or Internet.

BACKGROUND : THE PUBLISHING INDUSTRY

Books

It might be useful to make some preliminary observations about the publishing industry in the region, which forms the raw material for these secondary services. The Latin American publishing industry is still fairly weak and unstable. A flourishing publishing industry depends upon many factors, including raw material both physical (paper) and intellectual in the form of research, economic resources, a high literacy rate, markets for the material, (for which the library market is potentially strong, but in Latin America many libraries have low or even non-existent acquisition budgets) and a good distribution system. All of these form a complex and elaborate infrastructure.

TABLE I :
BOOK TITLES PUBLISHED
(DATA ARE PRESENTED IN THOUSANDS)

	1987	1988	1989	1990	1991
CHILE	1654	1840	2350	-	1966
COLOMBIA	-	-	1486	-	1481
COSTA RICA	-	-	198	-	244
CUBA	2315	2069	2199	1858	-
MEXICO	7725	4826	3490	2608	-
URUGUAY	801	755	805	-	1143
VENEZUELA	1202	-	3166	3175	3461
UNITED STATES	56027	55483	53446	46738	48146

Source : UNESCO Statistical Yearbook, 1992, 1993. Statistical Abstract of the United States, 1993

Table 1 compares the level of book production over five years of the major producers in Latin America with that of the U.S. While considerable variations between different countries should be expected, the noticeable fluctuations from year to year in the number of titles published within a country is indicative of a high degree of instability. For example the root mean square fluctuation for Mexico is six times greater than for the U.S. in the period between 1987 and 1990.

Serial publications

Regarding serial publications, several authors have observed that much Latin American research, particularly in the scientific field, is published outside the country of origin in foreign journals. Indeed this is often stimulated by academic promotion policies.

TABLE 2
LATIN AMERICAN SCIENTIFIC ARTICLES PUBLISHED
IN INTERNATIONAL JOURNALS, 1973-1984.

ARGENTINA	8511
BRAZIL	10545
CHILE	4448
MEXICO	5131
VENEZUELA	2549
WORLD	3,350,421

Source : Statistical Abstract of Latin America, 1993

Sandoval (1986) stated that researchers in Mexico send out over 3,000 manuscripts a year to some 2,000 foreign publications. Forty percent of the publications appearing abroad are in the health science field. Licea and Cronin (1989) found that of 1,302 papers in health sciences published in the period 1982-1986 by researchers in Mexican institutions, just over 70% appeared in foreign journals. But interestingly enough, they used no native bibliographic indexes to identify the output, relying upon BIOSIS, CAB, EMBASE and MEDLINE. The same authors (1988) in a similar article discovered 3,198 articles published in domestic journals versus 1,862 in foreign ones.

The bibliographical control of this information is covered adequately by the major indexing and abstracting services. However this has had an adverse effect on locally published journals within the sciences, as many researchers prefer to publish their better research outside, leaving national journals to publish items of lesser interest. The issue of intellectual dependence must also be addressed, as research published outside must conform to outside interests.

This is happily not so prevalent in the case of journals in the social sciences and humanities, many of which are of a high quality. Some of these publications are covered by American bibliographies and indexes, not only the ones specialized in area studies, such as the *Hispanic American Periodicals Index* (HAPI) and the *Handbook of Latin American Studies* for academic research, *Info-South* and the *Latin American Data Base* for more current information ; but also more general subject oriented indexes such as the *Modern Language Association International Bibliography*, *Public Affairs Information Service* and *Historical Abstracts*. (Their coverage has been examined more in depth by other panelists.) However, their primary interests cover research in Latin American studies, not that published in other areas of knowledge by Latin Americans. The inclination of one of these has been described as follows. *Info-South* focuses on "issues vital to U.S. national interests and policy goals...Emphasis is on trade, investment, debt, politics, democratization, drugs and the environment" (Levison 1993) The task of Latin American indexes remains to cover all areas of knowledge produced by national researchers, be it an analysis of Japanese linguistics, a critique of Habermas, or a description of women in Guatemala.

In many countries the lack of adequate economic resources makes the appearance of journals and reports unpredictable and irregular, thus reducing their potential usefulness. Scholarly journals in Mexico are increasingly dependent upon subsidies granted by the National Council for Science and Technology (CONACYT) for their regular publication. But this finance has been made conditional upon the journals being included in the major international indexing and abstracting services. This may

be seen in a positive light as stimulating the publication of higher quality journals, but it also potentially allows external interests to affect the slant of intellectual research.

Information naturally does not take only the form of published books and journals. Government and financial institutions generate huge quantities of primary statistical information, which must be controlled and disseminated to be of use, while businesses produce statistical and directory information. Newspapers are a vast storehouse of material, and although their distribution has always been good, at least in Latin America control via the use of indexes has always lagged behind. This paper places emphasis on textual information, as this is still the most widely used in academic communication, leaving aside other forms of visual, audio and non text-based information.

DATABASES : HOW TO IDENTIFY THEM/COVERAGE IN DIRECTORIES

Having established that there is indeed much information published in Latin America, and with the belief that the ability to access these resources will permit a more profound understanding of issues by taking into account differing perspectives, we will proceed to analyse the databases produced in the region that attempt to control this research. There are several issues to be addressed, first among which is the identification of possible databases to be consulted. There are several directories, but a complete listing of Latin American databases, online and CD-ROM has yet to be compiled. The 1994 *Gale Directory of Databases*, one of the best international directories, includes only some 27 Latin American databases out of a total of 7,358 unique database entries. The *Directorio de bases de datos de América Latina y el Caribe (DIBALC)* lists some 650 databases produced in the region, but with very broad subject descriptions and most importantly, does not cover access methods. Many are doubtless not available remotely. In a rapidly changing area, such a directory needs to be updated regularly. The *Latin American Information Base (LAIB)* is an electronic directory covering some 800 databases, gateways and networks, but is not limited to resources produced in the region. Part of the information refers to international resources with some kind of "hemispheric interest" (Walpole 1994) and their availability is not always stated very specifically. *LAIB* shows great potential, and is being continually updated. A select list of Mexican electronic resources is included in an article by Ainsworth (1994). The Latin American Database Interest Group (LADIG), is working to coordinate efforts on the part of database producers. The group has its own listserv, LADIG-L 2

Characteristics of Latin American databases

The following 262 Latin American databases analysed were compiled from a variety of sources. An attempt was made to include only those available offsite, whether online or CD-ROM. While not exhaustive, these statistics can demonstrate some general characteristics of Latin American databases. A similar study has been published by Alonso-Gamboa (1995).

An introductory article by Williams (1994) to the *Gale Directory of Databases* analyses the databases included therein, and this has been used as a point of comparison with the Latin American databases considered in this analysis.

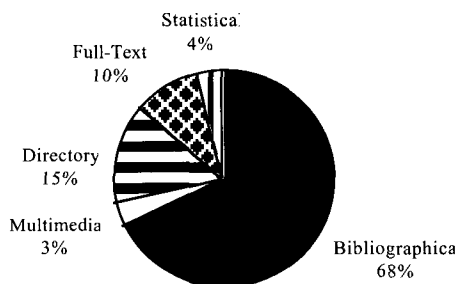
TABLE 3
DATABASES BY COUNTRY

ARGENTINA	10
BOLIVIA	5
BRAZIL	12
CHILE	15
COLOMBIA	3
COSTA RICA	10
CUBA	14
ECUADOR	9
EL SALVADOR	1
GUATEMALA	1
HONDURAS	1
MEXICO	139
NICARAGUA	12
PANAMA	1
PARAGUAY	1
PERU	15
REPUBLICA DOMINICANA	1
URUGUAY	1
VENEZUELA	11
TOTAL LATIN AMERICA	262
TOTAL WORLD	7538

Apart from a few major online databases, the majority of Latin American databases are comparatively small, some containing only hundreds of records. The effort involved in accessing a great number in search of information needs to be balanced against their potential relevance. A sample of 224 Latin American databases was taken, and excluding full text and statistical databases, the average size was 9,350 records. This compares with the international average size of 674,495 records per database. (If the 34 very large international databases with more than 100 million records are excluded from the world total, then the average size is 97,082 records, still more than 10 times that of Latin America.)

GRAPH 1

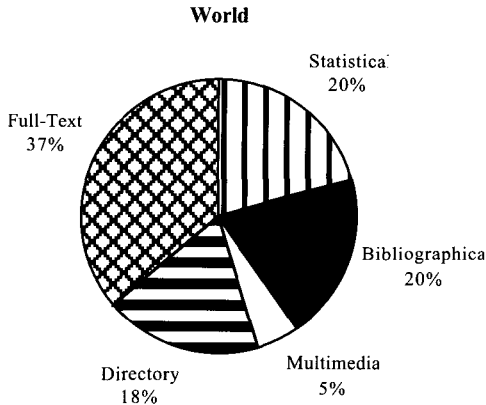
**Classification by Form of Data Representa
Latin America**



Bibliographic databases are by far the most numerous in Latin America, the majority being catalogs of libraries or documentation centers, with a lesser number of journal indexes. More recently full text and multimedia CD-ROMs in a variety of disciplines have been published.

GRAPH 2

Classification by Form of Data Representa



The differing subject orientations of the databases in Latin America may be explained in part by the fact that the producers are predominantly academic and governmental, which have little interest in trade and business databases.³ In some countries international organizations such as the Economic Commission for Latin America, ECLA, or the Centro Latinoamericano de Demografía, CELADE, have been the promoters of databases, focusing on specific subjects. "In the absence of a reasonable market, there are almost no local private online information providers" (Brito 1989) However commercial enterprises have been quick to grasp the possibilities of CD-ROM databases, and have concentrated more on business directories and the full text of newspapers.

The question needs to be addressed as to why online databases have grown so slowly in Latin America and failed to become an important part of the information infrastructure.

Access to online databases

One of the fundamental problems in accessing Latin American databases has always been that of telecommunication, considering not only technical deficiencies but also human factors. The complexity of connection needs to be understood, and more to the point, the bureaucracy involved. Until recently, access to the online databases has been via the public data transmission networks, which in Latin America are normally government owned. As Katz has argued, « Political systems of developing countries shape the national communications environment » (Katz 1988) In several countries the National Science and Technology Councils have been charged with establishing a national information policy, and were the natural places to begin offering centralised searching of international databases. In Mexico, the Servicio de Consulta a Bancos de Información, (SECOBI) a department of CONACYT, began offering services in 1976, first through a local TYMNET node, and then through connections via TELEPAC, the national packet switching network,

to international networks such as TYMNET, TELENET and SPRINTNET in the US, TRANSPAC in France, ITALPAC in Italy etc. SECOBI centralized billing and contracts, rented out dumb terminals to those libraries able to do their own searching, held training courses for searchers, and carried out searches for others without direct access, among other things. Similar efforts were carried out in other countries such as Colombia, Venezuela, and Chile.

Brazil experienced a rather different development, as national policy attempted to stimulate the creation of national resources, hardware, software, and databases, thus limiting the information dependency inherent in a reliance upon international databases. Due to the exceedingly expensive telecommunications access to international systems, those scientific databases with the greatest potential use were purchased on tape and loaded centrally. Searching was centralized through data processing centers, which limited their use a great deal. The situation has now changed, and in 1985, RNPAC, the Brazilian packet switching network was created. (Barcellos 1989)

The National Science and Technology Councils then have offered access to international databases and many have played an important role in stimulating the creation of union catalogs of serials. In Mexico SECOBI/CONACYT has been instrumental in stimulating the creation of national databases, some of which are loaded onto their computers, and offering centralized access to others.

Telecommunications

One might imagine that if Latin American searchers can connect to the world, then the reverse should also be true. The public telecommunication systems suffer from technical deficiencies : the Mexican TELEPAC has been completely saturated, making an initial connection difficult, and operates at a slow 1200 bps asynchronous transmission. It is also prone to much line noise, a condition exacerbated in bad weather. Since the 1989 privatization of the telephone company, upon which TELEPAC depends, parts of the system have been extensively modernized with the introduction of digital equipment ; however the benefits of this have not yet been carried over into online access.

The bureaucracy involved in setting up accounts with both the vendors and the telecommunication provider requires persistence and is not for the faint hearted or the casual searcher. This difficulty of access affects local and national searching as well as international access, and has been fundamental in terms of the development of the industry.

The online databases often reside upon outdated equipment, many users cannot be supported at any one time, with the result that at peak times access is painfully slow, if a connection is possible. Mexico has reached a point at which online access to databases via TELEPAC has decreased rather than increased, as several of these services are no longer available via TELEPAC. (Although a few remain accessible via local dial up ports.) Databases as potentially important as SIE-BANXICO, which is a statistical database of economic indicators produced by the Mexican national bank, the Banco de México, and the national union catalog of serials are inaccessible online at the moment.

Use of online databases

Online databases, both national and international have been comparatively underutilized in Latin America, and information culture is underdeveloped. Molino notes that "the major problem confronted by information and documentation services

is poor recognition of information as a necessary ingredient in specific efforts" (Molino 1983) Walderez points out that societies in Latin America work without utilizing information, and decisions are taken thus. This influences greatly the generation and utilization of databases (Walderez 1987)

As everywhere, due to fairly complex command structures, the use of online databases has mainly been through trained intermediaries, usually reference librarians. But reference librarians are very few ; library schools tend to concentrate more on technical aspects such as cataloging, and computers in libraries tend also to support these processes. There are simply not enough people who know about computers and telecommunications in libraries.

The language barrier for librarians is great when searching international databases, and the information contained in them may not be very relevant. National bibliographic control is also insufficient, so the time invested in learning systems and making the connections may not be seen as well invested.

The National Science and Technology Councils have made concerted efforts to train searchers and to create an information awareness through the organization of conferences of online searchers. The annual CD-ROM Conference organized by the firm Difusión Científica and the first North-South Online Conference of March 1993, both held in Mexico City, are an important beginning. Were a strong group of online searchers to exist, then perhaps they could influence the development of relevant online databases.

Software

The software used for online databases in Latin America is almost exclusively MINISIS, which along with Micro CDS/ISIS (Microisis) has been widely promoted in the developing world by UNESCO. Documentation tends to be poorly written or non existent, and online help is often not available, which is rather unfortunate as they are not always very intuitive.

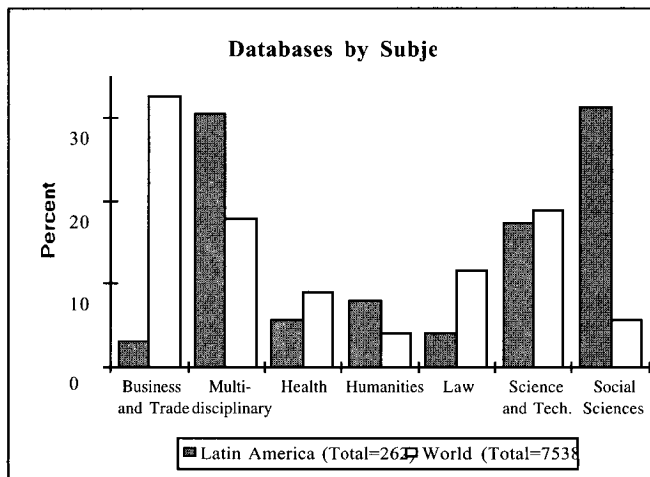
These databases must of course be searched in Spanish. The language barrier can be significant when searching unfamiliar databases. This holds true both for Latin Americans searching international databases, and for those from other countries searching Latin American databases. As Large points out, natural language searching requires taking account of « synonyms, near synonyms, singular and plural forms, broader and narrower terms » or put more succinctly, all the possible ways of describing a subject. « The availability of keywords in addition to or in place of natural language searching is a help to users who are operating in a foreign language » (Large 1990) MINISIS permits field structured searching, along with author and title keyword. Microisis has a term dictionary in addition to keyword boolean searching.

The use of MINISIS and Microisis has been promoted as a kind of standard, and in situations where technical expertise is limited, there are definite advantages to utilizing a common program, allowing small institutions to create their own databases fairly easily, and to share experiences. The Coordinadora Regional de Investigaciones Económicas y Sociales (CRIES) in Nicaragua has established a directory of 168 institutions in Central America and the Caribbean using Microisis, many of which they have installed (available as part of the first Central American CD-ROM produced by the University of Colima in Mexico). Microisis is made available free of charge to non-profit institutions, which is important in areas where economic resources are limited. Work continues to be done by various institutions to improve the user interfaces and make it more efficient. Many databases have been created with this, but are not available remotely.

CD-ROMs

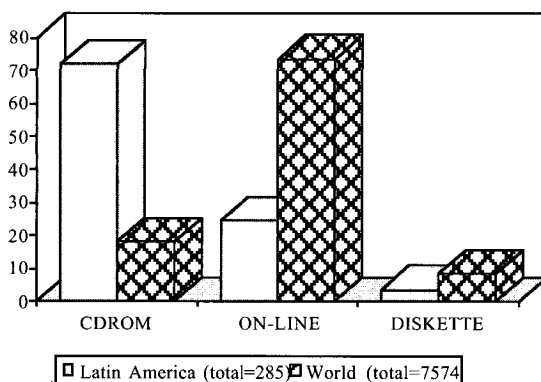
The difficulties of online access have given a tremendous impetus to the creation of CD-ROM databases in Latin America.

GRAPH 3



GRAPH 4

Media for Database Distribution/Acc



CD-ROMs store a great amount of information, and are a compact, durable and portable medium. Networking permits multiple access, although licenses usually stipulate that this is only within an institution. A subscription allows unlimited searching, which together with easier interfaces allow them to be searched directly by end users. Service orientation on the part of librarians is also a factor ; it is still rare to be able to walk into a library in Latin America and be able to consult CD-ROMs freely without having to confront bureaucratic procedures. Until now, a subscription in Latin America has usually meant outright purchase of the information, which is important where libraries have inadequate acquisition budgets. A licensing agreement, as is normal in the United States, often means that a library

unable to pay an annual subscription is left with nothing. The disadvantages of this medium lie in the fact that CD-ROM products are inherently out of date compared to online services, and need to be updated frequently. This is especially notable in Latin American products, where markets are still developing, and are not yet strong enough to support annual or even quarterly updates. Some of the commercial products are very expensive, as "many existing information CD-ROMs or databases appear to be attempting to recoup the entire start-up costs on the first sale" (Walpole 1994) CD-ROMs then are a very suitable medium for high volume end user searching, but rather exclude the casual user who with online services can pay only for the amount of connect time. Only the larger more specialized libraries may be able to purchase more than a select few. Reservations have also been expressed about the durability of the medium for preservation : the technology has not been in existence long enough to know whether in some 25 years the information will still be able to be consulted.

CD-ROM Producers

The University of Colima in Mexico, through its Centro Nacional Editor de Discos Compactos, created in 1983, has produced some 36 CD-ROMs of databases not only from Mexico but from most of Latin America and the Caribbean. There are plans for a further 11 in the short term. Some of these products contain multiple databases ; in one instance, there are 83 multidisciplinary databases from 16 countries on a single CD-ROM.⁵ Unfortunately, each one must be searched separately. These, if not for the initiative taken by Colima, would have remained totally inaccessible. Colima has been exploiting the Microisis software for the CD-ROMs as well, which while having the advantage of being familiar to both producers and users in developing countries, can be very slow in data retrieval. Microisis provides a menu option to use the search interface in Spanish, English or French, but does not have a help option. Large reports that «it should not be too difficult for an online searcher to learn and remember a command language even if it does not use vocabulary taken from his/her own language. Even so, in a European survey 43% of respondents thought a command language in the mother tongue was important» (Large 1990) Often there are no manuals or documentation to speak of, and there is no easy way to discover the titles of the different databases, as there is no general index.

In order to stimulate the use of CD-ROM databases, in a situation where there are few economic resources with which to purchase computer equipment, the University of Colima had an excellent program whereby CD-ROM players were donated to public universities in Mexico, as well as to distribute gratis some of the multiple database CD-ROMs. The small database producer has been able to take advantage of their expertise, equipment and distribution channels. The University of Colima has additionally published many other CD-ROMS at the behest of their producers, which are more commercial ventures.

Microisis has also been utilized by the Centro Latinoamericano de Demografía (CELADE) in Chile for a multiple database CD-ROM, and by a commercial bookseller and library supplier in Argentina.

Another important CD-ROM producer in Mexico is proving to be the National Autonomous University of Mexico, UNAM, which seems to be assuming more responsibility for some areas of national bibliographic control, in part due to the demise of SECOBI within the changing priorities of CONACYT. Apart from publishing a new edition of a CD-ROM containing some of the most important journal indexes of Latin American research produced by the Center for Scientific and

Humanistic Information, CICH, (which are probably the largest and best established in the region), recent products include a partial union catalog of serials held by some of the more important Mexican libraries, a national catalog of theses, of research projects from both Mexico and Guatemala, as well as LIBRUNAM the catalog of the 168 libraries comprising the system. CICH has been producing CD-ROMs for only about a year, and has begun to produce them for other institutions. The software is CD-UNAM, based on Rommaker with local modifications. These are beginning to be distributed widely in Mexico at least, and there are several distributors in the U.S. The INEGI, the Mexican national statistical agency, has also entered the CD-ROM market with several notable products.

Mexico, as well as being the major database producer in the region, has up to now been the most important CD-ROM producer for Latin American databases as well.

INTERNET

The development of the Internet, interconnecting computer networks all over the world, perhaps holds the greatest potential. It may solve the problem of access to information, and of course there is also a wealth of information stored on the networks. Information providers of all types and sizes can make their files available. This freedom is perhaps double edged : while there is essentially little or no control exercised over what can be made available, the quality of the material is extremely varied. This of course is true of Internet resources all over the world. As long as the potential users have access to the Internet, at the moment there is a world of information available for free. It remains to be seen how much longer this will last, with a growing interest on the part of commercial enterprises in exploiting its potential. « We may be experiencing a brief period in the evolution of the Internet when many tools and much information are available to all free of charge. The final outcome of the commercialization of the Internet is sure to affect both the First and the Third Worlds » (Van Jacob, 1994)

Within Latin America, Internet access has been growing rapidly as indeed it has everywhere, with anonymous FTP sites, listserves, gophers, world wide web servers, mosaic and the like. Yet it is easy to get carried away by enthusiasm and lose sight of reality : an enormous amount of people in Latin America do not have access to computer networks. The establishment of an appropriate telecommunications infrastructure with high speed fiber optics able to exploit Internet resources to the full remains an expensive proposition, as does the importation of computer hardware.

Latin American Internet resources, discussed in depth by other panelists, include access to some of the automated library catalogs, journal indexes, the full text of newspapers and so on. As everywhere, the native keyword search in gopher is too primitive, although we can witness databases being mounted with no additional search engine.

The Internet should not be seen as a panacea : electronic format in itself does not offer any guarantee of quality. « Countries often assume that a vast leap can be made from bibliographically poor organization and resources to the most modern and advanced systems through the use of the latest information technology » (Jackson 1992) Latin America now has the tools readily available to create databases that do not have to obey the dictates of market forces ; software, access to the internet and to the expertise of groups such as those at the University of Colima for marketing CD-ROM products. But as the Centre for Transnational Corporations of the United Nations (1991) noted « the proliferation of independent ventures without clear objectives has led to a chaotic growth of databases in [Mexico] ».

Many new products are created, but not continued, due to frequent personnel changes, and the enthusiasm involved in beginning grandiose new projects. As Sandoval (1986) wrote « discontinuity is a southern characteristic ». Even if a government finds external resources to build online information systems, it will seldom have the means to maintain them properly (Brito 1989)

Too many small databases are indexing the same material over and over again, with no clear scope or coverage. For such information to be useful, it must be timely, up to date, and available. Many database producers are working with insufficient resources, either economic or human, but a pooling of resources and more cooperation under a clear policy and participative design would be an important step. A structure imposed from above would not work adequately. Generally the quality of the indexing itself also leaves something to be desired : indexing and abstracting are not part of the library school curriculum. There are also very few Spanish language thesauri available. Larger and more relevant databases are needed.

ACCESS TO THE DOCUMENTS

Full text, directory and statistical formats obviously pose no further problem, but how is one to consult documents or articles cited in bibliographic databases? A little must be said about the interlibrary loan system in Latin America. As McGinn notes Latin America as a region has no bibliographic utility. (McGinn 1988) and although interest has been demonstrated on both sides of the border, as yet no country is contributing information to the great bibliographic utilities such as OCLC or RLIN in the United States.

Most countries have some kind of union catalog of serials, often maintained by the National Science and Technology Councils, either online, on CD-ROM or microfiche, which can be used to identify serial holdings. Brazil has established a centralized system, whereby users can make requests for copies to various libraries participating in the interlibrary copy service (COMUT) program. Barcellos describes this service as being well used, but it still has some deficiencies, principally regarding response time to requests and the excessive concentration of requests to a small number of libraries. (Barcellos 1989) In Mexico a start has also been made with the creation of the AMIGOS subnetwork, a grouping of nine academic libraries in the Mexico City area with some 23 libraries in the southwestern part of the United States for the purpose of cooperative loans. (Hoffert 1993)

In other countries, identification of library holdings is possible, but each request must be made on a transaction by transaction basis, which slows down the process. The mail systems are almost always very inefficient, and the fax machine, dependent upon the telephone system, is not yet widespread in libraries. Some of the more advanced are beginning to experiment with the Ariel software, which allows scanned images of documents to be sent over the Internet, thus eliminating the cost and inconvenience of long distance phone calls.

While identification of serials is reasonably well organized, this is not the case for monographs. Most countries do not have a national union catalog of books, with exceptions such as Chile and Brazil. Chile has the National Network of Bibliographic Information (RENIB), coordinated by the National Library of Chile and the CONACIT. Many universities, institutes and information centers input their records online through RENIB. (Rodríguez 1994) Brazil also has a bibliographic utility, BIBLIODATA, to which some 450 libraries from 90 institutions are contributing, including the National Library of Brazil. BIBLIODATA has around 580,000 records, and is available via RENPAC, the national packet switching system.

The automation of library collections and mechanisms allowing them to be mutually searchable is a priority. This is beginning to happen. However also necessary is a more developed service orientation towards sharing collections through interlibrary loan procedures. Aware of this situation, the databases contained within the CD-ROMs produced by the University of Colima all come complete with information to locate the documents cited therein, and document delivery features as one of the services offered by online suppliers in Mexico.

Some of the problems involved in setting up information systems are common to developed countries as well, but developing countries suffer them more acutely. As we have observed, there appears to be increasing interest in the use of information in Latin America, but the growth of databases has been uneven, and displays somewhat different characteristics compared to that of the developed world.

In many areas important advances have been made. Perhaps one of the most fundamental limitations continues to be the shortage of trained personnel. In addition, more coordination is needed to pool scarce resources and build larger more

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