6 An Overview of Library Automation in Greece
Present and Future Prospects

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6.1 INTRODUCTION

Today we are witnessing a transition in the role of libraries. Traditionally, libraries have operated as storehouses of printed material. Most recorded material has been in printed form (books, journals, newspapers, etc.) and the techniques to retrieve the needed information have been based on paper (for example, card catalogues). This situation is still prevailing. Initiated in the recent past and progressing rapidly, we observe a shift towards electronic catalogues and other technological approaches based on information technology concerning the organization, classification, correlation and access of the material (automated cataloguing and circulation control, on-line access to the holdings of the library, compilation of special bibliographies with computer searches, etc.).

Computer technology, which is the main tool in library automation, operates more effectively if all related material is organized and stored electronically. This is a good reason to transform the information that we have today into some of electronic form. There is a second good reason: the reduction of the prices for storing data (mainly text, but also graphics, pictures, sound and even video) in electronic format. A characteristic example of a modern storage medium is the CD-ROM, which is examined in more detail in the second part of this report. Therefore, I presume that in the future not only the methods and techniques to access information will be performed with the use of computers, but also the information itself will finally be produced, edited, disseminated and stored in electronic form. Computers will eventually support the whole of the document's life cycle. The effects of such an exciting prospect can only be compared to the revolution that occurred in the 15th century when Gutenberg 'automated' the printing of documents by inventing typography.

Last winter, I and a colleague undertook the task of visiting a number of Greek libraries that have made efforts towards their automation. We visited some public libraries (most Greek libraries are public), and a number of private ones (private educational institutions and organizations). We also talked with people involved in some way or another with the introduction of information technologies to modern
libraries. Among these people were professional and practicing librarians, information systems designers and programmers, library educators and persons responsible for management of information and archiving centres.

By and large the views expressed in this report are those of an 'outsider' to the field of libraries. Judging from his educational background, the author would easily rank more as a user or customer of library services and possibly a connoisseur of computer technology, rather than library staff, since it is only recently have he has been involved with library automation in the framework of the COMETT project Telephassa. This could partly explain a slight divergence in the coverage of the topic and differentiation in the views taken here.

The first part of this report describes the current situation concerning the introduction of new information technologies in Greek university libraries: what is automated, what can easily be automated in the near future that would be of considerable importance to Greek matters, what are the problems that have to be addressed in the given context and what could be done to proceed in the future. The second part deals with the operation and use of CD-ROM facilities in the Patras University Library (PUL). Different types of libraries would have dissimilar gains from the employment of CD-ROMs. In this case study, I report on the experiences that we have collected and the initial reactions of the users to this new source of bibliographic and general information. I enumerate and describe the steps that were followed during their incremental introduction. Finally, a vision of the role libraries will have to play in the future is presented, a role that eventually will be dictated by the progress of our society at large.

6.2 THE GREEK REALITY

6.2.1 Current situation
Automation of local catalogues is the first generation or wave of library automation. Admittedly, the situation in Greece, even in this simple aspect, is not satisfying. During 1986, 615 libraries were operating in Greece. Only a small fraction of these libraries (most of them university libraries) are making progress towards the use of computing machinery and the librarians involved have to cope with the problems of those who are first to do the job among their colleagues. In some cases no requirements analysis or explicit targets definition exists. People proceed based on their experience or the help and recommendations of other colleagues. There are no established criteria for the compilation of preliminary studies, nor typical computer systems and software; even when a library submits a proposal to the state financial agency the approval will arrive disappointingly late. Recently, new hopes are being raised thanks to the involvement of the European Community in the framework of the Action Plan for Libraries.
Basically, I will refer to work on library automation that is conducted at three places in Greece: Athens, Patras and Crete. In Greece most important work in this area has been done by a number of libraries, rather than commercial companies. Usually, libraries cooperate with computer research institutes or computer centres of affiliated university departments. The small market size deters companies from being actively and seriously involved because the estimated profits do not justify the investment.

The National Documentation Centre (EKT, in Greek) has developed a software module called ABEKT. This operates on the basic PC XT platform and supports cataloguing of small to medium-size libraries but is without circulation control or any other facility. Besides having simple and understandable functions, its usability is further enhanced by a menu-based user interface with descriptions in Greek operations. Bibliographic records follow a simple, customary format. ABEKT is distributed (disk and documentation) for free to any Greek public library that asks for it. Today, 130 copies including sufficient documentation manuals have been handed out but it is estimated that only a rough 10% of these are actually being used. EKT has plans to improve the facilities offered by ABEKT.

Another effort originated by the Patras University Library (PUL) has resulted in a more sophisticated program, PLAS. This also runs on an MS-DOS platform but requires a bigger machine (for example, based on Intel 80386 microprocessor). Deliberately, PLAS was designed and developed to operate under the Oracle database management system for transportability reasons. Oracle runs under the Unix operating system, which is quite widespread in Greece for medium-size computers. PLAS has Greek names for menu operations and accepts both Latin and Greek characters to be included in bibliographic records. Its records conform to a variant of the PICA MARC standard. PLAS automates cataloguing and circulation control and also offers on-line public access to the library's catalogue (OPAC). It can also be used to get statistics, to record use of photocopying machines and to print various forms of catalogues, spine and circulation labels (with bar codes, etc.).

A third system was developed by the University of Crete to support the automation of the affiliated library. This project started back in 1986 and now offers cataloguing and very flexible and efficient on-line access facilities. Crete's university library has two buildings in different cities and only a small percentage of its material (around 15%) is in the Greek language. This system runs on a microVax machine under the Ingres database management system. Bibliographic records conform to the LC MARC format which facilitates downloading to the system records from tapes taken from international bibliographic databases, for example OCLC. The system is distributed in both Heraklio and Rethimno, the two cities that host buildings of the library. There are plans to support circulation control.
and orders of new books and to produce a union catalogue for all libraries of Crete. The Crete University Library is collaborating with the University of Salonica to transfer on tape 13500 records from the Cretan catalogue.

In the past, some libraries were connected to on-line bibliographic databases abroad via telephone lines. A number of bibliographic databases for special topics have been compiled at the library of the Technical Chamber of Greece (TEE, in Greek) and the National Documentation Centre. EKT is presently operating as a host computer center which provides access to these databases. Custom searches can also be conducted using the in-house cataloguing system of TEE which runs under the widely known dBase III database management system. Some libraries have used computers for other record-keeping activities, for example logistics, personnel, etc. Most libraries also use some word processing software to edit and format text. In PUL significant investment has been made on CD-ROMs. This effort is described later.

6.2.2 Future directions
Sometime in the near future it is natural to expect some local catalogues to exist and since HELLASPAC, the Greek X.25 digital network is established, we could easily see remote searching of other libraries, automated catalogues. This facility coupled with a framework for interlibrary cooperation would greatly improve the quality of the offered services. A special factor that makes this perspective especially desirable is that the average size of Greek libraries is fairly small and their budget is invariably low leaving few prospects for rapid local development. Some libraries in the same city or territory are run by different organizations.

Unfortunately, until now the collaboration between libraries is based on the personal relations between librarians. A national framework or protocol for coordination of interlibrary transactions would prove advantageous to the community of the users.

Some work has been done on the establishment of national standards for the bibliographic descriptions and the organization of files for bibliographic information (these standards closely follow the respective ISO ones). Yet, Greek libraries have been slow to adopt and reinforce them uniformly.

Many Greek libraries have old, precious and badly preserved material sometimes being of great historical importance to our nation. For fear of accidental damage or even theft, such material has to be kept locked and is usually inaccessible at least to the public at large. As a consequence some old libraries having valuable collections operate more like museums. A decisive approach to this situation is the transformation of such material to a suitable electronic form. For example, old maps could be scanned and stored as images. Rare, old publications after being
scanned could be OCRed (Optically Character Recognized) and stored as ASCII text—representation lending itself to easy searching for keywords, etc. Newspaper and magazines articles, along with their photographs, would prove a significant source for the historians of the future, a source which today is laborious to exploit because of the sheer volume and the delicacy of the paper medium.

6.2.3 Problems
The problems which in the past hindered and even now cause delays in the introduction of high technology in libraries can be grouped in two categories. The problems of the first category are closely related to the Greek reality and in a sense are inescapable. The most obvious such problem is the Greek alphabet. We, Greeks, among our other peculiarities do not have a Latin alphabet. This has caused problems for a long time, since computers are unable to represent Greek characters. When no Greek characters are available, transliteration¹ can be a solution (an inadequate solution, as exemplified by e-mail messages). Every computer vendor offered his own mapping of Greek characters to computer character codes, resulting in incompatible files. Special filters were (and in some situations are) needed to transform one mapping to the other. Recently, the Greek and the International Standardization Organization have endorsed a standard code (ISO 5428-1984) representing Greek letters of the alphabet for bibliographic information interchange, so we hope that in the future such problems will disappear.

A second issue to be addressed is the existence of a relatively large number of small libraries distributed over the country. The small size implies of course limited financial capabilities and requires homogeneity in the way automation will be introduced, so that resulting systems can readily communicate and exchange data in a straightforward way.

The delay of the Greek library system in assimilating new technological advances is a reflection of the general absence of underlying infrastructure. Telecommunication and postal services only recently seem to be recovering from a chronic deficiency. It is only recently that we have enjoyed the services of a digital network and even now there are certain operational problems with it.

However, what I regard as the most significant cause of the present situation is the fact that state authorities have been slow to take up their responsibilities and at least select and adopt some generally agreed upon standards. This ascertained fact

¹ This operation consists of representing the characters of an entirely alphabetical system of writing by the characters of the conversion alphabet (ISO 5127/3a-1981).
should urge them to concentrate their efforts and put all their resources into developing and supporting some original choices, pertaining to the Greek libraries. Now we have a situation that confirms the saying "Even a bad decision is better than no decision". Besides the adoption of a bibliographical standard the National Library should do its best to produce a machine-readable national bibliography and distribute it. This act alone would strongly reinforce the existence and validity of a national standard for machine-readable bibliographic descriptions.

Bureaucracy and the lack of legislative framework are largely regarded as major causes responsible for the current situation. Because of them a librarian’s will for innovation and introduction of new concepts in his/her library can easily change to frustration and abandonment of any plans for automation.

The alternative approach that is known to work in order to address this situation is that interested individuals and institutions have tried to cover the gap left from the public authorities and responsible state departments. To a large degree, these efforts have succeeded (at least if seen at the level of individual institutions), but there is an inherent drawback to these approaches: institutions are generally short-sighted because they have in mind exploring, finding and applying solutions pertinent to their own organizations requirements and do not seriously consider the impact of their design decisions other organizations that would like to try their approach.

Two other problems conclude the list: namely the inadequate management of economic resources, which is the result of unnecessary duplication—not to say multiplication—of effort, and the shortage of specialized human resources. I refer specifically to people having interdisciplinary education sharing the background of a librarian and an information specialist; people aware of recent technological advances and technical means and methodologies to use those advances; people willing to contribute and share their knowledge with others with improvement of the public services as the final target. This final remark clearly stresses the importance of a new, updated curriculum for the coming generation of librarians.

6.2.4 The role of state authorities
In Greece, by and large, academic libraries operate in a legislative vacuum. The law that regulates the operation of higher education in Greece barely mentions anything for the operational facilities of libraries. In most universities, special departmental libraries operate besides the central ones resulting in a fragmentation (and sometimes duplication) of collections and mismanagement of resources. For example, if a departmental library has one or two people, it is difficult to extend its working hours. With reference to automation, it is not economically feasible for small libraries to obtain, customize and maintain automated systems.
Since the state authorities are slow to keep pace with developments of modern technology, their role as national coordinators has faded and the people who have understood the usefulness of automation and have seen the benefits of its application are taking over. Usually these librarians, who have studied and/or taken post graduate courses abroad, try to concentrate and manage resources (experienced programmers, hardware, operators) in order to make their own automated systems.

Despite a number of unsuccessful efforts, we have seen this scenario work out. In fact, in some cases efforts originating from university libraries not only bore fruit, but their results are immediate and visible. This can be attributed to the fact that design and implementation are customized in each case and take into account its specific needs and assets. Such unorchestrated efforts, examples of 'quick-and-dirty' methodology, besides unnecessary duplication of effort, yield an insurmountable disadvantage: they render incompatible results. Computers and their related technologies are well known for their dependence on standards and normalized procedures; their symptom of inflexibility is largely attributed to the fact that they detest pluralism and adherence to multiple formats. This characteristic makes them almost inoperable in heterogeneous environments with intrinsic custom regulations and formats.

Concluding this part of the report, I firmly believe that the vital first step to be made (even though it is late, but hopefully not too late) is the activation of the state services and the undertaking of their responsibilities concerning the study, compilation and formal adoption of needed standards. If this does not happen, we can expect that the law of the free market will eventually hold: one system will finally become prevalent by virtue of its offerings and how well they match the needs and requirements of Greek libraries. However, by then a sufficient amount of time, effort and money will have been spent.

6.3 CD-ROM AND LIBRARIES

6.3.1 Why use cd-rom databases?
I have stressed earlier the trend of the times towards nontraditional (not printed) recording and storage of the material generated by our information intensive society. These last years, such a prospect has become extremely viable with the advent and flourishing of electronics, especially with the dramatic advances in computer technology. It has been empirically proven that every two or three years, the capacities of storing and processing with computers are roughly multiplied by a factor of ten. This rule can be verified, for example with storing technologies: the diskette holds 1.44 Mbyte (or 375 A4 pages of text) and a typical hard disk holds 40 Mbyte (or 10000 A4 pages).
With CD-ROMs we observe a quantum leap in storing capacity so big a leap that it actually breaks the afore-mentioned law. A CD-ROM holds 600 Mbyte (equivalent to 150000 A4 pages)\(^2\). For the user, today CD-ROMs represents cheap, massive storage. Databases available on CD-ROMs containing bibliographic data for a host of areas of human knowledge are a useful tool for the researcher, the student, and the general library visitor. These databases remain operational 24 hours a day, seven days a week. They are reliable in the information they provide, they are complete and they are up-to-date. They have low cost per user and when properly managed they may present a high utilisation factor.

CD-ROM databases usually include a fast and reliable search engine supporting search in keywords, authors, periodical names, combinations of words, prefixes, etc. They are a simple and usable technology. They only require a base personal computer—a commodity for our days, a CD-ROM drive, and subscription to a CD-ROM vendor.

Normally, the user who wants to conduct a bibliographic search is forced to search analytically, sometimes with the help of a professional searcher-librarian. Either the user himself or the searcher explicitly develops a search strategy to access the bibliographical entries or more generally the material required. They must both know (or at least understand) the field they are working on and the inter-relationships between terms and concepts.

Using a CD-ROM based database, the user is left free to browse; look here and there wherever he finds it possible that valuable material will exist. He can explore a path or make a traversal to the universe of knowledge that the database holds, since wandering costs little (because it is computer-supported, no human intervention is involved and everything is in the computer; no need to dwell in library basements or get lost in narrow, dimly-lit corridors). He can thus acquire a good understanding of the organization of the body of knowledge he is interested in. The help of a professional searcher is unnecessary because the user can locate what he needs, even if he does not know where it is, or if it exists at all, or the terminology associated with it, etc. The CD-ROM is gaining more acceptance world wide. In 1990, the installed base of CD-ROM drives grew to 1.25 million and 2250 titles.

6.3.2 Why not cd-roms?
One problem that may come up with the introduction of CD-ROMs is the reaction of the users that are not already acquainted with computers and their

\(^2\) This spectacular leap in performance can be attributed to the fact that CD-ROMs are based in optical rather than magnetic technology.
interfaces. In a university setting, however, we expect that only a small percentage of library users will be totally ignorant of computers and their use. To serve these people, the PUL is offering small educational courses for the use of CD-ROMs. In some cases the library personnel may conduct custom bibliographic searches based on the requests of people unwilling to take this course.

We expected that the users of the PUL would be displeased and may even reject the CD-ROM idea because all the databases currently available are in the English language and, although the software that comes with them for accessing, searching and manipulating the database is menu-driven, operations are also in English. We found this was no major problem, because the majority of users in Patras, and I suspect in every academic library, are generally fluent in English (at least they should be since the literature they are consulting is English). Actually, we were surprised to see that people from the school of medicine were using CD-ROMs more intensive than people from the computer science department, who in principle are considered to be more computer literate (this in part may be attributed to the success of the MEDLINE database).

6.3.3 Full text databases
The most brilliant perspective concerning CD-ROM databases is when full text databases including papers from journals and proceedings from conferences circulate widely. Then, not only the tools for accessing information will be automated, but also the information itself will be in electronic form and subsequently amenable to searching and processing by the computer. I find full text databases are particularly suitable for small libraries dedicated to a special area of knowledge. With relatively small investment (no new buildings, no specialized personnel, no major restructuring, no additional work load for cataloguing and circulation control), there will be available a large amount of up-to-date information.

Another advantage of having full text databases on CD-ROM is that the user can easily copy the material he wants on his diskette and take it home for reading or further processing, for example filtering. New library services, especially in an academic setting, such as support for in-house authoring of reports and papers, text formatting and publication facilities can be integrated with the services offered by full text databases. Heavy users of library resources can develop their own custom, specialized personal libraries by taking from the CD-ROM database texts that they frequently need and store them in their personal work stations or PCs.

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3 Users of CD-ROMs are often dissatisfied with the large amount of data that comes to them when they issue a search. This happens because of the volume of data in the database and the generality of the search query.
6.3.4 Stages for CD-ROM introduction

The introduction of CD-ROM facilities in a library needs to be based on a thorough analysis of requirements and needs and must proceed following a carefully designed plan. PUL is now making heavy use of CD-ROMs as part of a general policy to introduce information technology. However, to reach this point, the library management has defined certain milestones and has tried to consistently follow a tight timetable. Faithful execution of the timetable has been hindered by financial and organizational problems; yet the satisfactory level has been reached thanks to the perseverance of the library's directorship.

I have distinguished four phases concerning the incremental employment of CD-ROM facilities. Initially, a small investment was made to buy a CD-ROM drive and connect it to an already existing PC. The MEDLINE database was bought for experimentation for the library personnel and a small number of users. At that time, it was not clear whether CD-ROM bibliographic databases had any future or whether they would be financially interesting compared to the on-line bibliographic searches.

In a second phase, we tried to bring university people, students, professors and researchers, in contact with the CD-ROMs, analyze and evaluate their reaction and define their needs. It has proven a difficult task to determine the areas where user interests lay because of the high degree of specialization exhibited by each individual. Also, the university library should try to serve the needs of all schools of the Patras university when its budget would remain basically unchanged.

The next phase, which I call full exploitation phase, is where we are now. Based on the evidence we have collected from the previous phase, our choice of this new technological medium has proven justified and therefore additional investments have been made to buy more PCs and subscribe to other databases. Funds were drawn from a special program of the Ministry of Education. In addition, some people from the library personnel have acquired sufficient experience with these products and now there are specialists who can easily help users either by organizing and giving introductory courses or answering questions and resolving problems that may come up every now and then. Users can arrange the hours they will need access to CD-ROMs just by making a call to the person responsible for maintaining the bookkings. For some people the use of a computer seems to meet with a kind of conceptual barrier. For those people, the specialized library staff will use CD-ROMs to search on request and even compile custom bibliographies and hand them out in printed form.

Currently, PUL has devoted four PCs for use with CD-ROMs and has subscribed to 16 databases which consist of 30 CD-ROMs. Among them are:

1. MEDLINE, the most popular database containing medical bibliographic data
2. Computer Library, a selection of recent periodical publications. Some of them include abstract and others full text
3. Books In Print, with information about publishers, new books, prices, availability
4. Grolier Electronic Encyclopedia
5. PERINORM, which includes the British, French and German standards (BSI, AFNOR and DIN respectively)
6. ELOT, which includes the Greek standards
7. Math-Sci Disc
8. Wilson, SCI, Physical abstracts
9. Hermes, the Greek directory of telephone numbers.

Two other not CD-ROM products have been ordered (SCI and On-line Hotline). A number of other databases (Life Sciences, Physical & Chemical Sciences, Engineering & Applied Sciences, Social & Behavioural Sciences) are available on diskettes.

There is a last phase in the employment of CD-ROM facilities: its fine tuning and networking. The primary concern of this stage is the maximization of system use by reorganization of the procedures, places and people involved with the task. This is necessary because the passage from the second to the third stage happened so smoothly it passed almost unnoticed and some adjustments are required to cope with more CD-ROM work places and users.

Until now the PCs on which CD-ROMs operate were stand-alone machines totally unconnected to each other. This fact resulted in the inconvenience that a user would have to wait for another user to finish his work with a specific CD-ROM in order to take it for himself. From a certain point, we understood that big benefits will result if we proceeded to the networking of CD-ROM systems. We have planned to establish a local area network operating in the library building which will interconnect all MS-DOS machines. The cables have already been installed and now the Ethernet cards are to be bought. Some of these machines will continue to have CD-ROM players attached to them, while the whole network will be connected to a multiple CD-ROM player hosting up to 6 or even 12 CD-ROMs. Users will be able to share access to the same CD-ROM disk.

Future plans of PUL include the connection of this local area network to the university backbone network. This will facilitate access to the library databases from the office or terminal of everyone having an account with the university computer systems. This prospect is the elaboration of the idea that future libraries should be able to offer their services to people with no limitations on space and time. The library customer will be able to access information from his desk at any hour of the day or night.
6.4 EPILOGUE

Our times have been called the information age because of the vast amount of information produced and processed and the dependence of our society on this precious resource. I would use the 'funnel' metaphor to describe the role of libraries and information centres in our civilization. They effectively organize and filter data, transforming them into precious information. Only now, the rate at which raw data are produced has exceeded any limit and we must enlarge the funnel and equip it with stronger and more efficient filtering capabilities.

The impact of libraries is not confined any more to a small section of literate people. In the future, we will be talking about the 'McDonalds of information' meaning that information will become a major consumer good necessary for our prosperity and well-being. There is a vision for the typical man of the future: he stays at home and can use his personal computer (not to be confused with today's PC; this machine will have much more processing and storing capabilities so that it can accommodate advanced input-output devices which will understand handwritten text and recognize voice, produce animated output to be sent to HDTV and stored on video tapes). He will do the shopping, communicate, and do his work without being harnessed to transportation. A bigger and bigger percentage of people will be working on what we would today call paperwork (white collars); but it will not be paperwork any more.

The function of a library is thus extended to include the production, editing, management and dissemination of new material (as information producer), in parallel to the pathetic role of store, organization and retrieval for accumulated knowledge (information consumer). In this framework, libraries take up the challenge. The degree of their success will in effect determine their existence and prosperity.

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BIBLIOGRAPHY


