

ARAB REPUBLIC OF EGYPT

Technical Report

By

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**AUTOMATION IN THE NATIONAL BIBLIOGRAPHIC AND
SCIENTIFIC COMPUTER CENTER OF THE GENERAL
EGYPTIAN BOOK ORGANIZATION**

General Information Programme 1983

Cairo

30 March 1983

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Introduction

1. During the period 10 March 1983 to 23 March 1983 a consultancy mission was undertaken to the National Bibliographic and Scientific Computer Center of the General Egyptian Book Organization (GEBO) in Cairo, Egypt. The Mission's purposes were:

- a. To evaluate the progress made in automation activities since the author's first consultancy mission in March, 1981.*
- b. To assess the minimum requirements for full computerization of routine functions of the National Library of Egypt.
- c. To give lectures and on-the-job training.
- d. To prepare recommendations for future activities.

2. The General Egyptian Book Organization has several major units: a printing and publishing unit that is responsible for many of the books produced in Egypt, the National Archives, the National Library of Egypt, and the National Bibliographic and Scientific Computer Center.

3. Before March 1981, the Library began a number of automation projects which used a small Data General Nova 3 minicomputer. The main use of the computer was intended to be the production of an English and an Arabic book catalog of the library's holdings. In support of this goal, the library was in the process of converting its Arabic bibliographic records to machine readable form via a contract with ICL, the computer manufacturer and service bureau. The library had also begun negotiations with Carrollton Press in Reston Virginia, USA to obtain MARC records for their English language holdings.

4. The author's technical report of 1 April 1981 [1] made a number of recommendations to facilitate the automation activities. Its principal suggestion was to develop a library automation system rather than purchase one. In addition, it recommended that an individual be hired to lead the development of a computerized bibliographic processing system. Other suggestions included the need to upgrade the present Data General computer system, develop procedures for using the phototypesetter available in the publishing section of the GEBO, and acquire a higher quality and faster line printer for the computer system.

*See Reference [1] in the Bibliography.

Main Findings and Conclusions

5. The library has taken a number of positive steps toward an on-line catalog. The most important has been the hiring, on an ongoing basis, of an individual with the experience necessary to guide the development of a computer system. That individual has been working for almost two years providing guidance to the programmers in the design of the system, and developing and giving training courses for the programmers and the rest of the library staff.
Computer System Design

6. A design for the computer software to automate the library's technical processing has been developed and has been partially implemented. The system has a number of major functions including allowing for addition, change, and deletion of bibliographic records, storing the records in full MARC format, and building indexes to fields in the records for use in retrieval.

7. The system is designed to allow the production of printed catalogs of bibliographic records, as well as indexes to the catalogs. It is also designed to allow public access to the bibliographic file through a query language. The internal design of the system appears to be good. The systems programmer can specify which fields of a MARC record will be indexed. As bibliographic records are input, the records themselves are stored in a bibliographic record file in MARC format, and index files are built for each field that is to be indexed. An entry in an index file consists of an index term. Associated with that term is a pointer to a list of accession numbers of bibliographic records that contain the term. As new records are added, they are stored in a bibliographic record file and each appropriate index file is updated with a new term and/or a new accession number. Changes and deletions to existing records are made to what the designers call a 'differential file' and a flag is set indicating that the differential file contains a corrected record. Periodically, in a batch run, the bibliographic file and the index files are updated with information from the differential file.

8. Due to the limitations of the Data General Nova 3 computer software, the design of the system is not as straightforward as described above. There are several additional files that are basically pointer files to help locate records. Aside from the omission of a few details, the system structure is as described above, and is a sound one given the hardware, software, and personnel limitations. Currently, only certain parts of it have been implemented. They include the sections that allow records to be input, that build and maintain the indexes, that produce listings of the records in 3x5 catalog card format, and produce listings of each record's contents by MARC tag number. Future System Developments

9. A number of parts of the system have not yet been specified and/or have not been implemented. They include the query language which will allow the user to access bibliographic records, the file reorganization programs, the procedures to change or delete fields in a record,

and the procedures to print catalogs.

10. In recognition of the skill level of the staff, the simplest procedures have been implemented first. As the staff gains experience, the more difficult change and delete functions, along with the query language, and the batch file reorganization programs will be implemented. One omission from the system design is provision for authority control. The designers feel it is better to get the system working in its present form and later add authority control. This is a reasonable approach given the circumstances.

11. The staff feel that the system will be fully implemented by 1 October 1983. At that time it should be possible to use the system for on-line cataloging, for the production of printed catalogs, and for user querying of the data base.

12. Aside from the development of the bibliographic processing system, the library has been performing two other tasks using the computer system. One involves the production of the library's accession list. This list, sorted by subject, gives the author, title, date, quantity purchased, and accession number for each item acquired by the library. The computer system is also being used to produce selected bibliographies of Arabic works.

13. As a precursor to the addition of authority control to the automated system, the cataloging department has begun to develop name authority files for Arabic authors. The project began one year ago and so far 10,000 names have been established. Progress has been extremely slow because of variations in names used by individual Arab authors. A name authority file of Ancient Arab authors has been completed, and the one for English authors is being accumulated from Library of Congress cataloging data.

Backfile Conversion Projects

14. Some progress has also been made in converting the library's Arabic catalog into machine readable form. Both ICL and the library have been proceeding slowly editing the records. Nevertheless, out of approximately 100,000 records, 40,000 have been completely processed and five bound volumes of computer-produced bibliographic records have been finished. The library expects that it will take two more years to finish the conversion. One way to expedite the process would be to take the remaining data from ICL, load it onto the library's machine and use library staff to finish the editing on-line. Insufficient computer capacity would appear to prevent this from occurring.

15. One pending activity is the conversion of the library's English language bibliographic records into machine readable form using the Carrollton Press REMARC file. On the basis of cost and quality, the use of the Carrollton REMARC service is still the most effective way to perform the retrospective conversion of the library's English-language bibliographic records. At US\$0.50 per record the approach is extremely economical, and it also insures a good quality record. The library's English catalog cards are of poor quality and poor legibility, and it would be false economy for the library to do anything but use Carrollton at this time.

16. There have been delays by the library in signing the Carrollton contract. It has only been recently that the REMARC file has become large enough to make matching the library's records against it have a reasonable success rate. Furthermore, while the library was waiting to begin the conversion, a significant improvement in the process of finding matches between the library's holdings and the REMARC file has been made. When the library signs its contract with Carrollton, it will receive an APPLE microcomputer. The programs that come with the APPLE will allow the library to enter the search keys of the records for which it wants a REMARC record. The keys will be recorded on a floppy disk and the disk will be sent to Carrollton where it will be matched against the REMARC file by machine rather than manually as the library had planned.

Recommendations for Future Action

17. The library has not proceeded with automation as quickly as it would have liked, but substantial progress is expected within the next six months. If definite progress is made during the period, the library will be in a good position to ask for additional resources to continue its automation program.

18. A major task that must be finished is the implementation of the computer system. The system should allow bibliographic records to be input both manually at a terminal and via magnetic tape (such as from Carrollton Press). Indexes to the records must be built, and the facility to correct or delete records or fields of records must be in place. The program must also be able to produce printed catalogs of bibliographic records, indexes to the catalogs (e.g. author and title indexes), and have a query language to allow users to search the data base and retrieve records from it.

19. Completing the system in six months is not an unrealistic goal to achieve considering what has already been accomplished. But it will require coordination between several groups. Specific tasks remaining to be finished include completion of the programs to allow record correction, specification and implementation of the query language for online searching, and specification of the format of the printed catalogs.

20. The library needs a high quality printer to produce readable output and the funds for this have been supplied by UNESCO. The actual procurement of the printer appears to be under way at the time this report is being written. Computer System Upgrade

21. The library has a large backlog of applications to implement on the computer system. It feels the need for an upgrade of the existing hardware and software in order to eliminate the backlog. It seems unwise at this time to invest additional funds in the operation of the computer center until the library has successfully implemented the system discussed above. Then, with a major product completed and operational, and after a review to insure the system is working properly, a request for additional funds to support an enhanced computer system should be reviewed favorably. Meeting User Information Needs

22. Several major projects could easily be undertaken as soon as the on-line system is finished. The first is a system to help the library produce the many bibliographical lists or listings it now compiles manually. They include:

a. Foreign books available from GEBO. Published yearly. Approximately 900 pages per issue.

Bibliographic records are indexed by author and title.

b. Egyptian Books in Print. Issued annually. Cumulated every three years. Annual issue approximately 150 pages. Cumulative issue approximately 1300 pages. Bibliographic records are indexed by author and title.

c. Trade list of books published by GEBO. Published annually. Approximately 870 pages. Extensive sets of indexes.

d. Books translated by GEBO. Last issued in 1973. Approximately 410 pages. Extensive indexes.

e. Other lists such as bibliographies cooperatively produced with UNESCO and catalogs of books displayed at international book fairs.

23. This list is indicative of the quantity of printed products disseminated to users of the library. It represents a major information dissemination activity to Egypt, the Arab world, and users of Arabic literature. With some modification, the computer system being developed could be used to help produce these products. The bibliographic data for the records could be input into the system just as normal cataloging data is input. Appropriate indexes to the records could be built, and then the output formatted for the specific product. The previous consultant report [1] mentioned the need to begin liaison between the library and the book publishing arm of GEBO. Little seems to have happened in this area, but it's pursuit will be particularly important. The library needs to make use of the computer-driven phototypesetters. It should be able to prepare a file of bibliographic data with appropriate typesetting commands and give that file to the publishing group to produce camera-ready copy. With this type of arrangement, production of many of the library's products could be expedited, and efficiency and quality improved. Future Retrospective Conversion Projects

24. The retrospective conversion of the English language catalog records has been delayed by the slow development of the Carrollton Press REMARC data base. Now that the REMARC data base is near completion, the library needs to begin closer coordination with Carrollton. Carrollton has announced that it will loan microcomputers to users to facilitate machine matching of search keys against the REMARC files. The library needs active coordination to get the English conversion project going and to get a microcomputer delivered to Egypt. The library needs to establish shipping procedures which will insure that computer-generated tapes and disks can rapidly be sent in and out of the country without damage to their contents.

25. It is suggested that in order to keep the automation program progressing after October 1983 when the bibliographic system should be finished, the library delay signing the Carrollton Press contract until near the beginning of August 1983 when it can assess if, in fact, the computer system will be finished in October. If that seems likely, the Carrollton contract should then be

signed so that by October the Carrollton microcomputer can be delivered to Cairo and the library can begin to work on its retrospective conversion.

Inventory Control System

26. Still another project needs to begin and that is to automate the process of keeping an inventory of the books that the GEBO (the publisher) has in its stock. This is a relatively straightforward computer application that would be extremely useful to the GEBO. It involves modifying the basic cataloging system to accept minimal bibliographic data that describe each GEBO imprint and the quantity of that item on hand. The program must then allow the user to update the quantity field of each record and produce timely reports on stock conditions. Manual procedures for stock control will have to be implemented so that the library can accurately update the quantity data.

Training

27. The training programs already begun by the library should continue and should broaden. A few key people in the library are leading the development of the computer system and if they leave, there would be insufficient skills to keep the project going. By giving more in-depth training to more individuals in library automation and programming, a steady supply of skilled individuals can continue to be available. Consideration should be given to sending some of the key members of the group on study missions to overseas installations so that their skills can be improved further. Summary 28. The library has made some progress toward its automation goal, but it has not reached it. The management of the groups involved are committed to a working system by 1 October 1983. If the system is working by then, favorable consideration should be given to supplying additional funds to upgrade the computer system so that automation can continue. The library provides valuable services throughout the Arab countries in the information products it produces. Automation of the production of these products will result in more timely dissemination of the information itself, develop an infrastructure in Egypt knowledgeable about library automation, and serve as a model for development in other countries in the area. The potential exists for this to happen.

Acknowledgements

29. I wish to thank Ms. Zeinab El-Kavokji and Ms. Zeinab El-Fawanissi, both of the National Library of Egypt for all their assistance during the mission to Cairo. Their kindness to me was greatly appreciated.

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Annex I

Individuals Consulted During Mission

Dr. Ezz El Din Ismail, Director, General Egyptian Book Organization, Cairo.

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Annex II

Courses Taught During Consultancy Mission

One of the tasks performed during this mission was to participate in a training program for the employees of the National Library of Egypt. To this end, the author gave three talks. Each talk lasted from two to three hours and each was attended by 20-30 individuals. The titles of the talks were:

- (1) Retrospective Conversion of Catalogs to Machine-Readable Form,
- (2) Microcomputers, and
- (3) On-Line Searching.

Topics discussed in the Retrospective Conversion talk included a definition of the process of retrospective conversion, the reasons for converting records to machine form, and the approaches to follow in performing the conversion process (e.g. keying records or matching records against an existing machine readable file). Also discussed was the problem of quality control of the conversion process, including problems of defining a conversion error, problems of counting errors, and automatic methods of detecting errors. Finally, the costs of conversion, and commercial organizations performing conversion were discussed.

The second discussion was intended to introduce the audience to various types of computers and specifically the growth in the use of microcomputers. The components of a microcomputer including the CPU chip, RAM chips, monitors, printers, and floppy and Winchester disks were discussed. Operating systems, programming languages, and data base management systems for microcomputers were also outlined. Applications of microcomputers including their use for games, in home and office, for word processing, and data acquisition were discussed. Applications to libraries were stressed, including their use and potential use in retrospective conversion, for circulation systems, journal check-in and routing, bibliographic record input, as acquisition systems, for keeping library management information (such as production statistics), and as a personal bibliographic filing system.

The third talk was on the use of on-line search services. The discussion began by suggesting these services were an additional tool available to a reference librarian, and showed how the complexity of some reference questions makes it appropriate to use an on-line search service to

answer them. A discussion of the types of data bases currently available through on-line search services vendors was presented (e.g. bibliographic, numeric, directories, patents). The vendors from whom the services are available and the costs of the services were outlined. Then the process of performing a search was discussed, including the use of a terminal and a modem to establish connection with the vendor. Finally, a set of examples were presented to illustrate how to do an online search.