Reflections on the Mechanics of Academic Library Circulation Computerization and Exit Control

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When one considers the preparation required for computerizing circulation, it seems shortsighted not to give thought to an exit detection system so that both the machine-readable book identification and the detection target can be attached simultaneously. The idea of a composite target/identification seems logical, but has not yet been manufactured. At present, there is also doubt in some peoples' minds whether it is advisable since targets might be found and sabotaged too easily.

An interested party with sufficient background might get the manufacturers together to try to come up with a satisfactory and difficult to locate assembly. Perhaps, the FDP 11 manufacturer (Digital Equipment Corporation) or the 3-M Company who manufactures the TATTLETAPE exit detection system or possibly Hazeltine who manufacturers CRT units might be interested. Even the light pen and bar code label printer manufacturer, Monarch, should be considered. It boils down to who will carry the ball to make it easier for libraries to assemble and operate a computerized circulation and exit detection control system.

The concept of exit control by other than a guard, preferably uniformed, has its good and bad features. The good feature is the easy exit flow of patrons; the bad, the fact that even with electronic systems libraries still show book losses from mutilation or borrowers determined to beat the system. The electronic exit control system is a deterrent, at best, and must not be considered a cure-all for book losses.

Most libraries favor the full circulating system over the by-pass system. The extra handling and effort spent sensitizing and desensitizing books is considerably more time consuming than by-passing the books. Also, the fact that a "person" must be faced at exit in addition to passage through the electronic exit check, may further reduce the theft potential.

In these reflections, only the bar code label (zebra stripes with numerical equivalents) and light pen is considered. Most people are by now familiar with the zebra stripes appearing on almost all packaged goods and other supermarket items, which in some locations already are being used for check out purposes. There are several light and Optical Character Recognition (OCR) devices available or coming on the market. Dataphase Systems, Inc., has been

contracted by the Library of the State of North Carolina to supply their OCR light wand as the method for scanning circulating items and borrower identification codes. In the Dataphase system, the single code is both machine and human readable and is cheaper to produce than bar codes. It can only read numerals plus a few identifiers, and is printed in special type.

Eventually technology may develop which will permit the Library of Congress classification to be in machine readable form and the OCRs, with full alpha-numeric recognition, to be produced cheaply enough so that all books and other items reaching a library from the publisher can have the necessary nation-wide, even world-wide, readable classification printed on them. The ISBN, in bar code, would be a start.

Any library of sufficient size to warrant computerization which can call on the help of a computer programmer, may do well to install its own mini computer. Only if no host computer time is available does a stand-alone unit appear feasible. The amount of function the mini computer has to provide depends, naturally, on the time/cost factor and the capacity of the host computer and how elaborate and current the output is to be.

CLSI and Gaylord, for instance, would of course be competitors, but neither seem to have sufficient service available to satisfy the requirements of libraries not located close to one of their few offices; whereas, DEC (Digital) is said to have excellent service almost everywhere. Long downtime kills a system. Also, it is generally difficult to make any modifications once a commercial, packaged "Turnkey" system has been installed. Let us now reflect on what the actual procedure might be when computerizing an academic library.

Having decided on the scope and method, the next step is to get the materials and borrower ID cards into machine readable form. If the bar code/light pen method is used, all items which are to be charged out must have a light pen readable bar code label attached which will identify the item's unique number. Each borrower must have an ID with a readable number. In the case of ID cards, the borrower's social security number might be used, or a number provided by the library, or by the institution may be preferred. In the case of books and other materials, a unique number must be established for each item. Until such time as the light pen can economically read alpha-numeric characters, unique "idiot" numbers will be required. The unique number should contain a computer check digit.

Preparing the Books

For daily charge and discharge and the delinquent borrower and reserve memory files, the library mini uses the unique book and borrower's numbers and exhibits only these on its CRT. A stand-alone mini or host computer uses the idiot number to search for the necessary author and title data in its memory. Only then, can the computer show detailed information or produce printouts or store information. In all cases, some method of combining the unique number with the author/title data must exist.

In the case of new acquisitions, the book number can be added to a punch card or if OCLC Archival tapes have been purchased by a member library or SOLINET—these can be edited and the unique book number added. Some libraries use Blackwell, North America data base tapes in lieu of OCLC tapes. Either tape can be used as input for the computer data base. In many instances, one may wish to reduce the bibliographic input by editing and compressing the original OCLC tapes with one's own software, depending again on the memory capacity of the computer being used and the extent of

computerization. The bar code labels can be purchased preprinted in numerical sequence, or produced on a special printer in house.

The label and exit target are then attached by Technical Services staff. Technical Services should also add the unque number to the shelf list card and to a number vs. author cross index. The latter is necessary if the mini computer used does not hold author/title information and only interfaces with the host computer in a batch mode at daily or infrequent intervals.

In the case of shelved books, there are several possibilities, all rather tedious. A punch card is prepared with unique book number, LC number, author and title and any other information for each book, working from the shelf list. Zebra label(s) (one inside the book for check-out and the other on the spine for inventory and shelf reading) are produced for each item, and these are attached to each book in the stacks. If magnetic tapes are available from OCLC or other sources, the zebra must still be attached throughout the collection, and, if there is an exit detection system, the target should be attached at this time. If punch cards are used, they are run through an interface onto a disk pack or magnetic tape to be held at the host computer for later use. If OCLC tape is used, it is interfaced directly to the computer.

So that the computer can produce overdue notices, a name and address file with borrowers' numbers must be entered into the system and held at the host computer in a memory deck or on mag tape which must be kept up to date.

The mini computer's memory file of delinquent borrowers is either the result of data returned from the host computer overdue file, if the computer has been so programmed, or has to be entered individually at the library console, or both if required. The mini computer reserve list memory file can be entered with special light pen badges at the time of discharge or via the console. An additional feature that some libraries have incorporated into their systems is the erasure of the borrower's unique number from the computer memory when books are returned so that no borrower's record is available.

Necessity for Planning

The chief thing to remember is that the computerizing of a library takes both money and time. If, however, planning is to be thorough and complete the sooner one starts the better. The task of building a data base is fundamental. Again, if one goes to the trouble of an instant delinquent borrower trap file, one should also have an effective exit control system, or borrower circumvention is inevitable.

In closing, it should not be forgotten that—although you will be committed to a light pen input system—once all the books are labeled, you can add to or rewrite the software within the limits of the computer's capacity to get more and/or faster retrieval and functions when and if the necessary funds are available. The beauty of the system is that you can start with something relatively simple and not too expensive and build it up at your discretion. For example, you can eventually eliminate the card catalog in favor of microform cataloging.

In the meantime, we press on and try to visualize what the future has in store for us.

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