

NU Library Enters

Computer Age

By allowing access to all available records of published material from one terminal, the university library's computerized cataloging system facilitates the location of information.

by Jon Luers

Anyone who frequents the university library knows what LUIS and LCUS are—two computer programs which can greatly simplify the job of finding a book in the library. LUIS (for Library User Information Service) is designed to take the place of the card catalog, by searching through computer records of the library's holding for a given title, author or subject. Using LUIS can be a lot easier and faster than searching through the card catalog by hand. LCUS (for Library Circulation User Service, pronounced li'-cus) searches for a given call number in the list of currently checked out books, so a library user doesn't have to go all the way to the stacks only to find out the book isn't there.

These two programs are only part of a

larger system called NOTIS (for Northwestern Online Total Integrated System) which handles a wide range of library functions, from generating purchase orders for new books, to cataloging them and printing catalog cards and claim notices. This system, which is one of the first of its kind in the nation, has all been developed here at Northwestern, and has been so successful that it is now even being marketed, with customer systems being installed at universities in Alabama, Florida, Missouri and Oklahoma.

Such a comprehensive system obviously was not developed overnight. Rather, it was first envisioned in the 1960s, when the new main library building was in the planning stages. At

that time, provisions were made for a computer room in the library, and although it remained unused for nearly ten years, it was ready when the library's own computer was installed in late 1979.

Beginning in 1968, the programs were written by Electrical Engineering professor James Aagaard, and specifications for what facilities they should provide were written by Velma Veneziano, a systems analyst. By the time the new library building opened in January of 1970, the circulation system was ready to handle the checking out of books. By 1976, a terminal in the main library made LCUS available to the public, and by 1979 an initial version of LUIS was in public use.





Professor Aagaard

Almost all of the system was written in assembly language to make it more efficient and flexible. This is one of the major reasons for its quick response. Today, development is continued by two full-time programmers and two systems analysts. Since the system runs mainly in an online mode, no full time operator is needed. Professor Aagaard, who is now Head of Library Information Systems Development, still does some of the programming.

The system originally ran on the IBM 360 computer located in the basement of the building which houses the bursar's office. As use of that machine increased, both by University administration and the library, system response time was very noticeably affected. Upgrading the computer, eventually to an IBM 370/138, gave only temporary improvement. Finally, the announcement by IBM of a new lower-cost computer with the same power made it feasible for the library to get its own machine, which was installed in the fall of 1979.

The current system hardware consists of an IBM 4331 computer with a faster Model 2 processor, over 2200 megabytes of online disk storage, and 90 CRT terminals. Many of these terminals are used by library staff and administration, but five are located in the Science and Engineering Library, five are at Garrett Seminary, and ten are on the Chicago campus in the libraries of law and medicine. Furthermore, the library's computer can be accessed

through dialup lines, so anyone who has a computer terminal with a modem in their room can call up LUIS just as easily as Vogelback. All this hardware is managed by IBM's DOS/VSE operating system. The CICS teleprocessing monitor handles communication with the 90 terminals.

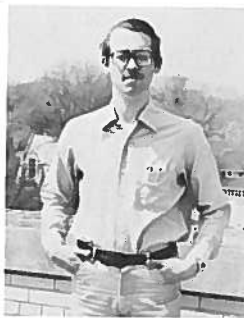
With the recent addition of the ability to search for a book by subject, LUIS came one step closer to its goal of completely replacing the card catalog. Before this can be done, however, the bibliographic display for a book must be changed to include all the information available on a catalog card, including notes and cross-references. Once this is done, catalog cards for new books will no longer need to be filed, since all information about them will be stored in and accessible through the computer. One major drawback of our system as it stands is the fact that very few of the books already in the library when the system was started have been entered into the database. Thus, using LUIS to search for a book acquired before about 1971 would be useless. This situation is not likely to change in the near future, either, since the task of transcribing the data from existing cards, as Professor Aagaard estimates, would cost approximately \$1 million.

Some improvements which can be expected in the near future—after a redesign of the database's index structure is complete—should be the capability to restrict a search to a given location or type of material, and the much-needed integration of LCUS into the rest of the system. The current need to write down a book's call number on a piece of paper before using LCUS can be eliminated by redesigning the LCUS program, which has changed little since it was introduced.

Hardware improvements to the system are currently on hold due to the University's financial situation, but projects being considered include the purchase of more terminals for public use and connection of the library computer to Vogelback's PACX, which would make LUIS available to any terminal currently connected to Vogelback.

Development of the system has been encouraged from the start by the University, and due to careful and efficient design, LUIS and LCUS have been well accepted by library users. Whatever the rate of progress in the future, it seems the computer has become an indispensable part of the library.

The author wishes to gratefully acknowledge the assistance of Professor Aagaard in preparing this article.



Jon Luers, diehard NUE staffer has been around the ENGINEER office for five years now. He expects to be leaving for good after this summer, with a master's degree in computer science.