The Indexing of Current Research Information by the Library and Graduate Engineering Students

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Because the School of Engineering, Air Force Institute of Technology, established the first college degree program in reliability engineering, the institute library has been collecting hundreds of documents in this fast-growing field. An immediate problem was to classify and to store the material in such a way that it would readily be available to a faculty member or student interested in locating specific reference documents.

The problem of classifying and storing the information was solved through careful study by a group of interested librarians and faculty members. It was clear from the outset that the Dewey decimal system imposed severe limitations on the flexibility needed. The very nature of reliability as a new field cutting across the boundaries of many disciplines made extensive cross-referring necessary. If this flexibility was to be made possible at a reasonable cost in effort and resources, an automatic data processing system seemed to be the answer. Finally, a punch card system was decided upon because of the following advantages: (1) reference to specific areas could be culled from the main list by an automatic sorter; (2) references could be added and placed in the proper space by using automatic equipment; (3) references could be duplicated automatically; (4) a complete or partial bibliography could be compiled and printed automatically, and supplements could be regularly issued.

The committee then set up a classification code consisting of ten major categories, each containing up to ten subcategories. The committee, of course, tried to establish a classification code which would reflect the needs of those who would have to work most closely with it. Each major category took about four hours to complete.

After the classification code had been devised, there remained the task of actually indexing or coding the reliability documents according to the classification code adopted. The library itself quickly prepared standard bibliographical reference cards which included the usual information of author, title, document number (if any), source, and last but not least, the all-important code or classification number for each document. All of this information eventually was to be arranged so that it could be coded on the punch cards. In addition, the library undertook to write fifty-word descriptive abstracts for all of the material. Conceivably, the abstracts could be included as "follow-on" cards in the automated system. Thus a fully annotated bibliography on punch cards would become a reality.

At this point, the library proposed the idea of using graduate students in reliability engineering to help index the ref-

erence material. The library did not have enough time and manpower to cope with the vast number of reliability documents collected on its shelves. Moreover, the members of the library staff did not always have the technical knowledge of reliability engineering to enable them to perform meaningful indexing and abstracting. Twenty-five graduate students, members of the 1963 class in reliability engineering, provided a potential source of the knowledge required. Thus they were assigned a special project as a part of English 310—Seminar in the Communication of Technical Information, a required two quarter-hour credit course taught by the humanities department. Since one of the purposes of this course is to discuss special problems in the storing and retrieving of technical reference material, the use of student help in coding the reliability documents seemed appropriate.

Each of the students in the class was given eighty of the standard bibliographical reference cards already prepared by the library. A major code number in keeping with the classification system was to be placed on each card, and more than one major code number could be assigned if cross-referring seemed advisable. In order to assign valid code numbers to the cards, the students either had to scan the appropriate reliability document itself or consult an adequate abstract, if one were available. In keeping with the efforts of the library, each student also was to write a fifty-word descriptive abstract. Again, the student either had to scan the document itself or he could base his abstract on one that he might find already printed in a reference source. In any event, the student was responsible for making sure that his descriptive statement was both accurate and concise.

There was one more important requirement for the students. At the end of the term, students were to submit, along with the coded cards and abstracts, a five-page analysis and evaluation of the classification code which they had used to number the documents. Specifically, the students were asked to judge the classification system, both from an indexer's and a potential user's point of view. Because the National Aeronautics and Space Administration had also devised a classification system for filing reliability information, students were given copies of this system. A few students used both the NASA and the institute classification systems to index the assigned documents, and then wrote an essay comparing the two systems. All papers were to be read by the instructor and by the librarians and faculty members involved.

The efforts of the students resulted in positive benefits for the classification code, for the students themselves, and for the library. The advantages for the classification code itself have been tangible. Although the students were primarily concerned with the ease of filing the information, all of them took a critical look at the reliability bibliography from the standpoint of a potential user. The student papers listed several suggestions about the classification code which the library staff and the project committee intend to incorporate into the system. A more useable system should result.

From the standpoint of classroom instruction and learning experience, the students themselves realized several important advantages. Most students felt that they did not spend a disproportionate amount of time on the assignment, considering the insights which they gained. First of all, students located, and with the help of the library scanned numerous publications in the field of reliability engineering. In some instances the references suggested possible thesis topics, and in most instances the material provided valuable background and bibliographical references for theses in progress. Second, a knowledge of the kinds of source materials available in reliability

engineering would certainly aid the student in his later professional career. Third, the students learned how to go about writing short abstracts, and for the first time some of them realized both the difficulty and importance of preparing helpful abstracts as guides to researchers. Fourth, the graduate engineering students clearly saw that engineers who need to retrieve information from an automated system should take a direct interest in helping a library staff construct the classification code for filing the information. In short, they became aware that no automated reference system can be any better than the classification code used to index the material.

The advantages for the library were obvious. First, twenty-five students accomplished in a few weeks what might have taken one or two librarians months to complete. Second, the library was able to have the indexing done by people who were qualified in the field of reliability engineering. A spot check of the student work showed that it was completely competent. The use of subject matter experts to help in the classification and coding of reference material seems to be growing within many industrial and research organizations. Some companies expect, or at least encourage, their technical people to offer assistance to the technical library. Last, and perhaps most important, students came to appreciate the importance of a good technical library in filing and locating documents. The tools and tasks of librarians took on a new meaning for the students.

The unmistakable conclusion is that graduate engineering students can profitably help technical libraries to index limited amounts of technical information. The classification system used to code the information thus will be closely scrutinized by those whose eventual concern is to retrieve information. A knowledge of the problems involved in the classification of information and a familiarity with automated reference systems may prove to be a valuable if not necessary asset in the education of a graduate engineering student. The President's Science Advisory Committee strongly urges that engineering students be made to acquire some proficiency in literature techniques and information retrieval.[1] Perhaps the technical libraries in our engineering schools can help to meet this goal by devising projects similar to the one described above. If so, both the library and the student will have gained. ■■

[1] *Science, Government, and Information: The Responsibilities of the Technical Community and the Government in the Transfer of Information.* A Report of the President's Science Advisory Committee (Washington: Government Printing Office, 1963), p.28.

Additional ACRL Appointments

ROBERT C. MILLER remains as chairman of the Law and Political Science Subsection; Bruce M. Brown was reappointed to the Publications Committee; Andrew J. Eaton has been appointed chairman of the St. Louis Conference Local Arrangements Committee with John B. Abbott and Carl H. Sachtleben appointed as members; Mrs. Margaret K. Toth continues as editor of the ACRL Microcard Series with the Editorial Board consisting of Felix Reichmann, newly appointed to managing editor, Thomas R. Buckman newly appointed, and E. Judson Humeston, Jr. ■■