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II D

TRAINING EXPERIENCE WITH AGRICOLA AT THE NATIONAL AGRICULTURAL LIBRARY

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Three years ago the National Agricultural Library began to receive comments about the CAIN (now AGRICOLA) file of citations online with the Lockheed Information Systems and the Systems Development Corporation. This was less than 2 years after the file had gone online and been available for general information retrieval use. There were and still are the usual complaints about the system inadequacies of the vendors, Lockheed and SDC, about the many typographical and bibliographic errors, and the lack of subject or document coverage. After receiving the comments of the information community, mostly librarians, and spending some time sorting through them, our important conclusions were:

1. The online users of the file were not finding citations of importance which we knew were there;
2. The frustration level from machine interaction and general ineffectiveness was great enough to force intelligent people to alternatives;
3. The basic skills required to provide effective, useful, and low cost online serarching were missing with many of our colleagues.

From these observations we came to the conclusion our sister institution, the U.S. National Library of Medicine, had reached some time before. We must provide basic tools, training, and incentive to get widespread effective utilization if we wanted our file to be used by the general information public.

The first step most creators of citation data bases have taken is the publishing of notices with technical details about special aspects of their files, and their meaning to the online operation. This is usually a temporary substitute for what takes longer to prepare: a careful delineation of the most essential knowledge, steps, and methodology in a systematic, almost textbook manner. And that is the user's manual.

We early learned that the brief information provided by the commercial vendors of several files online were not the answer to the fulfillment of retrieval happiness. Those descriptions were too sketchy on individual files, gave heavy emphasis to system hardware and its use, and provided only surface attention to the problems of all of the files, and most certainly not to individual files.

At the time work on a user's manual was ongoing, we gave training upon request to librarians who came to us or beseeched us for assistance on their home grounds. Occasionally this resulted in small group training. Our own staff had informal training and review sessions with advanced online searchers. From these experiences came the evidence that we must prepare more formal and effective ways of transmitting this knowledge and skill. To us that meant a formal course or workshop.

THE MANUAL AND THE COURSE

The user's manual was aimed at the most basic needs of learners, initial users of the files, and those unfamiliar with the NAL indexing practices. The manual takes an individual first through an introduction to the basic purpose of CAIN (or AGRICOLA) and fundamental knowledge of online systems such as Boolean logic, strategy formulation, online communications and their protocols. From there the manual describes the CAIN master record, indexing coverage by subject and format at the NAL and other indexing and cataloging practices, title enrichment, category codes, geographic designations, and a host of other features. Some of these are itemized in detail since they are important keys to unlocking the information storehouse. The manual next takes up online systems and their sequences, commands, codes, and basic techniques.

That is a very quick runthrough of 170 pages of technical information[1]. As with most textbooks, or manuals, the human intellect needs the added incentive of course instruction to put the knowledge to the best use.

Our formal course was set at a week's length and structured around the information in the manual which was augmented. For an instructor, we turned to a librarian with extensive online AGRICOLA experience, a quick mind, and training in educational and teaching practices. The course initially and presently follows the general plan of correlation of lectures with pre-assigned manual readings, numerous examples provided by the instructor, impromptu quizzes or testing, use of audiovisuals, practicums worked on paper and later at terminals, and much hands on terminal experience for each student. Each of four terminals has an experienced terminal instructor with 5 students per terminal. This all culminates in a written and terminal examination on the 5th day.

We kept in mind the adminition of Lancaster and Fayen[2] which we had also observed, that using all instructional methods and style, and levels of detail seem to satisfy fewer than half of the people. Another way to state this might be: Don't mix fruits and nuts or your methods and depth of penetration will not be well received. Therefore, the basic library or information science degree is a pre-requisite to our course, although one pre-screened person without this requirement was admitted and did well.

A second major point in structuring the course was the strongly-held U.S. view that we learn best by doing. Early we found this particularly true with NAL staff and insisted that hands-on experience be part of the course. This was a valid decision.

RESULTS FROM THE MANUAL AND COURSE

Evaluation forms have been used in each of the six formal courses we have offered. One covers the manual, its structure, coverage, ease of use and clearness. A second covers the course and the instruction.

From these evaluations and responses from advanced searchers not attending the courses, we are convinced that our basic objectives for the teaching manual were more than achieved. In fact, we have a best seller, from our restricted point of view. Suggestions for change in the manual have

been few, and a second edition is in final stages of editing. It will inforporate those suggestions received, extend into additional subject areas, and update portions resulting from technological, system or commercial vendor changes.

The course of one week has also been well received although shortcomings have been more evident and vocal with it. The requirement of finishing relatively skilled users of AGRICOLA from persons with little or no online background has been achieved with 85%. Most comments are: Rigorous; Difficult but excellently done; Superb instructor; Didn't think I would learn so much. Attendees have been almost equally distributed among industry, academiae, and the U.S. government. Changes in practicums, scheduling of portions of the course, intermising of lectures and hands-on exercises, as well as new audiovisuals have been introduced after each course. Therefore, improvements have been incorporated as we gained exposure and experience. But these alterations have been minor. We intend to continue this basic course, in fact, the next one is set for June 12-16 at the University of Illinois. Although most agriculturally-oriented academic institutions in the U.S. are active users of AGRICOLA and sent people to our courses, there are still other organizations just beginning to think seriously about online bibliographic services. These include smaller academic institutions, state government and smaller federal units, and many more private corporations and associations. We will not offer this course as often as in the past, but will proceed to an AGRICOLA users' advanced training workshop of 2 or 3 days. The first of these is scheduled in Minneapolis, Minnesota, this summer for an active, professional group of online users. We are also exploring the prospect of running an advanced users' workshop with another online citation data base creator whose file complements our own. As you can deduce, we are reacting to requests and observed needs of AGRICOLA users with gradations of skills. And some parts of the community are very skilled.

But let us return for an examination of the knowledge and skills operators must bring together for successful online searching.

REQUIREMENTS AND TRANSFER EFFECTIVENESS

As Gilreath observed in the "CAIN Online User's Guide":

> Efficient retrieval from a computerized bibliographic data base requires: 1) a clear view of the topic, clearly stated; 2) the development of an adequate list of key words divided logically into concept groups; 3) an ability to adjust the initial strategy on the basis of information gained from preliminary review of search output 1/

Online searching requirements and problems were detailed by Gilreath in a paper presented last fall and soon to be published 3/. I shall quote or paraphrase extensively from his paper since he has been on the firing line. As he and others have pointed out [2,4,5] the primary, distinctive steps in the searching operation are:

1. Interviewing and negotiation of a clear understanding of the requestor's needs.
2. Matching this need with the most appropriate citation data base
3. Establishing the search strategy for the question. There is much interaction here with choosing the correct file.
4. Execution of the search online.

We will examine these from the experiences in the AGRICOLA course and with our staff.

We deal lightly in our course with the interview on the assumption that this basic reference librarian's skill is fairly well learned. As Gilreath puts it: "This ability to ask the right questions cannot, properly speaking, be taught in a training program. But the nature of the questions which must be answered in order to formulate a successful computer search strategy can be taught" 3/. A successful computer search of AGRICOLA may place heavier reliance "...on the user's knowledge of variant word forms and synonymous terms. While it may be adequate, for example, to approach a good printed index with the term "cattle" and rely on the consistency of the indexer or the syndetic structure of the bibliographic tool to lead to related terms, a similar approach to a computerized file will be ill-advised. No fewer that 15 different terms would be required to retrieve the relevant literature on this topic in a data base such as AGRICOLA" 3/.

I believe it is fair to say our experience is this: If the person does poor interview work as a reference librarian, this will be compounded as a search analyst. We have found very few unable to make the adjustment on interviewing; we have found a few unwilling to do so, however. This area is generally not a major problem although the training essential to point out the necessity of the change of view should not be minimized.

Matching inquiries with approrpiate citation data bases is, of course, pre-determined in our AGRICOLA course. Knowledge of the content of the file and the structure into which it is placed by us and vendors are the reasons for the manual and the course. We come out very well instructionally on what NAL incorporates into the file and the indexing methods employed. Both aspects are well executed in the manual and the course. These policy statements come to many as revelations since they were not systematically available to the public earlier. We get lots of unsolicited advise on our literature coverage and indexing policies.

The problem of knowing practices and policies of data base producers continues today since too few details are available. NAL has done rather well in this regard, however. This information strongly influences the searcher's ability to reduce false starts and afix strategies with preciseness. Again, in this entire area of data base producer and vendor knowledge, we feel transmitting the knowledge is difficult but of a lesser magnitude that some other areas.

Establishment of the search strategy is a greater problem from our viewpoint because it involves for many the introduction of new or unused knowledge which constitute the heart of computerized information retrieval: coordinate indexing and Boolean logic. These must be mastered or the searcher will flee in terror or collapse in frustration. With these vital elements must also come a generalized understanding of how computer systems operate, or else analysis and re-design may not be possible. Then these essential parts of the search formulation must be matched with the protocols of the vendor's search system. We found learning the Dialog and Orbit protocols to be confusing to many students in the one week course. However,

most mastered both at the rudimentary level, but with complaints. Nearly all also overcome other search strategy requirements through a carefull orchestration of lecture, demonstration, paper practice, discussion, hands-on practice followed by individual or group analysis or results.

The final phase which involves equipment operation and interaction with the file in real time requires a different set of skills than previously employed. And what fun that can be. As Gilreath states:

> "It has been my observation that among these people new to the whole business of data base manipulation, their greatest sense of frustration came from actual manipulation of the retrieval systems. Review of proficiency exercises administered at the end of each workshop clearly indicates that most participants knew reasonably well the content and structure of the file and could formulate on paper a logical strategy to retrieve requested information. Actually getting the written strategy converted to results and then adjusting the initial strategy as necessary while in an interactive mode is, without doubt, the hardest part of the whole process for new searchers.[3]"

This bringing together of several operations and adding the physical to it is rather carefully examined by Mallen in an interesting paper which includes some startling observations and conclusions about online behavior[4]. Most professional librarians and information specialists possess the required skills, but some do not. Our greatest failure rate, although very low, was in this culmination.

OBSERVATIONS AND SUGGESTIONS

One can fairly safely draw several conclusions from this paper along with those to which reference has been made. I will make only a few in summary:

1. An intelligent person with normal motor skills does not need to be frightened at the prospect of online searching. Indeed, removal of this assumed fear of difficulty is the first and most important task of the instructor.
2. When planning for or implementing online services, don't skimp investment in training and instruction or you may pay a larger bill in inefficient retrieval results in the form of poor products and increased interactive online costs.

3. Choose your programs, training methods, and instructors with utmost care. Prefer training on the specialized files appropriate to you over the generalized introductions to all systems. If possible, both should be used,

4. Creation of instructional packages on a regional or language bases may be necessary. If you do this, work closely with all parties involved: the data base creators, vendors and instructors.

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