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Author

Buckland, Michael

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LIBRARY SYSTEMS AND MANAGEMENT
STUDIES AT LANCASTER UNIVERSITY*

Michael K. Buckland
Purdue University Libraries
Lafayette, Indiana

Abstract

A rationale is supplied that can be applied to a scientific approach to libraries. A description is given of an implemented operations research study of library stock control. Why and how the Lancaster Library Research Unit devised a computer-based library management game is explained as is what happened when library administrators and library educators played it. Although these remarks are based on the Lancaster experience, they are related critically to the state-of-the-art of education, research and administration in librarianship.

Instead of developing a blueprint for future international collaboration or attempting to analyze differences between different countries, this paper is deliberately historical and localized. In it are reported some of the experiences of a single research unit during the past few years. There are two reasons for this retrospection: it presents some interesting work which is little known outside England; and there seem to be implications and conclusions about education and research which are of general significance.

About ten years ago a new university was established at Lancaster in northwest England. When the chief librarian, Mr. A. Graham Mackenzie, was first appointed he was taken to the windswept hillside where the new campus was to be built. He was asked what university libraries would be like in twenty years time and instructed to plan accordingly. In responding to this challenge, he developed a conviction that the principal hindrance to effective librarianship was the inadequacy of our understanding of libraries--that not enough had been learnt about library systems.

As a digression, it can be observed that the traditional focus of scholarly effort by libraries has been on books rather than on libraries: the history of printing, of book production, and the analysis of literary texts. In addition, much energy has been devoted to the various techniques used in libraries such as cataloging, classification and file-handling. Studies of libraries tend overwhelmingly to be historical and descriptive rather than analytical. This is not a criticism of their quality or, even their usefulness (1), but evidence of the traditional emphasis in librarianship. More recently, there has been a considerable growth in what is called "systems work," which is, in fact, almost always concerned with the use of data-processing machinery to perform clerical tasks in libraries. Some of these activities are systems studies in a very real sense. This is notably true of work on the organization of knowledge and in systems analysis for computerized data processing. However, in neither case is it really the library itself--as an organism, as a system--which is the subject of study. However, the directors of libraries should be--but

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have not always been--concerned with the complex and dynamic interactions of the library services, the library users and the environment in which both exist: "the total dynamic ecological balance between information and its users"--to quote from Mackenzie's own appraisal of the need to learn more about library systems (8).

There are at least two plausible reasons for this general failure to learn about library systems: A library service shares several awkward features of non-profitmaking support services. There is no conveniently measurable output--like profit. Instead, different classes of patrons with different needs and varying information-gathering habits use documents with obscure consequences and no payment. The whole area is bedevilled with uncertainties. There are practical problems in discovering what people actually do in libraries. There are problems which derive from being a support service which has to adapt to the organization being served. Universities, in particular, can develop haphazardly. Furthermore, there are likely to be unresolved conflicts of interest and priorities among the user population. It is clear that these complexities make learning about library systems a relatively difficult and discouraging area compared with, say, data processing. A second reason is that until recently very little operations research or systems engineering work had been done in libraries. Professional operations researchers have not shown much interest in the area and, more pertinent to this session, the orientations and training of librarians have not been conducive to this type of work. It has been said that librarians have been taught to count but not to analyze. Recent papers have reviewed problems (10) and also progress (9).

Library Models Developed

At Lancaster, Mackenzie acted upon his convictions by establishing a small research unit in the library. It was charged with exploring the library system, in the wider sense, with a view to providing a better informed basis for the managerial decisions in running the library. The early years of this research program have been summarized (7).

Two particular studies undertaken by the Lancaster Library Research Unit are especially relevant to a discussion on learning about library systems. A model was developed of the allocation of resources and workflow in the processing of books through ordering, cataloging and marketing (4,ch.2). Although this modeling is feasible, the researchers concluded that it was not a sensible approach because of the complexity of the model. The very large number of interacting variables and constraints would make formal optimization unrewarding. This came to be seen as a situation in which the sensible approach would be to encourage the administrator of book processing to view the various book processing activities as one interconnected system and to manage it accordingly. If this could be done, then it would seem to be a more sensible strategy than attempting to compute optimal decisions analytically.

Another study was concerned with maintaining acceptable levels of book availability. In 1968, Mackenzie was concerned because of evidence that library users were often unable to find the books they wanted even though the library did possess copies. He therefore instructed his research unit to analyze the problem and to suggest possible remedies. After a survey of causes of user frustration, attention was focused on two key variables: the length of loan periods for borrowing; and the policy concerning the purchase of additional copies. Methods were developed for relating these variables to patterns of user behavior and for assessing the likely effect of a number of different policies in terms of cost, book availability and the impact on browsing (3,4,ch.6,6). A review of alternative policies in terms of cost-effectiveness led to the adoption of a rather novel type of policy whereby the loan period for each book was directly related to the level of demand for that book. The results of implementation were unexpected and dramatic. Borrowing increased dramatically and tripled during the next two years. It is possible that users perceived the increase in availability and that this was a positive reinforcement for further use.

Library Management Game

These two studies brought the researchers back to the original problem. How do you communicate the successful use of modeling to improve a library system to a profession unfamiliar with the concept of a model and unaccustomed to thinking about their libraries as systems? How do you foster the ability of library administrators to view their responsibilities in terms of systems even when, as in the book processing example, formal mathematical modeling does not seem directly helpful?

In order to tackle these problems, the Lancaster Library Research Unit set out to develop a library management game (1, 2, 5). It was hoped that this might make a new and needed contribution to professional library education. A review of the state-of-the-art of education for library management proved depressing. Personal experience, the literature on this topic, discussions with experts, and visits to several schools of librarianship and information science in Britain and North America led to the conclusion that this must surely be the least satisfactory aspect of our professional training. There is a marked tendency to concentrate on uncritical descriptions of procedures and administrative processes and a general failure to attempt critical analyses of management problems. Policy analysis, resource-allocation problems, the use of models and management information are neglected topics. In brief, the general picture is of a very inadequate learning process with respect to library systems.

In March 1972, the first prototype versions of the Lancaster game was used in Morecambe, England. A small group of senior librarians and library educators was assembled. They were divided into small teams and given a quite specific task. They were told that they had just been appointed director of an imaginary library and that they had precisely thirty-six hours to prepare a five-year plan for their library including policies and budget. The plan, and especially any increase in budget, would have to be justified in writing and verbally in terms of improved service to a skeptical library committee. The range of policies was in fact limited to: loan policies; duplication policies; increases in the range of titles held.

The participants were provided with data on their imaginary library. They were also allowed to explore heuristically the effects of various combinations of policies because they were allowed a limited amount of on-line access to a computer simulation which related their data and policy-options to a selection of suggested measures of performance. These measures were: amount of borrowing; satisfaction level, the proportion of demands on the library which could be immediately satisfied; collection bias, a measure of suitability for browsing; amount of reading, "document exposure"; and costs. Their task was: to grasp the structure of the problem both qualitatively and, so far as possible, quantitatively. They were to decide on the relative weighting to be given to the various different measures of performance; and they were to determine the most effective combination of policies for achieving improved library service. They were also asked to describe and justify their chosen policies in terms of expected results.

A heavy stress was placed throughout on two key concepts: the model as a means of achieving a better understanding of a given situation and of exploring alternative policies before implementing them; and management information as data collected in order to make better decisions.

The initial reaction of participants were uniformly favorable though it was clear that more development was needed. Currently, a selection of other games are being developed to supplement the original one on stock control. The new areas being pursued include indexing policies and book processing. In addition, internships are planned for selected British library educators to be attached to the research unit.

Although this paper has been retrospective and localized, it has touched on some basic problems in the current state of education and research. Personal experiences in different countries suggests that these problems and the possible solution are entirely international.

References

- (1) BROPHY, P., et al. A Library Management Game: A Report on a Research Project. University of Lancaster Library, Lancaster, England, 1972. (University of Lancaster Library, Occasional Paper, Number 7).
- (2) BROPHY, P., et al. "Simulation in Education for Library and Information Service Administration." *Information Scientist*, 6:3 (September 1972) 93-100.
- (3) BUCKLAND, MICHAEL K. "An Operations Research Study of a Variable Loan and Deuplication Policy at the University of Lancaster." In: Sivanson, Don R.; Brookstein, Abraham, eds. *Operations Research: Implications for Libraries*. Graduate Library School, University of Chicago, Chicago, Illinois, 1972, 97-106 (Also printed in *Library quarterly*, 42:1 (January 1972)) 97-106.
- (4) BUCKLAND, MICHAEL K., et al., eds. *Systems Analysis of a University Library: Final Report on a Research Project*. University of Lancaster Library Lancaster, England, 1970, 110 pp. (Available from the University of Lancaster Library, Occasional Paper, Number 4. ED 044 153).
- (5) BUCKLAND, MICHAEL K.; HINDLE, A. "The Case for Library Management Games." *Journal of Education for Librarianship*, 21:1 (Fall 1971) 92-103.
- (6) HINDLE, A.; BUCKLAND, MICHAEL K. "Towards an Adaptive Loan and Duplication Policy for a University Library." *Operations Research quarterly* (Forth coming).
- (7) MACKENZIE, A. GRAHAM. "Library Research at the University of Lancaster." *Library Association Record*, 73-5 (May 1971) 90-92.
- (8) MACKENZIE, A. GRAHAM. "Systems Analysis of a University Library." *Program*, 2:1 (April 1968) 7-14. (This paper also appeared in the *Anglo-Czech Conference of Information Specialists*. 2d, London, England, 1967. Proceedings. Edited by Douglas John Foskett, et al. Crosby Lockwood & Son, Ltd., London, England, 1970, 146 pp.)
- (9) MACKENZIE, A. GRAHAM; BUCKLAND, MICHAEL K. "Operational Research." In: Whatley, Herbert Allan, ed. *British Librarianship and Information Science, 1966-1970*. Library Association, London, England, 1972, 224-231.
- (10) MARTIN, JOHN; VICKERY, BRIAN C. "Complexity of the Modelling of Information Systems." *Journal of Documentation*, 26:3 (September 1970) 204-220.
- (11) NEWMAN, L.M. *Libraries in Paris*. Preston, United Kingdom, Conder Research, 1971. (SBN 902894 01 3).