

## “Machine-Men” and Librarians, An Essay

*“Library automation” is symptomatic of a radically changing civilization in which operationalism is displacing logical thinking. Library operations are being reformulated as systems of process rather than of functions. One of the consequences is that the profession of librarianship is being redefined. The “systems analyst” is taking a permanent place in the library world in a relationship to “the librarian” which is unique.*

THE DEAN of a major library school recently stated privately that the graduate of the school of information science of Georgia Institute of Technology was, in effect, neither fish nor fowl, and really had no clear place in the library profession nor in the library world. At that moment I knew that there were a number of libraries that “would have given their eye teeth” to have had the graduate of such a curriculum on their staffs. More recently, the director of a university library stated to me that the innovations of library automators and systems analysts would prove to be permanently valuable contributions to library science and practice, but that they themselves would pass from the scene as did the efficiency experts and labor-savers of previous decades.

The responses described above, it seems to me, are partially grounded in truth, but on the whole really fail to grasp the radical significance of what is happening to the profession of librarianship. The purpose of this paper is to explore the phenomenon of the impact upon librarianship of the logical positivistic operationalism which is rapidly

accelerating its transformation and domination of our advanced industrialized civilization as a whole.

During the last ten years there have been a great many attempts to “automate” library functions *in toto*, or in part. As a rule these experiments have varied by whatever measures of success are available, from being not practical to catastrophic, for the libraries concerned. In a few instances, as for example, in the case of the creation of book catalogs for public libraries with widely scattered facilities, or in cases where administrative or business data have been controlled more effectively by the use of machines, the results can be considered successful. In the main, however, what has emerged most significantly from these attempts is the realization that librarians have not had a tradition of reflective thinking about, or conscious theorizing on, the procedures that they have evolved, and that they really do not understand them well enough (in an operational sense, which will be elaborated upon later) to be able to explain their meanings and interrelationships. On the other hand, it has become clear that librarians have conceptualized library functions in reasonable and even logical formulations.

It would seem, then, that the preceding statements are contradictory, for if

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library functions are relatively well formulated logically, then one might expect that they should be well understood operationally.

The traditional organization of libraries has been along functional lines. The first and second definitions of the word *function*, according to *Webster's Seventh New Collegiate Dictionary*, are: "1. professional or official position: occupation. 2. the action for which a person or thing is specially fitted or used or for which a thing exists." The emphasis is on person, and secondly upon special aptitudes, and ultimately on things, presumably including machines. Library functions are those classes of actions which are common to categories of individual persons with recognizably similar interests and capabilities. Functions are abstractions which have been formalized from the observed patterns of the behavior of people.

Acquisitions, cataloging, and reference are functions which have been isolated and logically organized to carry out the social and historical missions of libraries in civilization, and these formulations have, in the main, been quite successful.

The logic and reason of functional organization are the same logic and reason of the Aristotelian tradition, which refer to the limited set of valid operations allowable for manipulating the thought forms of the human mind, which delightfully, occasionally are found to represent the "objective forms" in the world which order the Cosmos. In the context of this paper, an operational definition would be one such as exists within physics, say, for "work" which is operationally defined by a formula relating to the transference of energy when a specific force is applied over a specific distance. Prior to the formulation of this definition, everyone knew perfectly well what "work" was logically, but such a logical notion was useless for discussing steam engines.

In our highly industrialized civilization,

as is pointed out by Herbert Marcuse,<sup>1</sup> logic and reason are progressively being supplanted by operationalism which not only invalidates the former as irrelevant, but is making it progressively less possible to think or even talk logically. Operationalism is the validation of only those acts or manipulations of which machines are capable. Machines do not have broadly integrated patterns of special capabilities as humans do; rather, they have very restricted capabilities of highly generalized manipulative patterns. Machines are not functional creatures; they are manipulative and adapted to dealing with repetitive processes of narrow scope which may be common to a number of the traditional functional units, but which may be useful at only a small abstract level of, for example, the cataloging function.

The implications for libraries are clear. If machines are to be used to their fullest potential in library operations, these operations must be reformulated in terms of interrelated processes. The traditional functional formulations, which had been grounded in the concept of human personality, must be displaced by the professional formulations grounded in the concept of machine capabilities. It is obvious then, that if this is done, the very character of the persons to be integrated in such systems must be compatible with them; library administration must become scientific management. This means a redefinition of the concept, "librarian," to which I will return later in this paper.

At this point it might be well to speculate very briefly upon the radically revolutionary consequences which *must* follow from the utilization of computers in libraries. When Henry Ford put his automobile on the assembly line, he initiated a process which necessarily was to lead to freeways, the proliferation of private homes in sunny suburbia, gasoline sta-

<sup>1</sup> Herbert Marcuse. *One-Dimensional Man* (Boston: Beacon Press, 1964).

tions and promotion of the petroleum industry, used-car lots, and many other well-known economic and social phenomena. The limited use of computers in libraries has already shown us that we *must* have large communications networks, standardized procedures among libraries, new ways of organizing materials, new concepts, new languages (formal, natural, and machine), and new modes of thought which must be operational rather than logical. This radical revolution is generalized in our civilization, and its encroachment into the area of librarianship must be regarded as evidence of its universal pervasiveness into every aspect and corner of civilization, not as a phenomenon unique to libraries.

The structural organization of libraries is no longer to be man-centered; it is to be machine-centered. Logic and reason, which were the ideational forms appropriate to a man-centered organization, must be exchanged for operational definitions and formulations appropriate to the machine-centered organization. Library operations must be reformulated into systems of operationally defined processes. Man must be inserted into such systems where he fits most effectively.

One more point should be considered relative to the "dehumanization" of library operations. In the past, it was the humanizing of library services which was so desirable, particularly in the domain of public services. It was felt, and rightly so in a time when humans were relatively scarce, that personal contact and confrontation and dialogue were to be greatly prized in providing personalized service to the patron. Today it has been demonstrated (probably most effectively by the supermarket) that personalized contact may be "dehumanizing" in effect, particularly in congested urban centers where people are thrown together too much all during the day and night anyway, and where privacy has

become the privilege of only the very wealthy. In such areas, including the "mega-versity," it is more humane for the patron to interface with the system in a depersonalized way: signs instead of information clerks, recorded messages and teaching machines instead of overwrought librarians at crowded information desks, computer consoles instead of reference librarians. With the population explosion assured, library service may well have to "dehumanize" in order to become human as well as humane.

Now, to return to the central question as to the implications of this for the library profession. First, since operationalism is rapidly transforming the entire civilization, libraries need to face more squarely the changes in format that are available for the preservation and propagation of information. Second, libraries must be prepared to standardize their processes more uniformly on the one hand, while accepting the practical innovations in uniformity that are being imposed by the same historical processes, on the publishing world and professional societies which disseminate and organize information. Third, libraries need to define their roles in society much more minutely, operationally defining their missions, clientele, appropriate formats, and answers to related questions.

In the main, the realities enumerated above are and will be studied and adapted-to by men and women who are capable of or accustomed to thinking in terms of large self-consistent systems which consist of necessary processes (which strictly defined philosophically, is nothing more than the definition for reason itself). Operationalism is as reasonable as functionalism provided that it is accepted that the metaphysical ground, or ultimate nature of historical and social reality itself, has changed. Still, operational thought is not necessarily logical thought, and this is the crux of the matter for the profession of librarianship, the *rationale* for the entrance of the

systems analyst (or information scientist) into the field. Since processes and systems are constantly evolving, changing, re-adjusting, it appears that the systems analyst is not encroaching on an area which has no place for him; on the contrary, he is urgently needed, and late in coming. Neither is he likely to vanish after he has finished his work, because his work will never be finished.

The concept "librarian" is too generic; it is time that the ALA, SLA, MLA, ADI, and other interested organizations form a committee to define operationally the different classes and levels of generalization as well as specialization within the over-all concept, and invent new names (from Greek roots?) which the profession should strictly apply, as the medical profession has done with regard to its specialties. Each specialty should be related to a very definite educational curriculum. Prominent among the specialists included in the field (possibly more generic terms should be used to define what the field really is: Librarianship? Documentation? Information Science?) should be the systems analyst who certainly will "be with us, even unto the end of the world."

If it is true that he will be with us, then the question arises as to his probable ultimate role within the organization. If all libraries are to be defined as systems of processes, then it would seem that the systems analyst should have

final executive control over the entire operation. Upon second view, however, it is evident that complex, operationally-defined systems are extremely formal systems, and as such, are abstractions within the world historical process which is characterized by untold numbers of interrelating variables. The tight, operationally defined system can tolerate only the slightest variations in any of its subprocesses before it will fail. This means that such a system always presupposes another system outside of itself, and outside of its own system of "logic," which will create and maintain the environment and other conditions necessary for it to function within the historical process. This mediating system is nothing else than the administrative system which obtains and controls power and finance. Power and money, as is well known, are not generally dispensed by machine logic, but by the logic of the practical world, which is another story.

While it is true that the systems analyst will have great authority in the operation and control of the library systems of the future, and while it is very likely true that the librarian of the future will be well versed in mathematics, logic, and epistemology, it does not follow that the competent, resourceful, generalist librarian will necessarily be superseded by "machine-men."

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