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DISSERTATION

Ronald Bryson, M.S.L.S., M.Ed.

Graduate School
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1970

A THEORY OF LIBRARIANSHIP

DISSERTATION

A dissertation submitted In partial fulfillment
of the requirements for the degree of Doctor of Philosophy
at the University of Kentucky

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Erlanger, Kentucky

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Associate Professor of Education

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1970

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CHAPTER I

INTRODUCTION

> Scientific thought takes its ultimate point of departure from problems suggested by observing things and events encountered in co: :n experience.[1]
>
> --Ernest Nagel

THE STUDY

This study constitutes a search for a theoretical framework for the field of librarianship. Observation of events encountered in librarianship indicate that such a framework is needed in order to define the boundaries of the field, to demonstrate its unity, and to describe the relations between its internal elements, as well as the relations between librarianship and the parent-institutions which develop libraries.

The procedure followed in this study is: (1) to utilize three laws from the field of sociology, stating these laws as postulates of the theory and developing from them theorems that are appropriate for the field of librarianship (Chapter III), (2) to validate the theory by demonstrating that it conforms to the norms of correspondence,

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[1]Ernest Nagel, The Structure of Science: Problems in the Logic of Scientific Explanation (New York: Harcourt-Brace, 1961), p. 79.

coherence, and function customarily followed by social scientists in such validation (Chapter IV), and (3) to present the theory in the form of an interpretive model (Chapter V). The study will close with a discussion of the applications of the theory (Chapter VI).

The basic method underlying the above procedure is that of logical analysis as set forth by Abraham Kaplan in The Conduct of Inquiry. Kaplan's sense of the term, logical analysis, is that of a multifaceted activity which includes tests for correspondence, coherence and function. The term is used by Kaplan in a loose sense, and this is deemed to be appropriate for this study, which considers librarianship as a whole.

NATURE OF THE PROBLEM

Lack of a Theoretical Framework

Pierce Butler, writing in 1933, and arguing for the adoption of the scientific method in librarianship, stated that:

> The development of library science . . . will establish that theoretical framework without which no deliberate extension of knowledge is possible.[2]

In 1964, Julia Petrof stated the need for theory in this way:

> If librarianship is to receive its due recognition it must move to higher levels of abstraction; it must have a theory. . . .

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[2]Pierce Butler, An Introduction to Library Science, (Chicago: University of Chicago Press, 1933), p. 107.

> Librarianship needs a theory to provide clarity of conception and to enable librarians to venture into the realm of supposition.[3]

Today, there is still much concern expressed in the literature of librarianship over the lack of a theoretical basis for the field. Bernard F. Vavrek stated in an article published in 1968:

> For a considerable time, the library profession has concerned itself over the issue of whether or not there is a theoretical basis for librarianship, and if so, what is it? This unresolved question has left library science suspect. Indeed it has then led to the further query, "What is scientific about library science?"[4]

Vavrek raises a philosophical question in this statement which will be dealt with later, but his intention is to further the trend of thought toward development of a comprehensive theory of librarianship.

Indefinite Boundaries

One result of the development of librarianship without benefit of a theoretical framework is that the boundaries of the field are unclear. An example of this has been the controversy over the inclusion of audio-visual materials and equipment in the library. Many librarians, who do not think it appropriate for the library to be

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[3]Barbara G. Petrof, "Theory: the X Factor in Librarianship," College and Research Libraries, XXVI, No. 4 (July, 1965), pp. 316-7.

[4]Bernard F. Vavrek, "A Theory of Reference Service," College and Research Libraries, XXIX, No. 6 (November, 1968), p. 508.

involved with the newer media, simply ignore, their existence. Others, who feel that the library should house all forms of materials, have developed their own approach. In school libraries, for example, this interest in the use of all forms of materials in the library has led to the instructional-materials-center concept.

Another example of this need is demonstrated by the fact that there is no clear boundary between librarianship and the information sciences. Work is currently being done in various departments and schools, including programs which are independent and those which integrate the two fields. Does either of the two logically include the other? Or, are they mutually exclusive areas of operation? Questions such as these indicate the difficulty of describing definitive boundaries at the present time.

Undefined Relations

The lack of a theoretical framework causes relations between the internal elements of librarianship and those between the whole of librarianship and the parent-institutions which develop libraries to be unclear.

With regard to the internal elements of librarianship, the utilization of library staff members is a problem area which could be illuminated by logically framing library functions, processes, and individual tasks within a theory. For some years there has been a national shortage of librarians, yet salaries have remained low. Also, there has

been widespread misuse of graduate librarians in duties which were clerical in nature. Currently there is a trend toward use of non-professionals in greater numbers. Library technician programs are proliferating, causing many graduate librarians to fear for their own positions and status.

In addition, libraries have long utilized staff members having all types of education, ranging from the high school level to the Ph.D., with or without formal course-work in library science. There is no accepted set of functions for these people; each library utilizes its staff in its own way and must carry on a constant in-service-training program, which is costly and keeps services from being developed by diverting efforts which could be expended in more profitable directions. What balance of relations between library functions, individual tasks, and levels of education would alleviate these ills? The problem of determining proper staff functions and appropriate levels of operation for all members of the library staff is of major importance to the profession.

There is at present no systematic way to examine the relations that exist between librarianship and the parent-institutions that develop libraries. Why do these particular institutions develop libraries? What needs are satisfied? In what manner does the satisfaction occur? How effective is the process? These questions are treated in the courses

devoted to the administration of various types of libraries, but in this situation the approach is fragmentary, the unity that exists among all types of libraries is lost, and in none of these courses is there a framework offered as a tool for librarians to use in looking at all types of parent-institutions and determining how best to meet their needs.

Lack of Unity

The lack of a theoretical framework causes the unity of librarianship to be unclear. Separate courses for the training of librarians who plan to work in special, school, public, or college and university libraries are utilized on the assumption that special circumstances appear in each of these types of libraries. The Committee on Accreditation of the American Library Association, in reinterpreting the Standards for Accreditation and approving accreditation of library schools with programs based on a single purpose, made a decision which relates to this assumption about special circumstances and specialization of function. While the decision appears to be sound when taken in the context of librarianship as it is presently understood, the statement of basis for the decision, ". . . any area of specialization a library school might develop, e.g., school librarianship, information retrieval, library administration,"[5] indicates the lack of understanding that exists

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[5]Sarah R. Reed, "A Reinterpretation of Standards," A.L.A. Bulletin, LVII, No. 247 (March, 1963), p. 247.

regarding the unity of the field. In defense of the profession it must be said that there is a feeling for this unity, but the feeling has not yet been transposed into a logical framework or rationale.

Need for Guidance in Research

The nature of specific research projects and theory development in library science is affected by the lack of a larger theoretical framework. Vavrek's discussion of theorization in the area of reference is a case in point. He sets forth the idea that reference consists of all the facets of librarianship.[6] This statement of definition, however, is too general to have any utility, either practically or theoretically. It enhances neither the readers understanding of reference work, nor that of the relation between reference and any other facet of librarianship. It does not demonstrate the manner in which reference serves to satisfy a need of the parent-institution. It does contain an element of value, the idea that reference depends upon the power expended by every other facet of librarianship, but the absence of a larger framework prevents the reader from forming meaningful conceptualizations about reference service. Vavrek's thesis is that there is a need for a comprehensive theoretical framework, and his discussion of reference theory serves to demonstrate that need.

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[6]Vavrek, op. cit., pp. 509-10.

Petrof makes a case for the establishment of a comprehensive framework as well as production of empirical research when she states:

> Even with special emphasis on research, librarianship will have a difficult time finding its proper academic niche as long as the research is not organized within a theoretical framework.[7]

She goes on to describe the research efforts undertaken in librarianship as being

> . . . directed primarily toward solving the problems of particular library systems or toward simple information-gathering about current library practices.[8]

NEED FOR A COMPREHENSIVE THEORY OF LIBRARIANSHIP

A theoretical framework which logically and clearly defines the limits for the field of librarianship will demonstrate effectively the specific concepts and principles to be included in the field. The profession will benefit from the application of such a frame of reference to problem areas such as those above. The utilization of audio-visual materials and equipment will be established as appropriate to library functions, or it will clearly be excluded. The field of information science will be established as inside or outside of the realm of librarianship.

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[7]Petrof, op. cit., p. 316.

[8]Ibid., p. 317.

A theoretical framework which logically and clearly defines the relations between the internal elements of librarianship will perform a service for the profession which was predicted by Pierce Butler when he wrote:

> A third probable benefit which may be expected to result from the development of library science will be the way in which it will distinguish between the various professional activities. Formerly such a distinction was unknown in librarianship. That this is no longer true has come about largely through pragmatic distinctions rather than the development of theory and principles.[9]

Now, of course, the pragmatic distinctions are no longer adequate. It is time for the development of theory and principles.

A theoretical framework, which logically and clearly defines the relations between librarianship and the parent-institutions which develop libraries, will provide a basis for analyzing the information-needs exhibited by the parent-institution. These needs, in turn, will form the basis for establishment of library functions and a suitable range of library services. The framework will also serve as a basis for an analysis of the part which the library plays in helping the parent-institution to achieve its objectives.

A comprehensive theoretical framework which demonstrates the unity of librarianship will benefit library education by pointing out non-functional distinctions. Such a framework will allow distinctions to be made in conformity

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[9]Butler, op. cit., p. 110.

with accepted philosophical and scientific procedures. This framework will benefit the professional librarian by raising the level of his understanding of the field and of the parent-institution in which he practices. He will have a larger field of vision insofar as his recognition of his responsibilities in providing and evaluating services to the institution are concerned.

A theoretical framework which refines thinking throughout the profession on matters of information needs, information services, library functions, and staff functions and training will do much to end the confusion which results from complete reliance upon practical means. We may find, as Kaplan has said, that

> . . . theorizing may be a very practical activity indeed and contemplation may be but another kind of action, neither passive nor disengaged.[10]

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[10]Abraham Kaplan, The Conduct of Inquiry (San Francisco: Chandler, 1964), p. 295.

CHAPTER II

THEORY AND LIBRARIANSHIP

THE DEVELOPMENT OF THEORY

Definition of Theory

It was demonstrated in Chapter I that a need exists for the development of a comprehensive, theoretical framework in the field of librarianship. But what exactly is theory, and how will it meet the needs of librarianship? Kaplan answers the first part of this question by defining theory as being:

> . . . a way of making sense of a disturbing situation so as to allow us most effectively to bring to bear our repertoir of habits, and even more important, to modify habits or discard them altogether, replacing them by new ones as the situation demands.[11]

Observation of Reality

The manner of making sense of a situation by theorizing stems from a basic sequence of events which occurs as human beings interact with their environment. This sequence has led Nagel to make a distinction between what he terms "experimental laws" and "theoretical laws".

> The distinction between experimental laws and theories is based on the contention that laws subsumed under the first of these labels, unlike the laws falling under the second one,

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[11] Ibid.

> formulate relations between observable (or experimentally determinable) traits of some subject matter.[12]

The sequence of events goes something like this. As we observe events in reality, we tend to conceptualize and establish experimental laws which govern our thinking and behavior. These experimental laws then lead to further conceptualization of more general applications, and to the establishment of theoretical laws. These theoretical laws influence further observation and conceptualization.

The Development of Analogy

At any stage beyond the initial observation, there is the possibility of perceiving an analogy between whatever is observed and the conceptualization of a past observation, or of a past conceptualization. These analogies can thus occur at any one of several levels of complexity, being based on a few or on many observations of real phenomena, or on the juxtaposition of two or more theoretical laws which are removed from direct observation. This process can be visualized as shown in figure 1.

Kaplan points out that when awareness is evoked of a real resemblence between reality and a theoretical concept, we are likely to conceptualize the experience as involving an analogy.[13] It is this act of perceiving the pattern of

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[12]Nagel, op. cit., p. 81.

[13]Kaplan, op. cit., p. 265.

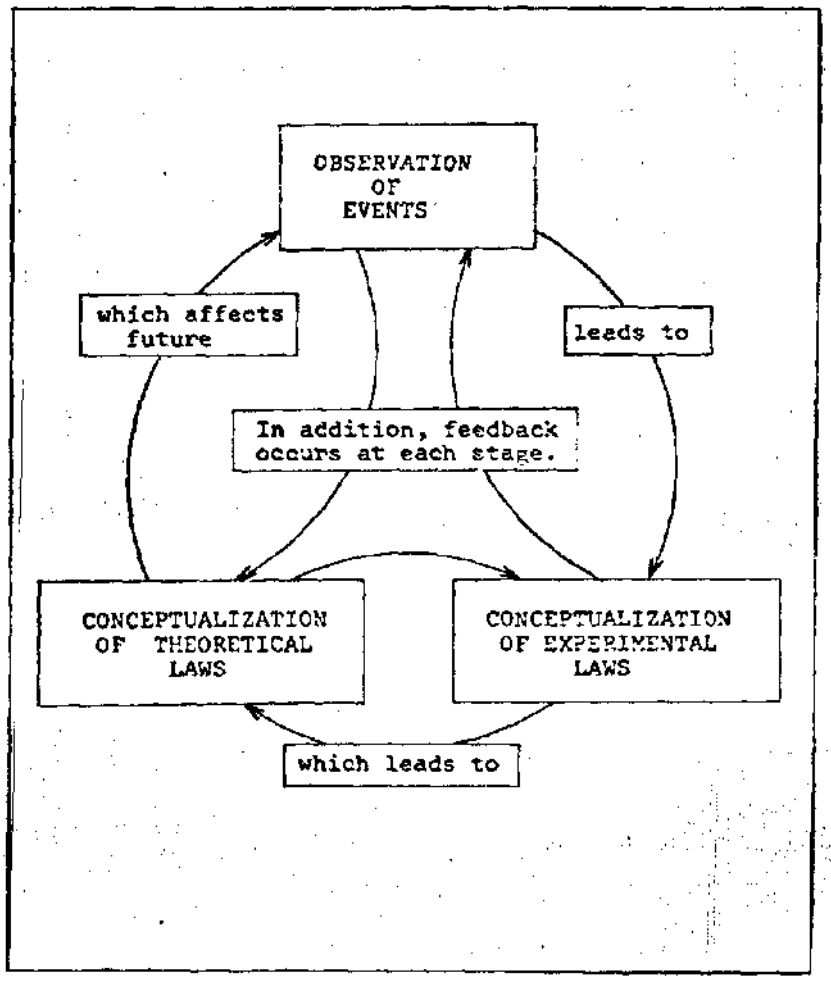


Figure 1.

Conceptualization of Laws.

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[14]For a similar but more detailed account of the "spiral of scientific method," see S. R. Ranganathan, Five Laws of Library Science (Bombay: Asia Pub., 1963) pp. 359-61.

resemblence between previously disconnected phenomena -- the making of an analogy -- that creates theory. These analogies cannot be separated from theories, but form an integral part of them.

Approaches to Theorizing

The manner of conceptualization, which is influenced by the attitude taken toward theoretical laws by an individual, comes into play here. It is pertinent at this point to refer again to the comment by Vavrek concerning the " . . . issue of whether or not there is a theoretical basis for librarianship, and if so, what is it?" (emphasis mine).

Vavrek's use of the phrases, "a theoretical basis" and "what is it?" imply the acceptance of the realist's approach to theory. In this conception, theory is viewed as a map of reality. This point is worthy of discussion, because there may be a great many librarians who feel that there is "a" theory of librarianship, if only someone can "find it". Or, perhaps they fear that no such thing exists. In either case, theory is equated with a real, physical entity which can be "found" or "discovered".

The view of theory taken in this study is that of the instrumentalist, as described by Kaplan. In this view, theories are utilized as tools of inquiry, but are not expected necessarily to describe phenomena which can be directly observed; rather, theories, for the instrumentalist, serve to guide one's description and to assist in making

judgements regarding the effects of such descriptions. Thus, theories are not conceptual reflections of a pre-existent, but are guides to the construction and continual reconstruction of the conceptual frameworks themselves. If a particular theory should refer to specific referents, all well and good, but this is not a prerequisite to the usefulness of the theory. The question of the existence of a a theory of librarianship is answered in the instrumentalist view in this way; the theory does not exist now, but it will when someone creates it. Rather, the theories will exist, for in time several will surely be developed.

Development of Models

Frequently, due to the nature of the phenomena, an interpretive structure, or model, will present itself at the point of one's recognition of an analogy. Such a model will utilize the elements of both laws and phenomena involved and will serve to explain and illuminate them with a clarity otherwise unknown. Nagel says, in commenting on the utility of both anaolgies and models, that

> . . . the history of theoretical science supplies plentiful examples of the influence of analogies upon the formation of theoretical ideas; and a number of outstanding scientists have been quite explicit about the important role models play in the construction of new theories.[15]

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[15]Nagel, op. cit., p. 108.

Rules of Correspondence

Inherent in the concept of the analogy is the correspondence of individual traits in the situation being observed to similar traits in another situation which was observed in the past. The degree of this correspondence dictates the congruency of the analogy, and the nature of the correspondence dictates the form of the interpretive model which is developed.

Form of Theory

This brings us to the stage of being able to identify the major components of a theory. Nagel describes them:

> It will be useful to distinguish three components in a theory: (1) an abstract calculus that is the logical skeleton of the explanatory system, and that "implicitly defines" the basic notions of the system; (2) a set of rules that in effect assign an empirical content to the abstract calculus by relating it to the concrete materials of observation and experiment; and (3) an interpretation or model for the abstract calculus, which supplies some flesh for the skeletal structure in terms of more or less familiar conceptual or visualizable materials.[16]

It must be made clear, however, that these component parts of a theory are not distinctly separate, discrete items. Together, they form the whole of a theory, and separately they provide alternative, supporting ways of examining it.

Style of Logic

Kaplan makes a useful distinction between what he

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[16] Ibid., p. 90.

calls "logic-in-use" and "reconstructed logic".[17] The former describes one's logical style as it actually occurs in the process of observing and conceptualizing from reality. The latter refers to the reconstruction of that logic as it is presented later. Kaplan identifies six cognitive styles, and says of them:

> Note that this is a question of the style of thought, not merely of the style of presentation: Plato and Galileo both wrote dialogues, but with very different cognitive styles. Yet thought and its expression are surely not wholly unrelated to one another, and how scientific findings are formulated for incorporation into the body of knowledge often reflects stylistic traits of the thinking behind them.[18]

He then describes the literary style, in which interpretation is made according to the perspectives of the actors; the academic, in which an attempt is made to illustrate general principles; the eristic, in which there is an interest in empirical proof; the symbolic, in which mathematics is utilized in the proof; the postulational, which depends upon logic for proof rather than mathematics; and the formal, in which there is no reference to any specific empirical content, and proof depends upon the relations between the symbols used.

Types of Theories

In his discussion of types of theories, Kaplan quotes Einstein who describes two types:

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[17]Kaplan, op. cit., pp. 3-11.

[18]Ibid., p. 259.

> We can distinguish various kinds of theories in physics. Most of them are constructive. They attempt to build up a picture of the more complex phenomena out of the materials of a relatively simple formal scheme from which they start out. . . . Along with this most important class of theories there exists a second, which I will call "principle-theories". These employ the analytic, not the synthetic, method. The elements which form their basis and starting point are not hypothetically constructed but empirically discovered ones.[19]

These classifications are by form, but Kaplan also classifies theories by content.

> Every theory may be said to demark an explanatory shell for the phenomena with which it deals. The shell around a given event is, as it were, a sphere containing whatever is referred to in the theory of that event. The contents of the shell constitute what is, from the standpoint of the theory, an effectively "isolated system". Such a system consists of the things that are both necessary and sufficient for an explanation, according to the theory, of the event in question. On this basis, we may distinguish *macro or molar theories* from micro or molecular theories according to the radius of the explanatory shell, as compared with the extensiveness of the sort of events being considered.[20]

Functions of Theory

In considering the specific functions of a theory, the chief benefit seems to be that

> . . . theory puts things known into a system. . . . It is true that the systematization effected by a theory does have the consequence of simplifying laws and introducing order into congeries of fact. But this a by-product of a more basic function: to make sense of what would other-

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[19] Ibid., p. 299.

[20] Ibid.

> wise be inscrutable or unmeaning empirical findings.[21]

To return to the concept of "reconstructed logic" which was mentioned earlier, Kaplan says that the theory as it is presented comprises this reconstruction of the original "logic-in-use", and describes its function in this manner:

> In the reconstructed logic, accordingly, theories will appear as the device for interpreting, criticizing, and unifying established laws, modifying them to fit data unanticipated in their formulation, and guiding the enterprise of discovering new and more powerful generalizations.[22]

Thus, we have an answer to the second part of the question with which we opened this chapter, how will theory meet the needs of librarianship? Theory will systematize our thinking about the field; it will interpret, criticize, and unify laws as we develop them, and it will guide future observation and theorizing.

THEORY IN LIBRARIANSHIP

The foregoing discussion of the methodology of theory development leads us now to an examination of actual theory development in the field of librarianship.

The Literature Search

Although, as has been shown, leading thinkers in librarianship have indicated interest in theorizing for

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[21] Ibid., p. 302.

[22] Ibid., p. 295.

several years, the volume of literature produced on this subject has not been such as to require the terms "theory" or "model" to be utilized in subject heading preparation for the index to the field, Library Literature. A search of the periodical literature was, therefore, conducted by examination of the tables of contents of those periodicals in librarianship considered most likely to publish articles of a theoretical nature. Articles containing the terms "theory", "model", "organization", "communication", "personnel", and "function" were then perused, as were any others which, without using any of these terms, seemed to indicate a tendency toward a theoretical approach. Appropriate book titles were located through use of Books In Print, The Cumulative Book Index, and the card catalog of the library science laboratory in the University of Kentucky's School of Library Science.

The goals of the literature search were: 1) to locate existing literature in theory and model construction in library science, 2) to determine whether other attempts had been made to develop a comprehensive theory of the field, and 3) to utilize suitable articles in support of, and as a source of data for this study.

Understanding of Theory

Library literature reveals a wide range in the degree of understanding among librarians of the terms "theory" and "model". We find instances of both terms being used with

little or no justification, and we find theoretical works of value. Early attempts to theorize in library science resulted in the statement of generalizations about the nature of the area under examination, but not in theories, because the proper tools were not yet available. Theories could not be developed without the methodology which is now supplied by the social sciences and mathematics. The following examples will demonstrate the range of understanding that exists, and the use of the new methodology.

Because of the manner in which an individual builds both experimental and theoretical laws from his contact with reality -- by utilizing analogies -- he comes to hold a body of theoretical assumptions which are based on his past experiences. A set of these assumptions, all centered around a given problematic area, can be thought of as forming an "implicit model". The use of implicit models as a basis for the development of pragmatic solutions to problems is common in any pre-scientific endeavor, but when an effort is made to utilize the scientific approach to problem solving, one of the first tasks encountered is that of formulating these models explicitly. The goals here are twofold, to refine the conceptualizations, and to obtain a consensus of understanding among the individuals involved.

In the past, librarians have worked largely on the basis of such implicit models. One of these is the model of the library itself, which is viewed as an archive, a depos-

itory of books, and a quiet place of study. The image of the librarian represents another of these implicit models; traditionally he is viewed as a bookman, a scholar, and a custodian of books. Both of these models emphasize the form of the information carrier -- the book. They also emphasize the passive, custodial role of both librarian and the library.

A recent publication which serves as an example of utilization of this pre-scientific, implicit model is the Personnel Organization and Procedure manual. An excerpt from the preface serves to illustrate the reliance upon past, common observations by librarians using the manual in order to establish the understanding which is necessary for successful utilization of the information being presented.

> The purpose of this manual is twofold: First, to treat systematically all of the generally accepted basic principles and procedures of sound personnel administration which should be considered by heads of libraries so that they can be clearly stated to, and fully understood by, members of the library staff. Second, to provide in this publication an example of such a statement written within a specific, if imaginary, framework as an actual personnel manual or handbook.[23]

A second excerpt, however, reveals a desire to utilize the scientific, logical approach to the personnel problems in librarianship, and it also expresses a lack of under-

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[23]American Library Association, Personnel Organization and Procedure: A Manual Suggested for Use in College and University Libraries, A.L.A., Chicago, 2nd Ed., p. i.

standing about the nature of theory and of models.

> In no case is it expected that this theoretical model can be adopted without modification to fit local conditions.[24]

The fact is that no theoretical model is presented. The manual discusses the standard range of personnel functions, providing a standard operating procedure for developing the routines required in personnel administration. But the model is implicit, existing already in the minds of librarians who read the manual. The ". . . generally accepted basic principles"[25] and the ". . . specific, if imaginary, framework"[26] would comprise a theoretical model, but what these principles and framework consist of, remains unstated. A theoretical model, to be scientifically useful, must be fully stated. Furthermore, if valid, such a model can be expected to be useful in reality without ". . . modification to fit local conditions".[27] The latter phrase expresses the lack of consensus which is known to exist among librarians concerning the framework of librarianship.

In a second example from the literature, we find an examination of the library as an organization, and the application of the terminology of the scientific method by

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[24] Ibid.

[25] Ibid.

[26] Ibid.

[27] Ibid.

W. Boyd Rayward, who states:

> A library takes from a bibliographical universe and transmits what it takes through its services to a particular community.[28]

This statement comprises a single principle which could, no doubt, be combined with other principles to form the systematic body of an abstract calculus for a theory. However, standing alone as it does, this single principle does not adequately provide for all of the elements of librarianship.

Note that the principle quoted above states the existence of four elements -- 'library,' 'bibliographic universe,' 'services,' and 'community.' The diagram provided (figure 2)[29] depicts the bibliographic universe, services, and the community in a satisfactory manner. The interjection of 'sampling criteria,' 'librarianship,' and the functions of 'government,' 'management,' and 'processing,' however, is not logical because these elements are not logically contained in any of the four larger elements stated in the principle. Note that the term, "materials," is logically contained in the element "bibliographic universe".

Obviously, all of these factors are pertinent to the practice of librarianship, and we conclude that only the methodology is faulty. This conclusion is further reinforced by the use of the term "model" to describe the

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[28]W. Boyd Rayward, "Libraries as Organizations," College and Research Libraries, XXX, No. 4 (July, 1969), p. 317.

[29]Ibid.

diagram itself. It is important to recognize that Rayward did not claim that he was defining a theory. His work is criticized here on the basis of the use of scientific terminology in a pre-scientific manner, and also because he comes so close to accomplishing more than he perhaps was aware of. Hopefully, he will continue to build on this initial effort and come forth with a fully developed theory.

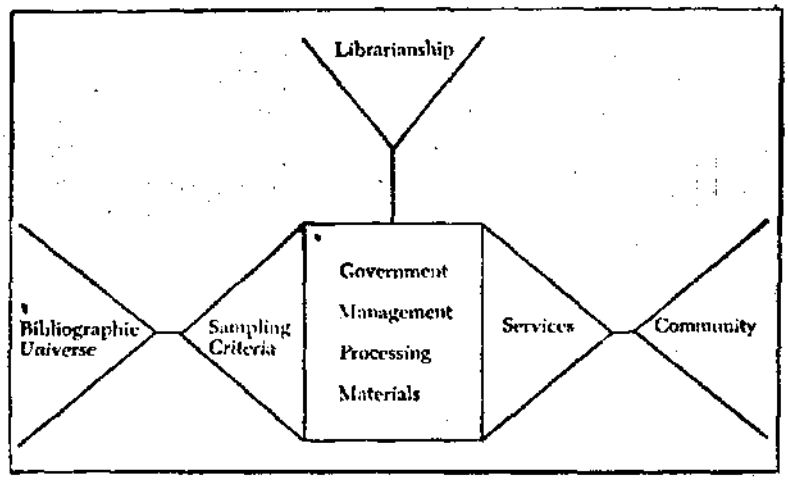


Figure 2.

Rayward's diagram of the library

Characteristics of the Literature

The most interesting aspect of the review of the literature was the juxtaposition of the developmental patterns which emerged in librarianship and in information science.

Generally, the approach in library science has been scholarly and the attempt has been made to define principles and theories because the value of theory has been recognized. A typical approach is that taken by Mortimer Taube in his work, "The Theory of Book Selection." He states:

> The theory of book selection is a branch of the general theory of value since it is concerned with problems of choice and discrimination between competing values.[30]

Taube's theory also presents the characteristic of being non-measurement oriented, and not highly concerned with proof. These characteristics define the cognitive style and explain why library science exhibits the traits with which we are familiar. The style, of course, is the academic as defined by Kaplan, and once we are aware of this, it is obvious that the field will not develop as a science until we have moved into other cognitive styles as well.

In contrast to the literature in library science, that in information science exhibits the cognitive style described by Kaplan as symbolic. The work is experimental in nature, and expresses interest in making observations in great detail. It is measurement oriented, and it attempts to define experimental laws based on the measurements obtained in the observations.

Although Kaplan only grudgingly admits the use of the term "model" in connection with the symbolic style of

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[30]Mortimer Taube, "The Theory of Book Selection," College and Research Libraries, II (June, 1941), p. 221.

thought, the use is quite heavy in information science. Many "mathematical models" are offered. One librarian who crosses the line between the two fields is Philip M. Morse, whose work, Library Effectiveness: A Systems Approach, is based on the use of the symbolic style.

Robert A. Fairthorne indicates the approach which is taken in this area:

> Since 1960, and especially during the past three years, many papers have appeared about particular manifestations and applications of a certain class of empirical laws to a field that may be lavelled conveniently "Bibliometrics". This term . . . denotes . . . quantitative treatment of the properties of recorded discourse and behavior appertaining to it.[31]

An example of this approach was the development of the Bradford-Zipf law of scattering. The literature indicates that Leimkuhler did an original analysis of the distribution of published papers of a given topic. Bradford then carried out a follow-up study which influenced others to take up the work. Buckland and Woodburn were two who were interested, and they produced an article on management policy as related to the law of scattering.[32] This is a good example of the way in which scientific evidence must accumulate in order for the process to be effective.

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[31]Robert A. Fairthorne, "Progress in Documentation: Empirical Hyperbolic Distributions (Bradford-Zipf-Mendelbrot) for Bibliometric Description and Prediction," Journal of Documentation, XXV, No. 4 (December, 1969), p. 319.

[32]B. C. Brookes, "The Derivation and Application of the Bradford-Zipf Distribution," Journal of Documentation, XXIV, No. 4 (December, 1968), pp. 247-8.

The contrast between the two cognitive styles can be shown again if we compare the previous work with that of S. R. Ranganathan. Ranganathan's Five Laws of Library Science is in the academic style, the laws consisting of statements of principles at a general level, not, as in the case above, the result of a detailed analysis and measurement of a process.

Summary

The survey of the literature of library science has shown that there are two distinct levels of investigation being carried on. Writers in traditional librarianship have concentrated on the development of principles, working in the academic style. Meanwhile, writers in information science have attacked the traditional problems utilizing the symbolic style, in which they attempt to establish experimental laws based on observation.

The survey of the literature, therefore, reinforces the contention that a need exists for a comprehensive theory of librarianship, one which could serve to relate the two cognitive styles in which investigations are being carried on.

CHAPTER III

THE THEORY OF LIBRARIANSHIP

> Whether or not theory formation is the most important and distinctive scientific activity, in one sense of the term "theory" this activity might well be regarded as the most important and distinctive for human beings. In this sense it stands for the symbolic dimension of experience, as opposed to the apprehension of brute fact.[33]
>
> --Abraham Kaplan

OPERANT SOCIAL FORCES

This theory of librarianship defines three basic social forces which cause libraries to be developed and to continue to function within a culture. These forces are described in the development of the postulates of the theory.

Communications-Need

Jesse H. Shera indicated the direction in which a fruitful search could be extended for materials with which to create a theory of librarianship when he wrote:

> The study of the ways in which a society achieves an understanding relationship with its environment . . . is fundamental to a theory of librarianship.[34]

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[33]Kaplan, op. cit., p. 294.

[34]Jesse H. Shera, "The Library as an Agency of Social Communication," Journal of Documentation, XXI, No. 4 (December, 1965), p. 241.

Librarianship is a social activity, which helps individuals to achieve an understanding relationship with their environment by providing them with information. The information provided ranges from that which is generally considered to be the basic knowledge of the culture, to highly specialized data useful only in specific, technical areas. The basis of this communications function is brought into focus by Raymond Williams, who uses the same springboard for his thought as Shera -- a concept of society.

> What we call society is not only a network of political and economic arrangements, but also a process of learning and communication.[35]

Williams describes the source of this need to communicate by saying, "communication begins in the struggle to learn and to describe."[36] This act of struggling to learn and to describe would seem to lead to the development of gestures, verbal language, signals using drums and smoke, pictures, and finally, written language. These constructs of the communications process comprise experimental and theoretical laws referred to by Williams as communication models.

> To start this process [learning and communication] in our minds, and to pass on its results to others, we depend on certain communication models, certain rules or conventions through which we can make contact.[37]

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[35]Raymond Williams, Communications, (rev.; London: Chatto and Windus, 1966), p. 19.

[36]Ibid.

[37]Ibid.

Shera reinforces the importance of language development and adds the criterion of technological development:

> Communication can take place within an individual organism, between two individuals, or among the members of an aggregate, but always there is a mutually intelligible "language" as well as a carrier or medium;[38]

This carrier or medium will vary from clay tablet to laser beam and beyond, according to the technology of the times.

The communications models which Williams spoke of occur on many different levels. A pre-literate person using sounds and gestures to convey a message to another is developing and using one such model. A scribe writing by means of a stylus and clay tablet which will be stored and read later by another person is working in another, more sophisticated model. The library, thus, represents an advance communications model which utilizes pertinent carriers of information to provide a communications channel for individuals who wish to send or to receive such information.

Shera adds still another consideration to the study of librarianship in this statment:

> Graphic records are both an extension of and a check upon the accuracy of the human mind. They are, in the terminology of the semanticist, "time binders" which span the temporal and spatial distances of our three-dimensional world.[39]

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[38] Shera, loc. cit.

[39] Ibid., pp. 241-2.

The manner in which the concepts of time and space relate to librarianship are as just described in the use of the stored clay tablets. This fact of storage for later retrieval is a significant point in the consideration of the communication which takes place through libraries.

From the above discussion, we can draw concepts which will establish a basic postulate for the theory of librarianship. This postulate must encompass the factors of communication, language, technology, time, and space. Accordingly, these factors have been combined in the following statement:

The Postulate of Communications-Need:

Human beings, once language has developed, and as their technology makes possible, express a need to communicate beyond the confines of present time and space.

ORGANIZATIONAL DEVELOPMENT AND DIVISION OF LABOR

What then, is the next step for members of a society when they have identified a need -- specifically, a communications need? They might appoint one man to act as a messenger, or as a storyteller, or as a medicine man, and expect him to memorize and pass on the knowledge which he accumulates. In just this simple act, we can identify two

important steps that are taking place. The individuals involved are organizing themselves, and at the same time, they are specializing their functions. Blau and Scott have described this behavior:

> If the accomplishment of an objective requires cooperative effort, men set up an organization designed to coordinate the activities of many persons and to furnish incentives for others to join them.[40]

In the field of librarianship, the organization of effort occured as powerful men of means became interested in preserving knowledge. J. K. Gates describes one of the earliest of such libraries in this way.

> This library of King Ashurbanipal, one of the earliest patrons of letters, was at Nineveh; it contained tens of thousands of tablets, including many which had been copied and translated by scribes as they traveled throughout Babylonia and Assyria. In this well-organized library, the tablets were tagged for identification and arranged by subject or type in alcoves, with a list of the contents of each alcove painted or carved on the entrance to serve as a catalog. It is believed that this library was open for the use of the king's subjects.[41]

She demonstrates further the manner in which powerful leaders spurred the development of libraries:

> Caesar, for example, wanted to found Greek and Latin libraries and open them to the public. His libraries would preserve books and records, serve as a means of instructing the people, and

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[40]Peter M. Blau and W. Richard Scott, Formal Organizations; A Comparative Approach, (San Francisco: Chandler, 1962), p. 5.

[41]Jean K. Gates, Introduction to Librarianship, (New York: McGraw-Hill, 1968), p. 10.

> add to the cultural influence already being exerted by the private libraries, bookshops, and schools; Marcus Terentius Varro was to organize and manage them.[42]

Both of the above quotations show the development of organization of efforts, but the second lends a new perspective--that of the individual as he might view the specific functions which he would perform as his contribution to the group effort. The sentence, "Marcus Terentius Varro was to organize and manage them,"[43] raises the question of who else was to be involved, and what were they to do? Because the early libraries were intended to preserve the most valued work of men's minds, the organization of the materials required men who understood the works themselves, men of scholarly bent. Gates points out that "significantly, all the librarians of Alexandria were scholars -- poets, critics, and Grammarians."[44] Thus, two aspects of the division of labor in librarianship have been identified -- management and scholarship.

It is interesting to compare the development of this line of thought with the same thread in the field of management itself. Hutchinson, in describing the development of the domestic or putting-out system of production, says:

> As world population increased, and as demand for products (a human need) grew, specialization

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[42] Ibid, p. 18.

[43] Ibid.

[44] Ibid, p. 15.

> began to enter the production process. The master craftsman contracted people who agreed to perform manufacturing, fabrication, and assembly operations in their own homes. The craftsman bought the materials, let out the job contracts . . . and supervised the coordination of the subcontracted operations with the productive activities performed in his own shop.[45]

In this description, again, we see the principle of organization and that of division of labor at work. In this case the effort is directed toward production and sales, whereas, in the libraries, the effort was directed toward production and organization of materials for preservation and use, but in both cases the approach to achievement of the goals was the same.

From the above discussion, it is possible to cull the operant factors and state two postulates which will complete the abstract calculus of the theory of librarianship. The factors which comprise these postulates represent two sides of one coin, in that they describe the effort of the social group from one viewpoint, and the tasks to be performed by the individual from the other. The postulates are:

The Postulate of Organizational Development

As a human need is recognized in a culture, a social organization is developed to design appropriate functions and utilize resources to meet that need.

The Postulate of Division of Labor

Within social organizations, a division of labor

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[45]John G. Hutchinson, Organizations; Theory and Classical Concepts, (New York: Holt, 1967), p. 3.

occurs as individuals establish the processes required to meet their common goals, and fragment them into tasks which are divided among the members of the group.

DEVELOPMENT OF THEOREMS

Each of the postulates of the theory logically contains a number of concepts which are inherent in the more general conceptualizations used in the postulates themselves. In effect, we are simply subdividing the conceptual classes used in the postulates and providing sub-classes which can, in turn, also be subdivided. We are classifying only to the extent of two such subdivisions.

Theorems Contained in the Postulate of Communications-Need

Human beings, utilizing their language and technology, express a need to communicate for the purpose of:

1. Teaching
2. Learning
3. Developing Vocations and Professions
4. Being aware of Events
5. Carrying on Research
6. Enjoying Recreation
7. Managing their Organizations

Theorems Contained in the Postulate of Organizational Development

Social organizations satisfy human needs by developing the functions of:

1. Acquiring Resources
2. Producing Materials
3. Organizing Resources
4. Providing Services which utilize Resources
5. Professional Activities

Theorems Contained in the
Postulate of Division of Labor

Within social organizations, individuals help to achieve the common goals by:

1. Administering Operations
2. Processing Resources and Information
3. Carrying out Technical Routines

STATEMENTS OF SYNTHESIS

The following statements serve to synthesize the postulates and theorems and to translate their neutral, general concepts into terms which are descriptive of the field of librarianship.

Statement A

Libraries develop as organizations designed for the purpose of satisfying subject oriented information needs felt by the parent-institution.

Statement B

Libraries develop internal functions which satisfy the information needs felt by the parent-institution.

Statement C

Libraries utilize individuals who perform tasks

which complete the library functions and thus satisfy the information needs felt by the parent-institution.

DISCUSSION OF THE THEORY OF LIBRARIANSHIP

The Process of Library Development

Utilizing the postulates, we can trace the development of libraries in this manner: Men who have developed a language and who wish to communicate their ideas to others create some form of record, by means of the available technology. In accordance with postulate two, the development of an organization devoted to acquiring, producing, organizing, and providing services through the use of these records occurs as these individuals prepare to satisfy their needs for information.

At the same time, postulate three comes into play and the specific tasks involved are distributed among several individuals.

As the culture becomes more complex and many types of organizations develop, in accordance with postulate two, these organizations begin to have need for the type of information stored in records, and in accordance with postulate three, someone in the organization is charged with the responsibility of creating a collection of records of the required type. And a library is born.

The types of institutions which become "parent-institutions to libraries include all forms of private and public organizations. Local communities, state and national govern-

ments and their divisions, schools, businesses, industrial enterprises, hospitals, and colleges and universities are among the ranks of present day library patrons.

As the effect of postulate two took place, library schools were developed in order to establish and pass on the accumulated knowledge concerning library operation. Librarians also organized professional organizations designed to promote their welfare and to further their common goals, and they began to carry out research activities. These functions do not necessarily occur within libraries, and they do not directly contribute to the satisfaction of information needs in libraries, and so belong to a separate class of events, that of professional activities. Even though they do not occur in libraries, they must be accounted for in a theory of librarianship because the scope of librarianship is broad enough to include all events related to the practice of the profession, regardless of where they occur.

Type of Theory

This is a "constructive" theory, to use the term attributed by Einstein to theories which attempt to build a picture of complex phenomena by utilizing a simple, formal scheme. The elements of the theory are hypothetically constructed and are taken from the real world of librarianship.

When viewed from the standpoint of emphasis placed upon either relations or attributes of the elements involved, the theory is classified as a "field" theory rather than a

"monadic" one, because it lends primacy to the relations of the elements, and not to the attributes of each.

Scope of the Theory

When viewed in the light of Kaplan's discussion of macro and micro theories,[46] the theory of librarianship is classified as macro in nature. This is due to the fact that the radius of the explanatory shell is as large as the field of librarianship itself. The contents of the theory constitute a "closed system" in that they consist of everything necessary and sufficient to explain the phenomena under examination.

Cognitive Style of the Theory

The theory is couched in the cognitive style which Kaplan describes as postulational. Because the style is "a question of the style of thought, not merely of the style of presentation,"[47] its effect is felt on the development of the interpretive model, and on validation of the theory.

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[46]Kaplan, op. cit., p. 299.

[47]Ibid., p. 259.

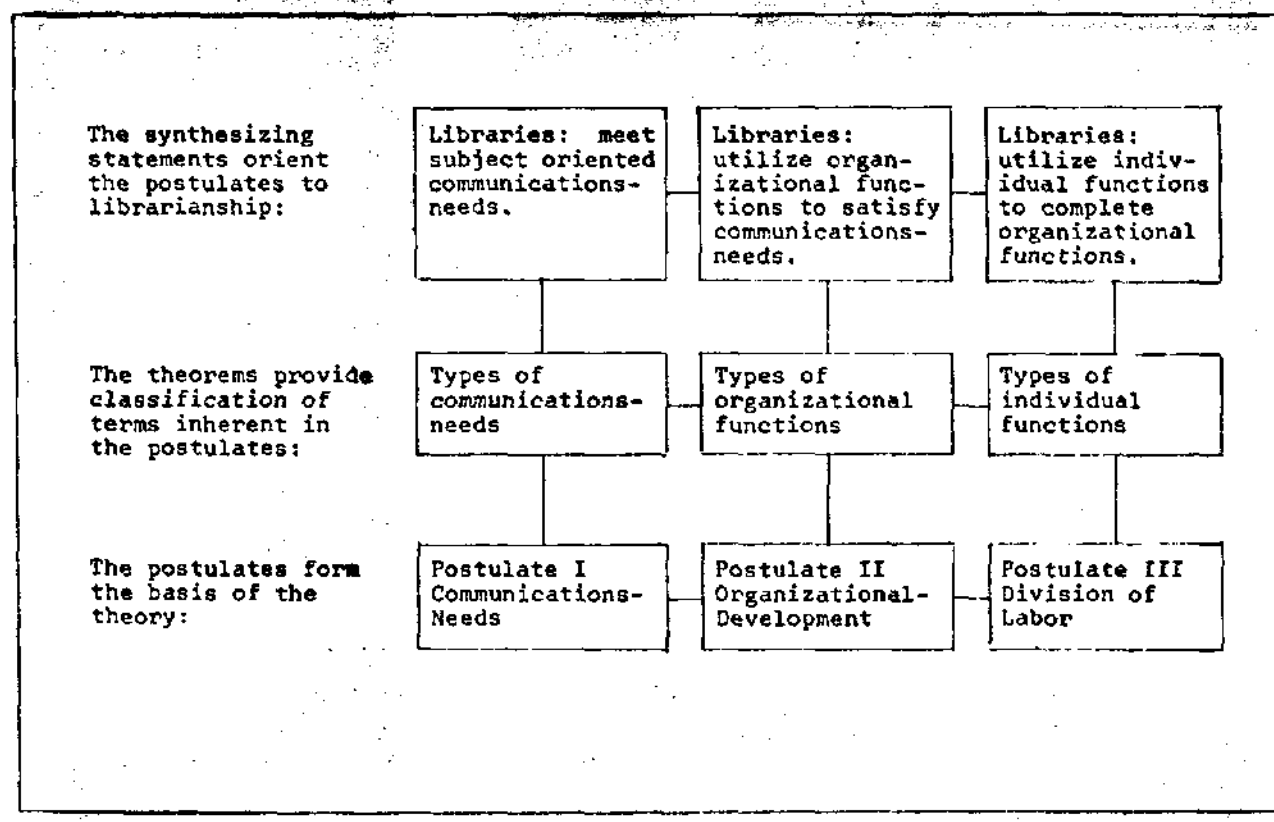


Figure 3. Structure of the Theory of Librarianship.

CHAPTER IV

THE INTERPRETIVE MODEL

> The creative imagination, in both scientist and artist, takes the form of a vigorous discussion with the boys in the back room; and there inevitably comes a time when someone says, "Put up or shut up!" It is at this moment that models are brought forward.[48]
>
> --Abraham Kaplan

RATIONALE FOR MODEL BUILDING

Analogy and Cognitive Style

In much the same manner that the development of a theory depends upon the perception of analogies, the creation of a model depends upon the development of an analogy with the theoretical system which the model depicts. Kaplan says that "a model might be said to be the embodiment of a structural analogy,"[49] and points out that model building "concerns one of the dimensions of cognitive style -- roughly speaking, the use which is made of formal logic and mathematics."[50]

The significance of this use of logic and mathematics in formulating both the theory and its structural analogy, or

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[48] Ibid., p. 269.

[49] Ibid., p. 266.

[50] Ibid., p. 259.

interpretive model, lies in the increased precision of conceptualization that accrues as we increase the degree of such use. Increased precision of conceptualization in the theory, however, results in a wider gap between the theory and reality. This is due to the number of observations, experimental laws, and theoretical laws that are involved in the process of logically and systematically examining reality and refining the construction of laws. With each observation, each refinement of a law, the terminology becomes more precise, and moves further from the basic terminology of reality. This gap is filled, of course, by the interpretive model which comprises the system analogous to the abstract calculus of the theory. With regard to both the terminology and the model, Kaplan cites Craig's theorem which demonstrates

> . . . that the empirical content of a system is contained in its observational terms, not by translating theoretical statements into purely observational ones, but by showing how to construct another system, without theoretical terms, empirically equivalent to the first one.[51]

The cognitive styles which Kaplan defines as literary, academic, and euristic (sp. from Kaplan) are not relevant to model building. Those styles which are cited as frequently making use of models are the symbolic, postulational, and formal, although Kaplan indicates that he views this use as being too broad.

> The term "model" is often used loosely to refer to any scientific theory couched in

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[51] Ibid., p. 61.

> the symbolic, postulational, or formal styles. I believe, however, that it is most appropriately applied only in connection with the last, or at most, with the last two.[52]

Kinds of Models

The kind of model which evolves for the depiction of a given theoretical system depends upon the nature of the system and the analogy which is drawn.

> The embodiment might be in a set of symbols (that is, in the conceptual structure they specify), or else in some actual physical system. Such models might be called analogues, as a generic term for both conceptual and physical isomorphs. These may be distinguished as semantical and physical models.[53]

Characteristics of Analogues

Kaplan asserts that for one system to be a model of another,

> . . . the systems must . . . resemble one another . . . in terms of the pattern or order exhibited in each system, the information which each contains, . . . More specifically, models are isomorphs of one another. Both systems have the same structure, in the sense that whenever a relation holds between two elements of one system a corresponding relation holds between the corresponding elements of the other system.[54]

DEVELOPMENT OF THE MODEL

The theory of librarianship is cast in the cognitive style described by Kaplan as postulational. It describes the need which causes the development of libraries, and it

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[52] Ibid., p. 263.

[53] Ibid., pp. 266-7.

[54] Ibid., p. 263.

justifies their continued existence by virtue of the functions they perform.

The analogue to be developed here stems from three analogies which exist between the order exhibited in the theory, in the reality of librarianship, and in the geometry of Euclid. This order will become apparent as the physical model is developed.

Theoretical Basis: Major Dimensions

Assuming the operation of postulate I, that of communications-need, within one of the many organizations within our culture, we can expect that, as the parent-organization defines its communications-needs and determines that it requires the services of a library, it also acts in accordance with postulates II and III, organizational-development and division-of-labor.

From the above we see that it is appropriate to consider the library as a sub-institution within the larger parent-institution which it serves. The public library serves the local community, the state library serves the state and operates in conjunction with public libraries, the special library serves the business, industrial or other public or private institution, such as hospital or prison, that fosters it, the school or college and university library serves the educational institution. In each case, the library is established to serve certain communication needs of the parent-institution.

We are aware, of course, that the library does not satisfy all communication-needs. This element must be qualified in order to avoid conflict with other communication-needs which are not satisfied by library service. These would include such media as mail, office memorandums, radio, television, and telephone communications. Libraries are usually utilized to provide in-depth, subject oriented information. Since "information" is the commodity which satisfies the communications-need, this term will be used in the model. Thus, one dimension of the interpretive model of librarianship will be that of Information-Needs.

In order to transpose this concept into a physical form, this dimension can be thought of as a line laying against the surface of a large, amorphous body which represents the parent-institution (figure 4).

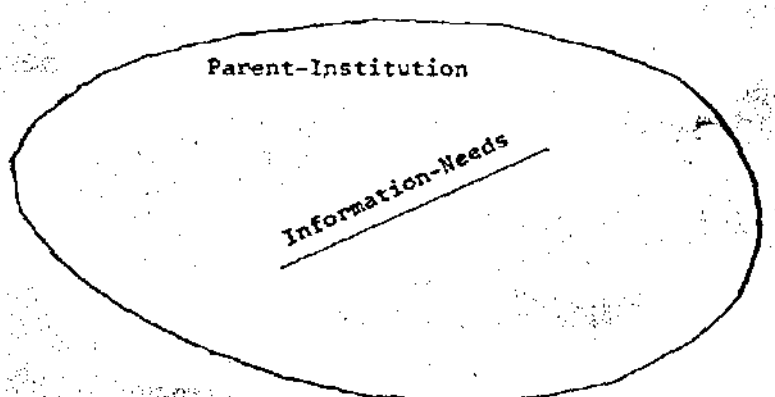


Figure 4.

The Dimension of Information-Needs.

This dimension serves as the interface between the parent-institution and the library. It is along this dimension that the members of the larger organization make contact with the library staff and with the materials in the library collection as they attempt to satisfy their needs for information. This dimension parallels and is co-existent with one facet of the parent-institution's operation.

In order to meet these information-needs, the library evolves as a sub-institution and develops its own functions. This is the postulate of Organizational Development in operation, and the term, "Library Functions," will be utilized in the model to represent this postulate. (figure 5).

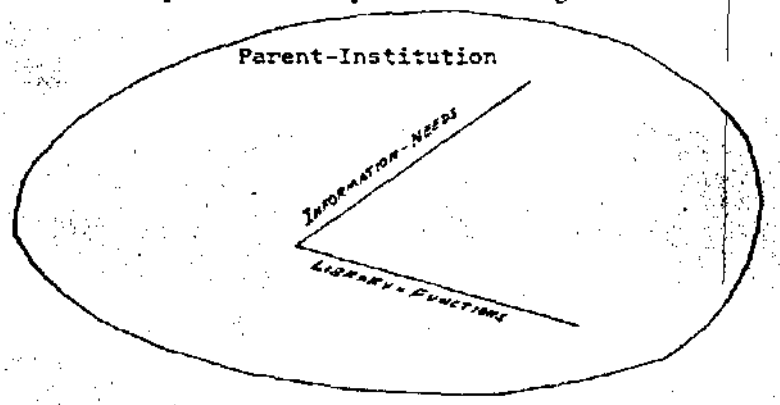


Figure 5.

The Dimension of Library Functions.

These functions are unique to librarianship and do not serve to connect the library directly with the parent-institution as do the information-needs. It is, therefore, appropriate to represent them by a line which is at right

angles to the dimension of Information-Needs. This line must intersect the first dimension because the two do have a common point -- the one serves the other.

Finally, the library employs individuals to perform tasks which lead to completion of the Functions of Librarianship and thus contribute to the satisfaction of the Information-Needs of the parent-institution. The third dimension of the model represents postulate three, that of Division of Labor, and its designation in the physical model is the term, Individual Functions (figure 6).

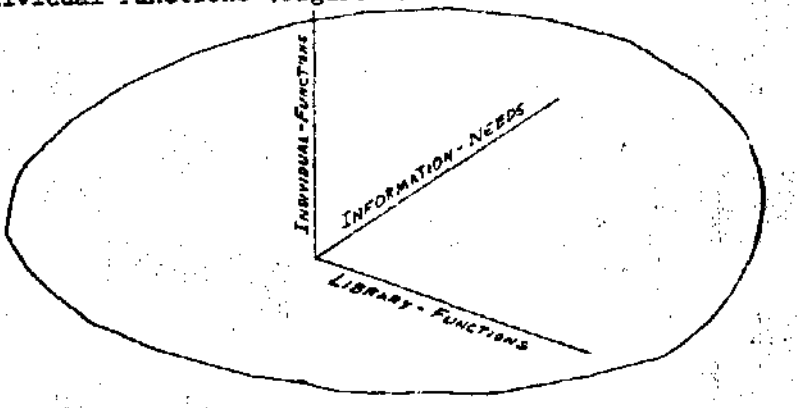


Figure 6.

The Dimension of Individual Functions.

This dimension parallels neither that of Information-Needs nor that of Functions of Librarianship. Therefore, it must be represented by a line which is at right angles to both of these dimensions, but is must also intersect each of them because it has one point in common with them -- it operates to complete the one and to satisfy the other.

However, this line must also represent an interface between the parent-institution and the library, just as that which represents Information-Needs. This is so because it is the library staff, as individuals, who must be contacted by the individual members of the parent-institution in order to satisfy the information needs that exist. The individuals all work for the larger institution, and the library staff members will then appear to be what they are in reality -- members of a department of the organization who contact members of other departments at the service interface, the dimension of Information-Needs, and at the appropriate staff level. (figure 7).

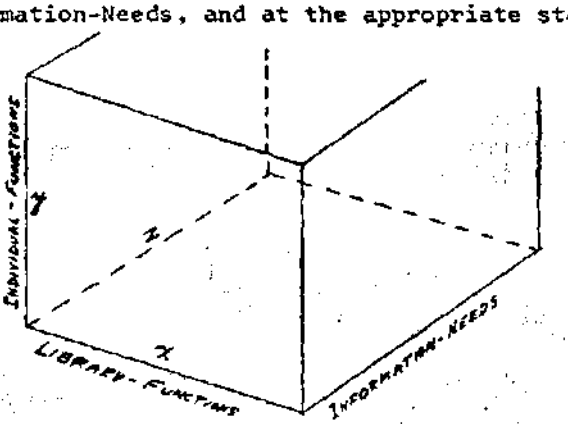


Figure 7.

The Major Dimensions of the Model.

The lines which have been defined represent the outline of a cube, indicating that the conceptual model can be cast in the form of a cube as a physical model. For ease of visualization, the z axis, which represents Information-Needs, will be designated on the front face of the cube rather than on the back face, which will be hidden at times.

SUBDIVISION OF MAJOR DIMENSIONS

Information-Needs

The major dimension of Information-Needs has been tentatively subdivided into seven types of needs. These are: the need for materials to teach, to learn, to develop a profession or vocation, to be aware of events, to provide recreation, to carry on research, and to manage an organization. Note that the original term "communication" which was transposed to "information" has now become "materials." The logic of this is that materials contain the information which provides the communication. These materials are the carriers which Shera introduced. Perhaps the term "media" would be more appropriate.

The subdivisions outlined above are represented in the physical model by planes which extend back from the front "z" axis into the body of the cube. They are stated as distinctive types of needs which might require particular types of materials, organization, or policies for use. Upon investigation, they may prove to be inadequate or incomplete, or both. For now, they serve as a starting point. (figure 8)

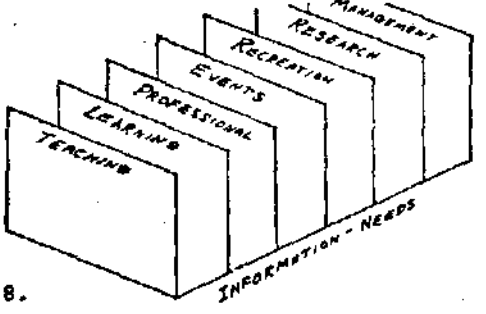


Figure 8.
Subdivision of the Dimension of Information-Needs.

Library Functions

The major dimension of Library Functions has been subdivided into five functions: Professional Activities, Acquisition, production, organization of materials, and provision of information services.

These subdivisions are also represented as planes which extend back into the body of the cube, this time from the "x" axis. The plane which represents Information Services contains the line which originally represented Information Needs. Of course, that line, coupled with the line representing Individual Functions, now defines the area of a rectangle. It is now this plane which is the interface between the parent-institution and the library. (figure 9).

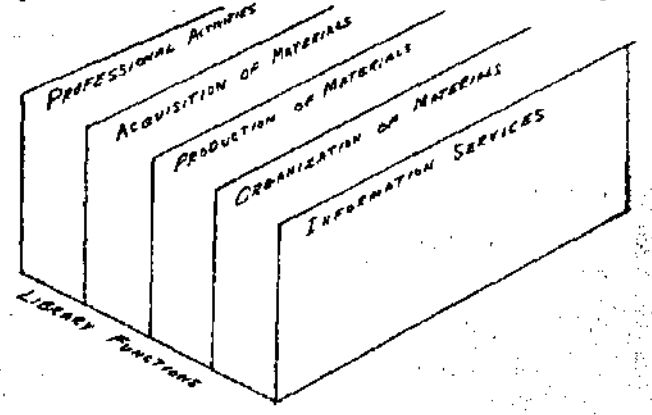


Figure 9. Subdivision of the Dimension of Library Functions.

The plane of Information Services is backed up by the planes of Professional Activities, Acquisition, Production, and Organization of Materials. These planes provide power to

reinforce the action which takes place in the plane of the interface.

Individual Functions

The major dimension of Individual Functions has been subdivided into three functions: Administration, Information-Processing, and Performance of Technical Processes.

Again, the subdivisions are represented by planes which extend back into the body of the cube, this time from the "y" axis. Because of the very thin edge of these planes which is presented to the dimension of information-needs, and which represents a very small area, these individual function planes do not provide power to meet the needs. Instead, they serve to provide the flow of information or meterials. (figure 10).

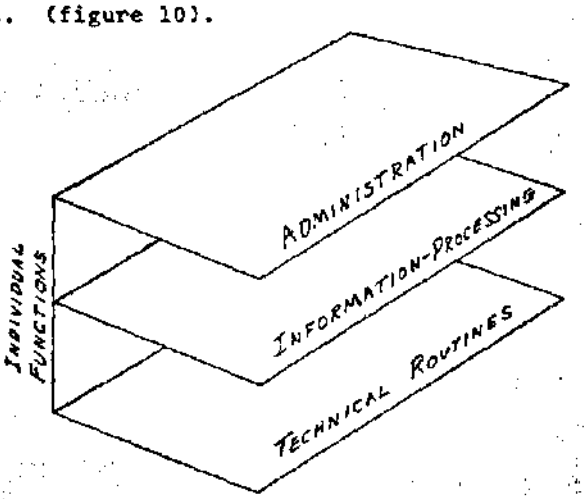


Figure 10. Subdivision of the Dimension of Individual Functions.

SECONDARY SUBDIVISION OF MAJOR DIMENSIONS

Information-Needs

Further subdivision within the seven planes which comprise the dimension of Information-Needs is by form of material. Because of the wide variety of such forms, and the fact that they are suitable for all types of needs, these same form subdivisions appear in each plane of this dimension.

Library Functions

The function of acquisition of materials requires the processes of selection, ordering, and receiving of materials for its completion.

Library Functions: Production

The function of production of materials is divided into two types of activity, creation of materials, and production of materials.

Library Functions: Organization

The function of organization of materials is divided into: cataloging, classification, shelf-listing, and storage of materials.

Library Functions: Information Services

The function of provision of information services is divided into types of services: reference, circulation, dissemination, displays and exhibits, instruction, public relations.

Individual Functions: Technical Processes

The performance of technical processes is divided into types of processes. These are: record maintenance, operation of office machines, secretarial and stenographic, searching for secondary information (such as order information, or L.C. cataloging information), manual processing of materials, maintenance of materials, and operation of audio-visual equipment.

Individual Functions: Information-Processing

The function of information-processing is also divided into types of processes -- the analysis of needs, the analysis of materials, and the provision of bibliographic control.

Individual Functions: Administration

The function of administration is divided into the types of management activities that lead to implementation of policy. These are: organizing, staffing, planning, controlling, communicating, and directing library activities.

Individual Functions: Professional Activities

The function of professional activities is divided into education, organizations, research and development.

THE PHYSICAL MODEL

From the preceding discussion of model construction, and utilizing the results of our sorting and classification

of terms, we can now construct the physical model which interprets the theory of librarianship.

Because of the mechanical difficulty encountered in using large planes which intersect in so many lines as are required here, the model is conceived as discrete cells which represent the elements occuring at the intersection of the planes.

Figure 11 shows the complete interpretive model. This model is not just a finished product of the study, but was developed early in the project and has undergone constant modification, providing feedback which has resulted in revision of the theory itself.

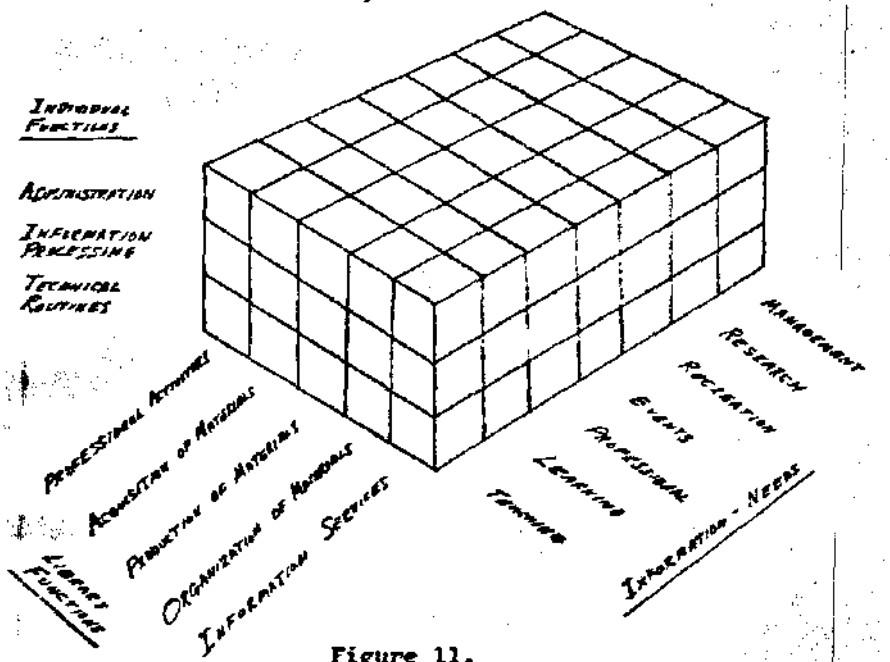


Figure 11.

The completed Interpretive Model.

CHAPTER V

VALIDATION OF THE THEORY

> Truth itself is plainly useless as a criterion for the acceptability of a theory. When we are asked to justify our beliefs it is no good to answer that they are true, for the question obviously is, what makes us think so?[55]
>
> -- Abraham Kaplan

RATIONALE FOR VALIDATION

Norms of Validation

In those fields which rely on the use of measurement, validity is generally considered to be dependent upon a judgement as to whether or not a particular effort ". . . measures what we actually wish to measure."[56] A similar question is asked concerning the validity of a theory. Does this theory describe the phenomena for which it was designed? Past efforts at validation in the sciences have led to the establishment of norms, which are described by Kaplan:

> Norms of validation can be grouped according to the three major philosophical conceptions of truth: correspondence or semantical norms, coherence or syntactical norms, and pragmatic or functional norms. The first set is the

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[55]Kaplan, op. cit., p. 312.

[56]Robert L. Thorndike, and Elizabeth Hagen, Measurement in Psychology and Education, (2nd. ed.; New York: Wiley, 1955), p. 160

> basic one somehow; the others must be regarded as analyses or interpretation of correspondence.[57]

The manner of application of these norms may be described, generally, as follows.

The attempt to answer the question of validity is begun by determining if the theory fits the facts involved. In taking this approach, the facts and laws included in the theory are matched with those in reality and a correspondence is sought. The question then becomes, how good an analogy has been drawn?

Because this gives only a partial picture, a look is then taken at the theory itself, and an attempt is made to determine whether it exhibits a logical coherence in its internal development. The logical coherence with respect to the larger body of theorization which is related to the new work is also examined.

Finally, a determination is made as to the effectiveness of the work as a theory. The basic concern here is in ". . . what the theory can do for science itself."[58]

Approach to Analysis

It is pertinent to the discussion of validation to recall Nagel's statement that

> . . . the three components mentioned as usually present in a theory (an abstract set of postulates which implicitly define the basic terms of the theory, a model or interpretation for the postulates, and rules of correspondence for

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[57]Kaplan, loc. cit.

[58]Ibid., p. 319

> terms in the postulates or in the theorems derived from them) are not to be construed as separate items . . . but simply as features that can be isolated for purposes of analysis.[59]

With this understanding of the unity, or the internal integrity of the theory, we must also be aware of the difficulties encountered in such analysis.

> It is in fact often quite difficult to state fully and with precision the abstract postulates, freed of all interpretations, that are embedded in a theory, or to formulate in detail the tacitly used rules of correspondence.[60]

Before turning to the analysis of the theory in terms of the *norms of validation*, we must consider one more factor, the effect of the cognitive style in which the theory is cast, on the process of validation.

Validation and Cognitive Style

It was demonstrated in Chapter III that the style of thought followed has its effect on all aspects of theory development. What special considerations are necessary when dealing with theories couched in the postualtional style? To begin with, we must recall that Kaplan has established these categories on the basis of one criterion of classification, "the use which is made of formal logic and mathematics."[61] Because of this, the symbolic style and the postulational are similar. The symbolic style utilizes the "precision and

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[59]Nagel, op. cit., pp. 106-7.

[60]Ibid., p. 107.

[61]Kaplan, op. cit., p. 259.

power of mathematical ideas,"[62] and is closely related to the postulational style, which "differs from the symbolic style in general only as logic differs from mathematics."[63] Kaplan's description of this style sets forth its various characteristics:

> The validity of proof is at the focus of attention here, rather than the content of the propositions which occur at the various steps. Emphasis is on the system as a whole, bound together by the chains of logical derivation. Rules for such derivations are explicitly formulated and applied. The foundation on which the whole system is erected is a set of propositions laid down to serve in just this way. These are the postulates; . . . In general, postulates have an empirical content, and their truth is dependent on matters of fact. From the postulates theorems are derived, whose verification indirectly validates the postulates by which they are proved. Interest centers on the independence of the postulates from one another (none of them is a theorem of the system constituted by the rest), and on their mutual consistency (a proposition and its negation cannot both be derived from the set). What is wanted is the simplest set which will suffice for the derivation of the theorems in which we are interested, one which will allow for elegant proofs of the important propositions about the subject-matter. The postulational style is likely to be less demanding of extensive measurements, less bound to various quantitative scales.[64]

The factors which are identified here -- proof, logical derivation, rules for derivation, postulates, and theorems -- interact throughout construction and validation of a theory. Let us now turn to the rules of correspondence as a beginning point for our analysis of the theory of librarianship.

RULES OF CORRESPONDENCE

Thus far, the theory has been presented in the form of abstract postulates and theorems, and that of an interpretive model. The burden of responsibility for demonstrating the validity of these two facets of the theory, however, rests upon the third facet -- the rules of correspondence. *Nagel cites the heavy reliance upon these rules in this way:*

> Theoretical notions are in general defined only implicitly by fundamental premises of a theory, whether the premises are formulated as abstract postulates or in terms of some model.[66]
>
> . . . it is clear, however, that if a theory is to explain experimental laws, it is not sufficient that its terms be only implicitly defined. Unless something further is added to indicate how its implicitly defined terms are related to ideas occurring in experimental laws, a theory cannot be significantly affirmed or denied and in any case is scientifically useless.[67]

As a result of the lack of explicitly formulated notions usually contained in the premises of a theory, Nagel says that there is then a "necessity for rules of correspondence to link theoretical laws with experimental concepts."[68]

Making Concepts Explicit

Nagel's statement concerning the implicit nature of theoretical notions in the fundamental premises of a theory is applicable to the theory of librarianship. The postulates

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[66]Nagel, op. cit., p. 106.

[67]Ibid., p. 93.

[68]Ibid., p. 106.

contain three basic theoretical notions -- communications-need, organizational development, and division of labor. The theorems make these notions explicit. Nagel has said of explicit definitions:

> When an expression is said to be "explicitly defined," the expression may always be eliminated from any context in which it occurs, since it can be replaced by the defining expression without altering the sense of the context.[69]

Thus, we can replace the theoretical notion of communications-need in the original postulate with each of the types of such needs, or subdivisions, in turn. One such would read: Human beings, once language has developed and as their technology makes possible, express a need to teach which extends beyond the confines of present time and space.

In the case of the second postulate, that of organizational function, such substitution of terms leads to: A social organization is developed to acquire resources to meet human needs as they are recognized in a culture.

And in the third postulate, that of individual function: Social organizations utilize individuals who administer in order to help the organization achieve its goals.

The above discussion actually includes several steps which occur simultaneously in the creation of theory. As the postulates are subdivided, classification is taking place,

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[69] Ibid., p. 97.

theorems are being developed, and the rules (or habits[70]) of correspondence are forming themselves.

Classification and Levels of Terminology

Kaplan says of terminology in science that,

> By and large . . . the important terms of any science are significant because of their semantics . . . they are not notational, but reach out to the world which gives the science its subject-matter. The meaning of such terms results from a process of conceptualization of the subject-matter. In this process the things studied are classified and analyzed: several things are grouped together and particular things assigned to the several groups to which they belong.[71]

He also indicates that it is useful to think of an "empirical-theoretical continuum" along which a line can be drawn to show some distinction between terms which are considered to be theoretical or observational in nature.[72] There is, of course, no clear-cut guidline for determining where such a line will fall. One reason is that:

> The terms of any science differ markedly from one another in the way in which they relate to the experiences that they conceptualize.[73]

Also, there is the problem of the instrument of observation. In library science, instrumentation has yet to be developed along scientific lines, including the basic instrument of

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[70] Ibid., p. 100.

[71] Kaplan, op. cit., p. 50.

[72] Ibid., pp. 57-9.

[73] Ibid., p. 54.

observation, the librarian himself. In any observation, the perceptions that arise are colored by many theoretical frameworks besides that of Library Science. The observer's understanding and attitudes toward many diverse areas, including science itself, all serve to complicate and contaminate the attempt to observe and theorize, and to determine the comparative status of observational and theoretical terms. Kaplan reaches the conclusion that:

> In short, the line between the observational and the theoretical is differently drawn according to the purposes and contexts of our reconstruction of the logic-in-use. As inquiry proceeds, the invention of new instruments, the growth of knowledge of empirical connections, the incorporation of well-established theory into the conceptual frame of emerging problems -- all affect the placing of this line. Norwood Hanson speaks of theoretical terms as sliding up and down on a "semantical zipper."[74]

For the purposes of this study, it was determined that the postulates contained the three basic theoretical terms mentioned previously, and that the model contained a number of "constructs" but no observational terms. This, of course, coincides with Nagel's statement that the language of models is not that of experimental procedures.[75] Kaplan has defined constructs as "terms which, though not observational either directly or indirectly, may be applied

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[74] Ibid., p. 59.

[75] Nagel, op. cit., p. 98.

and even defined on the basis of the observables."[76] The chart in figure 11 shows the use of terminology in each facet of the theory and demonstrates that the rules of correspondence operate to maintain logical relations between terms in the various facets.

To return now to Kaplan's description of the postulational style, we find that he indicates that the procedure here is to validate the theorems which indirectly validate the postulates. We can see that in the theory of librarianship, this is a useful approach. The theoretical terms used in the postulates themselves cannot be verified by direct observation. We can, however, assert with confidence that libraries do perform each of the functions ascribed to them by the theorems: libraries provide subject-oriented informational materials to satisfy needs for teaching, learning, about events, for professional advancement, for recreation, research and management. Libraries do provide for the acquisition, production, organization and service of informational needs through the use of subject-oriented materials. And libraries do utilize individuals who administer, process information, perform technical processes, and carry out professional activities. While each of these "constructs" just listed is not a directly observable activity, we are aware that other, more basic activity is going on that leads to

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[76]Kaplan, op. cit., p. 55.

the fulfillment of these constructs. We can simply ask, does the library provide materials for research? Does the library acquire materials? Does the library employ someone to administer its operation? Obviously, all of these things do occur in libraries, and our conclusion is that the theorems are valid, and therefore the postulates are also valid, in that both "fit the facts" of librarianship.

Having satisfied the need to show semantical congruence between the theory and the real world of librarianship, we turn now to the norms of coherence.

NORMS OF COHERENCE

The norms of coherence refer, on the one hand to the logical coherence of the internal structure of the theory. In the process of creating the theory, the method used was that of generalizing, then stating all possible, more specific constructs which were both pertinent and logically contained in the generalizations.

By moving from the most general toward the more specific, in graduated steps, three levels of need and function were defined. Following this method insured that there was a chain of logical development which would provide needed concepts and, at the same time, reject illogical ones. An example of attempted use of illogical concepts occurred in the initial sorting and classification of the dimension of information-needs. The concepts of "type of library" and

"size of library" are both used frequently in librarianship and an attempt was made to subdivide information-needs by each of these terms. It became obvious that neither subdivision was appropriate, and that it was logical to subdivide needs by "types of needs."

The procedure followed also insured that the relations between various aspects of librarianship would become apparent. Sorting of the terms "reference" and "dissemination" demonstrated this point. The term, reference, has been used in library literature for the past fifty years, and represents to librarians the meeting point between client and library. The term, dissemination, caused a problem because it seemed to be of equal weight with reference. Neither seemed to contain the other. The problem was resolved by moving to the next higher level of generality and stating the term which contained both reference and dissemination. What general term could qualify? Whatever it was, it would have to contain the services which satisfy information-needs. And so, "information-services" became the next more general term, ranking with acquisition, production, and organization of materials. Thus, the sorting and classification procedure resulted in clarification of relations within one class of terms.

Moving now to the question of coherence as it relates to other theory, we see that our examination must be directed in two ways -- outward, through the postulates to theories

which are external to this one, and inward, toward those micro-theories which have been done in library science, and which are contained within thes theory.

Looking outward, the postulate of communications-need indicates that there is relevant work in communications theory and information theory. At the present time, neither field is advanced enough for a determination to be made as to just what aspects will be useful to librarianship.

The postulates of organizational development and division of labor both lead to the field of sociology, where again, work is underway but not yet well advanced.

Through the development of these postulates, the theory has defined outside areas which hold promise as a background for future development of thought in librarianship. In terms of validation, it is enough to say that this theory does no violence to any existing theory in the above fields. It builds from them by using established principles, and in this manner properly meshes with them.

Looking within the theory of librarianship itself, we see that it is able, as a macro-theory, to contain all other theories of a smaller radius existing in the field. The physical model, with its discrete appearing cells, shows clearly the proper location of existing theories, in a spatial arrangement with one another.

From the above discussion, we can state that the theory does exhibit the internal and external coherence de-

manded by the norm. It not only does not conflict with existing theory, but builds from such theory, and in addition, draws support from and lends support to those theories which have already been established.

PRAGMATIC NORMS

In order for a theory to be considered valid in terms of the pragmatic, or functional norms, it must perform the proper, accepted functions of theory. It must raise pertinent questions about the phenomena which it purports to explain; it must explain old laws, and predict new ones; and it must unify, criticize, interpret, and modify thought about the field involved.

The theory of librarianship raises questions about the nature of communications needs. Are all such needs accounted for? Are there adequate services in our repertoir for meeting these needs? What are the relations between types of parent-institutions and the needs exhibited? What are the factors that are pertinent to each type of need and which would influence the design of services?

Questions are raised concerning library functions. Is the addition of "production of materials" to the roster of library functions justified? Acquisitions and organization of materials is traditional, and production also has a basis in history. What does the addition of this function indicate in this age of multi-media?

Questions raised in the dimension of individual functions include, are there more than the three types of functions now accounted for? Are these categories found in all types and sizes of libraries? Are the categories of professional and clerical still satisfactory for an adequate description of library staff? Do these categories described in the theory indicate discrete types of activity which might require different educational backgrounds and personalities? Are library education programs adequate, if the categories in the theory are valid?

So we see that the theory does raise questions about the field of librarianship.

This theory explains old laws, not by speading for them, but by placing them in a meaningful context so they can better speak for themselves. Thus far, only Ranganathan has stated laws in library science, but there is activity in this direction in information science. The theory of librarianship would place Ranganathan's first law, for example, along the dimension of information-needs. Ranganathan has stated, "Books are for use."[77] First of all, the theory modifies this law by broadening the scope of the materials-form. Any form that contains information which will satisfy a need for subject-oriented information is relevant. Next, the theory is in complete agreement with Ranganathan as to

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[77]S. R. Ranganathan, Five Laws of Library Science, (Bombay: Asia Pub., 1963), p. 26.

the function of these materials. The "need" aspect of the theory reinforces the "use" aspect of the law. We have achieved unity on this point.

Laws such as the aforementioned Bradford-Zipf law, which deals with the scattering of publication of articles, can be placed in the plane of professional activities and are appropriate to the subdivision of "research." Work such as this is interesting because it deals with phenomena which relate to librarianship, but actually occur outside its framework. Such research is important because of the feedback into services which can result, and this theory provides a place for it.

In this chapter, the theory of librarianship has been validated by demonstrating that it adequately describes the phenomena of librarianship. The facts of the field are contained in the postulates of the theory. The theory is simple, both in description and in content, and is logical in its statements. It performs those functions normally attributed to theory, and meets the requirements of the norms of correspondence, coherence, and function.

CHAPTER VI

CONCLUSION

> A theory is validated, not by showing it to be invulnerable to criticism, but by putting it to good use, in one's own problems or in those of coworkers.[78]
>
> -- Abraham Kaplan

This study has resulted in the development and validation of a theory of librarianship, and in the presentation of a conceptual and physical model of the theory. As Kaplan has said, however, the value of this work lies in the use to which it is put.

THE THEORY IN USE

In thinking about the field of librarianship, there is a certain amount of difference between use of the theory as stated in the postulates and theorems, and as it is set forth in the physical model. While examining the theory as stated in the English language, a certain set of perceptions holds sway. These are abstract and tend to be large in scope. There is a tendency to look outward, for connections between librarianship and other areas.

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[78]Kaplan, op. cit., p. 322.

The specific areas which are designated by the postulates are sociology and communications. The field of communications has several branches, dealing with linguistics, mass media, and the constitution of information itself. Any or all of these areas, as they are developed, might comprise a valuable source of background information for librarianship.

We are all aware of the social foundations of librarianship, yet there has been little interest shown in delving into the field of sociology in a search for specific information which would be useful. The one exception to this is in the area of methodology, where the usefulness of the techniques of social research is obvious. The area of organizational development is the most useful place to begin such an investigation, as is suggested by the second postulate. We should also follow the lead of the postulate of division-of-labor and look into those areas of study which relate to the staffing of libraries.

The theory suggests that, if librarianship is to fulfill its potential, it must grow and develop in each of the areas defined by the postulates as parts of the field.

THE MODEL IN USE

To return to the difference between use of the postulates and use of the model, we find that when looking at the physical model, the focus of attention becomes localized. Clarity of definition and relations becomes important. The

internal anatomy of the field stands out. This theory may already have made its most important contribution to librarianship by readily producing a physical model which greatly facilitates understanding of the theory and the field. Because of its visual clarity, its completeness, and the logic of its development, the physical model makes an ideal teaching device for all levels of library staff. It serves to relate the functions of the various types of staff members, demonstrates the importance of each level, and its contribution to the completion of the library functions. It is useful in estimating the degree of each type of information-need which might be expected in various libraries, but at the same time, shows that these are only diferences of degree and that the needs and services which satisfy them are more similar than otherwise.

Kaplan considers systematization to be the prime function of theory.[79] The physical model expresses visually the systematization effected by this theory, and the effects on the field of librarianship should be: 1) to create increased understanding among librarians about the boundaries, the unity, and the relations between elements of the field, 2) to create increased understanding among librarians concerning the relationship of the library to the parent-institution and their responsibilities as members of the larger institution, and 3) to provide impetus toward problem-solving within the profession.

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[79]Kaplan, op. cit., p. 302.

THE THEORY AND THE BOUNDARIES

The theory defines the boundaries of librarianship as consisting of the information-needs of a parent-institution, the library functions developed to meet those needs, and the individual functions developed to carry out the library functions.

Problem: Audio-Visual Materials

In chapter I, the problem of inclusion of audio-visual materials and equipment was raised as an issue involving boundaries which could be resolved by reference to a comprehensive theoretical framework. Although the problem seems minor when viewed in the theory, and the practical approach of combining all forms of materials in the library is being implemented in more libraries as time goes on, the resolution has not been quick and acceptance of this approach is not by any means complete. The question we ask here is, how does the theory account for this storage and use of materials?

In the theory of librarianship, information-needs have been classified as follows: Need for materials for the purpose of teaching, learning, being aware of events, developing professionally, and for recreation, research, and management. When librarians begin to carry out the acquisitions function to meet these needs, they find, due to the development of technology, that there are materials available which

satisfy the needs but which are not in book form. At this point, the librarian must make a choice between loyalty to a traditional point of view concerning the "library," which has been known as a storehouse for "books," and the fulfillment of the information-needs of the parent-institution. The former is readily seen to be a non-functional approach, while the latter approach taken by the theory indicates that it is logical to fulfill the need by use of any form of material which is suitable and available.

Problem: Information Science and Librarianship

A second problem which was raised with regard to boundaries was that of librarianship and information science. Again, several practical solutions are being put into practice across the country. Working within the framework of the theory, we see that this problem does not fall into the dimension of information-needs, nor into that of library functions, but into that of individual functions. The theory has defined four levels of individual functions: the performance of technical processes, information-processing, administration and professional activities. So the question now becomes, what do information scientists do, and where do these activiti fall into this framework?

Perusal of the literature indicates that information scientists carry out tasks which lead to the completion of the same organizational functions as librarians -- acquisi-

tions, production, organization of materials, and the provision of services utilizing those materials. The chief difference between the two types of personnel seems to stem from the basic approach taken to provision of services, although this does involve a shift in emphasis placed upon the individual function of analysis of materials. Two such approaches have been described by DuPuy as being "active" or "responsive" in nature.[80]

Because of the need-function development of the theory, and the fact that these are the same in both situations, this theory does include the information sciences within the scope of librarianship. For the same reason, there is no special plane or cell set aside and labelled for this area. Instead, the terms which describe those aspects of librarianship commonly associated with information science are simply included in their natural place in the classification scheme. These terms fall into the plane of information-processing alongside those descriptive of traditional library staff functions. The research and publication activities of both areas are also placed together in the professional activities plane.

THE THEORY AND RELATIONS IN LIBRARIANSHIP

The theory of librarianship sets forth in a logical manner the relations between the elements of the field. The

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[80] T. N. DuPuy, Ferment In College Libraries: The Impact of Information Technology, A Report to the Trustees of the College of the Potomac, (Washington, D. C.: Communication Service Corp., 1968), p. 28.

problem in the previous discussion, the boundary between information science and librarianship becomes one of relations within librarianship when viewed in the light of the theory. This leads us back to the larger problem posed earlier.

Problem: Library Staffing

The utilization of library staff members was mentioned previously as an area which could be illuminated by the clarification of relations within librarianship. The problems normally encountered in librarianship spring from a single factor -- heavy reliance upon people who are over-trained or under-trained for the work they do. This indicates that a proper division of labor has not yet occurred in libraries. The former classification of staff members as professional or clerical was useful and constituted a step forward at one time. Now, however, along with a changed technology and an increased set of demands for services, must come further application of the law of division of labor.

The process of classification as carried out in the construction of the theory has resulted in the establishment of a logical, natural set of individual functions at each of three levels of operation. These functions contain everything that is necessary and sufficient to complete the library functions. The levels were established in answer to the question, what general types of activities do individuals perform in libraries? The first and most obvious answer

is that someone administers the operation. Next, there is the processing of the subject-oriented information contained in the materials; this is conceptual work. Then, there must be back-up processes of a mechanical or technical nature to help complete this information-processing. An examination of the essentials of management[81] indicate that administration of a library requires that a library staff member perform a variety of tasks subsumed under the functions of organizing, staffing, planning, controlling, communicating and directing which are both internal and external to the library.

In looking at the information-processing level, we see the need for analysis of specific needs for information exhibited by individuals in the parent-institution, analysis of materials which might satisfy those needs, and provision of bibliographic control over the materials.

At the level of technical processes, the need is for the maintenance of records, operation of office machines, secretarial work, searching for secondary information, manual processing of materials, and maintenance of the collection.

From the above descriptions, it can be seen that the theory has provided a method of examining the relations among the elements within the dimension of individual functions

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[81]Joseph L. Massie, Essentials of Management, (Englewood Cliffs: Prentice-Hall, 1964).

which results in a classification of functions both necessary and sufficient for completion of the library functions.

It can also be seen that a certain level and type of knowledge is required for effective performance of the functions. Appropriate educational programs are required to provide libraries with trained staff and thus achieve the effective service required by the parent-institutions. The development of programs to train library technicians is well underway, and there is at least one program designed specifically to train administrators.[82] More of these programs are needed. The masters degree programs in Library Science and Information Science are already providing staff members who are oriented to the level of information-processing.

Relations Throughout The Model

All of the relations exhibited in the model are the result of the postulational development of the theory. They are dictated by the three major dimensions and the subdivision of those dimensions. They can be demonstrated in this way:

The Individual Function of:	operating office machines
Leads to Completion of:	the ordering process, which
Leads to Completion of:	the acquisitions function, which
Leads to Satisfaction of:	an information need.

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[82]Library School, Announcement of Courses, Bulletin of The University of Wisconsin, MCMLXVII, No. 8, (March 1967), p. 13.

The question arises occasionally, what is the relation between reference and cataloging? In answer, it is helpful to look at the model and note that the plane of information-services, in which the element of reference exists, is in effect backed-up by the power provided by the area in each of the planes which preceded it. The planes representative of the library functions are arranged in a time sequence, in the order in which the events occur. Materials are first of all acquired or produced, then organized, and finally made use of. The use simply depends upon all the elements which precede it. The effectiveness of reference work can be seen to depend upon the accuracy of the cataloging done on the materials. The theory contributes to the design of a systematic approach to this problem by basing the library functions, and thus the elements themselves, on the information needs of the institution. This common base for decision making about the methods of cataloging and reference work can serve to improve the degree of correlation between the two elements. Of course, such decisions must also account for the other related elements which are also dependent upon the organization of the materials.

Thus, the theory has provided a logical definition of the relations among the elements of librarianship.

UNITY OF LIBRARIANSHIP

The theory of librarianship indicates that there is a consistent set of information-needs which occur in parent-

institutions. There is also a consistent set of library functions which have been developed to meet these needs. And the theory has presented a set of individual functions which it asserts are consistent throughout librarianship.

The consistency of these needs and functions indicate that there is a unity to the field which has not yet been fully described. One of the objectives of this study was to set forth this unity.

An example of the way in which a lack of understanding of the unity of the field operates to create non-functional distinctions is shown in an article by Martha Zachert, in which she describes the creation of a separate course for special librarians. She says that the content of such a course "depends upon what is required to supplement the general curriculum."[83] It seems that this statement speaks rather poorly of the general curriculum. Zachert goes on to say that the shortcomings in the curriculum at her school were in training for administration and in "the values of special librarianship."[84] These values she lists as:

> 1) that information is a commodity; 2) that the special librarian is more of a manager than an educator; 3) that creative administrative intuition is an essential virtue for a special librarian; and 4) that user-satisfaction is the major motivating force in special library planning.[85]

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[83]Martha Jane K. Zachert, "Special Libraries Instruction: The Separate Course," Special Libraries, LVIII, No. 1, p. 37.

[84]Ibid.

[85]Ibid., p. 38.

She later adds the history of special libraries to the list. These values contain no specific content which causes them to be anchored to special libraries. In fact, they describe the "active" style of library service which is appropos to any type of library. And the history could be included in the general course which is always provided.

As the theory has already demonstrated, the general curriculum is in need of additional programming in the area of administration as well as in its attitudes, or values. We sympathize with Zachert's point of view and applaud her success in gaining for her students the course content which is needed. However, the theory suggests that the programming could be re-aligned to greater advantage for all levels of library staff and for all types of libraries. In this way the unity of the field would be restored and the effectiveness of our efforts in all parent-institutions improved. The theory indicates that type of library is irrelevant and that the administrative functions and the techniques operate in any and all libraries.

FUTURE RESEARCH AND THEORIZING

This theory provides a comprehensive framework within which future empirical research can be carried out and evaluated.

The most important function of the theory is that of systematization of the field of librarianship. It provides

a conceptual framework, which can be used to guide our extension of knowledge by exposing unexplored areas. It exists as a framework which contains, implicitly, every element of librarianship, and it provides a basis for judging any new elements tentatively placed within it.

The theory will explain the meaning and utility of new theorems or laws in terms of the relations and attributes of their elements. It will criticize laws by demonstrating where and why they show relations or attributes which are contrary to others with which they must mesh. By the same measure, it will unify and strengthen those laws which do mesh and support each other. As new data is gathered, the theory will accept it and if necessary, modify any laws affected. It will also reject any completely unsuitable ones. As newly perceived relations and attributes are found, the theory will be a guide to development of new laws, and if adaptable, will accomodate them and continue to be useful.

SUMMARY

This study was launched as a search for a theoretical framework for the field of librarianship. The theory has been formulated, expressed in an interpretive model, and shown to be scientifically valid. It has also been applied to several practical problems from the field of librarianship. Hopefully, this theory can perform its function for the scientific endeavor and also provide guidance in reality.

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BIOGRAPHICAL SKETCH

Ronald Bryson was born January 18, 1934, in Jeffersonville, Indiana. He graduated from the public schools there and attended college at Purdue University and Indiana University, where he graduated in 1956 with an A.B. degree in Comparative Literature.

After teaching for three years in the public schools in Indiana, he served for four years in the U.S. Coast Guard. Following the military service, Bryson returned to school, taking master's degrees in Library Science and Education at the University of Kentucky in 1964 and 1967, respectively. During these years he also worked for the Cincinnati Board of Education and the University of Cincinnati.

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July 17, 1970
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ABSTRACT OF DISSERTATION

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A THEORY OF LIBRARIANSHIP

ABSTRACT OF DISSERTATION

A dissertation submitted in partial fulfillment
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By

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A THEORY OF LIBRARIANSHIP

The purpose of this study was to develop a comprehensive theory of librarianship. Theoretical work in the past had largely been at the micro-level, with the exception of S. R. Ranganathan's establishment of laws of library science; and a macro-theory was considered to be needed in order to provide a frame of reference which would encompass the entire field.

The procedure followed in this study was: 1) to utilize three laws from the field of sociology, stating these laws as postulates of the theory and developing from them theorems which were appropriate for the field of librarianship, 2) to validate the theory by demonstrating that it conformed to the norms of correspondence, coherence, and function customarily followed by social scientists in such validation, and 3) to present the theory in the form of an interpretive model.

The view of theory taken in this study was that of the instrumentalist. In this view, theories are utilized as tools of inquiry, but are not expected necessarily to describe phenomena which can be directly observed. They serve to guide description and to assist in making judge-

ments regarding the effects of such descriptions. Theories are not conceptual reflections of a pre-existent, but are guides to the construction and continual reconstruction of the conceptual frameworks themselves.

The major components of a theory were identified as: 1) an abstract calculus which contains the basic notions of the system, 2) a set of rules which assign an empirical content to the abstract calculus, and 3) an interpretation or model for the calculus.

The abstract calculus was embodied in the three laws from the field of sociology, which were stated as postulates of the theory. These were: 1) the postulate of Communications-Need: Human beings, once language has developed, and as their technology makes possible, express a need to communicate beyond the confines of present time and space. 2) the postulate of Organizational-Development: As a human need is recognised in a culture, a social organization is developed to design appropriate functions and utilize resources to meet that need. 3) the postulate of Division-of-Labor: Within social organizations, a division of labor occurs as individuals establish the processes required to meet their common goals, and fragment them into tasks which are divided among the members of the group.

Each of the postulates logically contains a number of concepts which are inherent in the more general conceptualizations used in the postulates themselves. Theorems

were then developed by subdividing the concepts of communications-needs, organizational-development, and division-of-labor.

Theorems contained in the postulate of communications-needs were: Human beings, utilizing their language and technology, express a need to communicate for the purpose of teaching, learning, developing vocations, being aware of events, carrying on research, enjoying recreation, or managing their organizations.

Theorems contained in the postulate of organizational-development were: Social organizations satisfy human needs by developing the functions of acquiring, producing, organizing, and providing services which utilize resources pertinent to the needs, and by providing for professional activities which are related.

Theorems contained in the postulate of division-of-labor were: Within social organizations, individuals help to achieve the common goals by administering operations, processing resources and information, or carrying out technical routines.

The postulates and theorems are general enough to pertain to several types of organizations in our culture. Synthesizing statements were then formed to relate the postulates and theorems to libraries: A) Libraries develop as organizations designed for the purpose of satisfying subject oriented information needs felt by the parent-institution. B) Libraries develop internal functions which

satisfy the information needs felt by the parent-institution, and C): Libraries utilize individuals who perform tasks which complete the library functions and thus satisfy the information needs felt by the parent-institution.

The postulates account for the development of libraries and serve to identify their objectives.

The study presents a validation of the theory and an interpretive model. It is felt that the theory will be o value as a teaching device, as a framework within which various problems can be examined, and as a guide to further research and theorizing.