LIBRARIANSHIP AND SYMBOL-MEDIATED COMMUNICATION

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ABSTRACT

This paper moves from Kaplan's view of information as the formal structure of ideas to Mead's view of intersubjective communication, and hence to Popper's overview of reality. It presents a model of librarianship, identifies its components with Popper's three worlds, and concludes that librarianship is a technology of intellect, not a technology of action.

"When ... criticizing the philosophy of an epoch, do not [direct] ... attention to those intellectual positions which its exponents feel it necessary ... to defend.... [Concentrate on the] fundamental assumptions which adhere to all ... systems within the epoch unconsciously presuppose. Such assumptions appear so obvious that people [who make them] do not know what they are assuming because no other way of putting things has ever occurred to them."

Alfred North Whitehead[1]

By Way of Introduction.--This paper, which advocates a humanistic philosophy of science in an age accustomed by four centuries of mechanistic thinking to scientific philosophies of humanism, is critical of materialistic assumptions in both librarianship and information science. It therefore elaborates a few insights from the form-philosophies of Abraham Kaplan, George Herbert Mead, and Karl Popper, who represent, more or less, a loyal opposition to the matter-philosophy which underlies the scientific perspective on communication. None of these philosophers is genua stricto antiscientific. Still, by sharing a humanist perspective on communication, they (and others like them) offer a real alternative to systems theory, which, needless to say, dominates librarianship and information science today. It was Mead who created symbolic interactionism, the humanistic view of symbol-mediated communication which directly or indirectly informs virtually all theories of human communication.[2] But Mead was educated in Germany and had European leanings. He was essentially a form-philosopher who thus became an intellectual pragmatist like C. S. Peirce (the founder of pragmatism) and C. I. Lewis, for all of whom pragmatism was essentially a humanistic theory of meaning with great relevance for all forms of intersubjective communication.[3] He was not a matter-philosopher who became an empirical pragmatist like William James, by whom pragmatism was transformed into a scientific theory of action relevant only to the communication system.[4] Kaplan, it seems, is also an intellectual pragmatist of sorts, with more affinities to Mead than to James.[5] While addressing an ALA conference in 1964, he emphasized (1) the central role of communicative symbols in creating all of the intellectual concerns which underlie the modern information problem, and (2) a thoroughgoing familiarity with the history of ideas[6] as a means of understanding and dealing with those concerns—something the librarians and library educators have never seriously considered and other information specialists are only beginning to recognize. His address thus remains unique in library literature, which contains nothing even remotely resembling its philosophical importance either before or since 1964. Popper's thinking is also strangely akin to Mead's.[7] Although there are many differences: Mead, for example, is less comprehensive and far less prolific than Popper, whose thought consists of two definite parts—his systematic philosophy, and a 3-world summary of his systematic philosophy. Munz thinks the former more important than the latter in understanding the growth of human knowledge.[8] But this paper takes precisely the opposite view: it is Popper's elaboration of Plato's 3-world reality, not Popper's systematic philosophy, which has the potential of creating a comprehensive theory of communication capable of explaining all of the subjective and objectified forms of knowledge in terms of the natural and cultural environments and the human use of symbols.[9] Popper's philosophy of three interactive worlds has been explained in his own extensive writings;[10] but its clearest exposition, perhaps, has come from the world-renowned neurophysiologist, Sir John C. Eccles.[11] Popper's scientific coauthor and the only person authorized by Popper to discuss his philosophy in public.

From Chaos to Kaplan.[12]—Librarianship is always in a critical condition. But its current crisis, according to Abraham Kaplan, does not result from excessive demands on the performance of its functions: it occurs because "the profession itself is now unsure of what its functions are," and because its educators and practitioners are "unsure also of just how to go about performing whatever functions are assigned..."
to it ... or it adopts."[13] The occupational ambivalence of librarians and other information professionals, that is to say, is derived from the modern knowledge explosion, which has transformed the twentieth century into an age of the symbol wherein "enormous changes at every level of ... society can be associated with the concept of information."[14] Kaplan cites three reasons for this important transformation. There is, first of all, "the sheer volume of information,"[15] which makes it virtually impossible for anyone to keep up with developments in any field. "There has also been a fantastic growth in the technology by [means of] which information is produced, processed, and transmitted" in the physical world.[16] But the basic cause of these two things, the reason for both the unwieldy volume of information and the unprecedented growth of informational technology, is the increasing involvement of the modern age with symbols. In lengthy telephone conversations during the early eighties I discussed these elements of Kaplan's argument with Jesse Shera, who agreed that "the general information problem has three aspects," and that "we have addressed only two of them," namely, the veritable deluge of information unleashed on us today, and our attempts to deal with it through high technology.[17] There was no doubt in Shera's mind, however, that "symbols ... occupy a larger part in our lives today than ever before," and that the size of that part ... is growing exponentially.[18] The massive amounts of information available to us have had a tremendous impact on modern life. But "theories about information," by which Kaplan explicitly means "theories about symbol processes," have continued to "exert a similar force,"[19] and indeed constitute a basic cultural reality of the twentieth century—of which the printed word and its technologies are merely the expressions. "From the standpoint of the theory of ideas," which is Kaplan's standpoint throughout, everything suggests that "ours is the age of the symbol."[20]

The library profession has never investigated the human use of symbols, which has generated all of its intellectual problems. These problems, however, can no longer be avoided, because the 20th century has witnessed a profound change in the nature of human effort. This change constitutes the most basic cultural transition of the modern age, which has moved steadily away from the labor-intensive work of talented tinkerers and inspired mechanics toward the knowledge-intensive labor of theorists and philosophers.

The primacy of theoretical knowledge ... [constitutes] the axial principle [of modern culture]. Industriial society is the coordination of machines and men for the production of goods. [But] post-industrial society is organized around knowledge, [which is utilized] for the purpose of ... directing ... innovation and change.... What is distinctive about [the twentieth century] ... is the change in the character of knowledge itself.... What has become decisive ... is the centrality of theoretical knowledge—the primacy of theory over empiricism and the codification of knowledge into abstract systems of symbols that can be used to illuminate many ... [if not most] areas of experience.[21]

As evidence of this fundamental shift in the essence of work, which accounts for our ever-deepening involvement with symbols, Kaplan points to the "many intellectual disciplines" which have recently "come into being around processes of symbolization or have begun to focus ... on language and symbolism."[22] But this remark about intellectual disciplines, which explore the symbolic environment of human thought, can only be understood by contrast with the empirical disciplines, which study the nonsymbolic environment of matter and energy. The empirical disciplines produce knowledge of physical realities that can be observed by means of the senses, whereas the intellectual disciplines create knowledge of formal realities that cannot be observed by means of the senses, although they can be thought and communicated as thought. The mathematically statable content of sensation, that is to say, constitutes the only subject matter of empirical science;[23] but mentation, which must be studied philosophically or not at all, can only be stated verbally (in natural language) or by means of ineffable images (in the language of art objects). Here is a crucial distinction librarianship has overlooked. It has confused first-order knowledge about phenomena, or the intellectual knowledge of physical realities required by science, with second-order knowledge about knowledge, or the knowledge of intellectual realities required by librarians. Thus, the librarians and library educators must somehow break their strong addiction to the empirical matter-philosophy of science and come to grips with the intellectual form-philosophy of critical humanism. "The humanistic basis [of librarianship] is there," says Kaplan, and it "will and must remain as a basis."[24] Accordingly, the need of librarians to know about the actual uses people make of knowledge "must always remain fundamental" to librarianship. But that need cannot be met by scientific knowledge about physical nature. It calls for knowledge of human nature, and that, says Kaplan, "is nothing more than knowledge of people," or more specifically, knowledge "of the various ways in which ... people generate and transmit and interpret ideas or information."[25] Kaplan is clearly not talking in engineering terms about information as physical data in the form of visual characters, audible speech sounds, or electrical impulses. He is thinking of information as ideas and struggling to understand (1) how people bring ideas into existence, (2) how they communicate the ideas they bring into existence, and (3) how they utilize the ideas they bring into existence and communicate.

From Abraham Kaplan to George Herbert Mead ... From Kaplan's "philosophy of library education," says Jesse Shera, "must be derived the objectives of the library school."[26] That strong endorsement of Kaplan's symbolic views is closely related to
the last recommendation made by Shera to the library profession. "I submit," he said, "that librarians must turn to 'symbolic interactionism' for the proper foundation of a theory of librarianship."[27] Symbolic interactionism was created by George Herbert Mead, who rejected the study of social phenomena by mechanistic methods devised for studying scientific phenomena and brought into social science from physics. The natural order is a monistic unity that includes everything physical and nothing else; but the social order is an ontological dualism constituted by an empirical social order, which consists of people as behavers who do things, and an ideative social order, which consists of people as thinkers who know things. Humanists regard the empirical social order as instrumental because it constitutes their only instrument of access to the ideative social order; but scientists treat the ideative social order as nonexistent and regard the empirical social order as a subset of the natural order. Thus, science studies the behavior of human beings without reference to their minds; but humanists studies their behavior as the only means of access to their minds. The dual nature of the social phenomenon therefore accounts for the following typical assumptions of symbolic interactionism.

1. The human intellect is vigorously active. Locke was dead wrong: the mind is not everlastingly controlled like a writing tablet that passively receives ideas from outside itself; it is the active generator of its own ideas; and it uses humanly produced stimuli as symbols which enable it to communicate its ideas to other minds and to control all sorts of rational activities. Thus, the human mind is constantly observing, thinking, making decisions, and acting at the same time—like the rider of a bicycle or the pilot of an airplane.

2. The formal realities of mind cannot be known empirically because they cannot be observed: they can only be thought, communicated as thought, and recognized as thought by means of observable symbols.

3. Human beings are intelligent subjects living in two environments. These are the physical environment, which includes all of the matter and energy in the cosmos; and the cultural environment, which includes all ideas available for study outside of the subjective consciousness of individuals. Thus, people live on the physical landscape of an objective universe; but they also live in the cultural "weather" of their fellow human beings.

4. Intelligent subjects actively select, interpret and modify their environments by choosing the directions and purposes of rational behavior and controlling its construction. This proposition constitutes "an important tenet of most humanistic views of [rational] conduct," which assumes that "human beings are ... participants in creating their own destinies."[28]

5. Access to the human cultural environment is provided only by symbols. "Men have a distinctive capacity for symbolic communication"[29] which enables him to think abstractly and to encode subjective ideas in objective reports that go into the world for others to contemplate. The objectification of thought is thus accomplished by the human use of symbols. Since "thinking is strictly a symbolic process,"[30] and since the physical symbol is the only means of rational communication, the cultural store of objectified knowledge is accessible only through symbols.

6. All aspects of specifically rational behavior are symbolic. Human interaction with one's self and with others is always carried out by means of symbols and their interpretations. Rational behavior cannot be explained, therefore, unless thinking and language are taken into account because human beings attach meanings to symbolic stimuli and act on the basis of those meanings, which "are socially derived through interaction with others rather than inherent in the stimuli themselves."[31]

7. The subjective meanings of symbols can be learned by human beings only through the communication of abstractions. Rational conduct, which is "specifically learned in symbolic communication"[32] by an active self, can be observed. But the meanings acquired by a self are abstractions that cannot be observed: they are communicated to others or remain forever with the self. The communication of abstractions, which subsumes the communication of all meanings, is thus essential to the exploration of subjective questions.

8. Natural language can refer to the subjective realities of mind; but human subjectivity can neither be described by applied mathematics nor explored by pure mathematics. The natural languages are referential, in other words, whereas mathematics is descriptive. This means that natural language can refer the mind to ideas about anything; but mathematics is securely tied to the material universe. Mathematics is therefore "an instrument for application to physical problems."[33] It was invented in order to account for the physical objects and processes of matter and energy, which cannot be adequately described in words. "The axioms of arithmetic and geometry are based on the physical processes of counting objects and measuring distances;"[34] and the differential calculus "is a direct attempt to put physical notions of velocity and acceleration into precise terms."[35] Mathematics is thus the intellectual technology of materialism, an artificial language whose "utmost abstractions are the true weapons with which to control our thought of concrete fact"[36]—which explains why mathematics cannot control
our thinking about abstract form. Natural language, on the other hand, "is the primary mechanism leading to the individual's mind and self."[37] and its verbal abstractions therefore constitute our best means of intersubjective communication.

From George Herbert Mead to Karl Popper. By Popper sorts the whole of reality into three distinguishing between the subjective and objective components of the formal universe, Karl Popper sorts the whole of reality into three separate worlds, which he calls Worlds 1, 2, and 3.[38]

THE THREE WORLDS OF KARL POPPER

World 3

World 2

World 1

1a
1b
1c

KEY

World 2 -- Everything subjective: the individual human mind; the personal consciousness of an intelligent self (with all of its knowledge processes, experiences, etc.)

World 3 -- Everything objective and thinkable: the human cultural environment; all ideas (imperceptible subsistents) available for study outside of World 2.

World 1 -- Everything objective and sensible: the physical environment; anything the human mind can detect by means of the senses (with or without a sophisticated artificial technology).

1a: the liaison brain
1b: the rest of the brain
1c: the rest of the body

Figure 1

Thus, World 1 includes everything physical: it contains all natural and social realities--everything made of matter and energy, which comprises (1) all physical objects, processes, forces, and force fields; (2) all organic and inorganic configurations of matter and energy (including human brains); and (3) all artifacts created by human beings. Everything nonphysical, on the other hand, is found in Worlds 2 and 3, which contain all noetic forms.

World 2 includes everything nonphysical and subjective: it contains all psychological realities--all of the subjective processes of knowing in the private world of the individual human mind; it is the personal world of your own intelligence, "the world of your inner spiritual self," the world you know and live in all the time you are conscious, from the moment you wake up until you go to sleep. That's World 2,][39] the world of the human mind; it is a vigorously active world which comprises everything you can think, feel, create, remember, or imagine; and it can only be "known in others by inference from symbolic communications."[40] World 3 includes everything nonphysical and objective: it contains all objective products of knowing, which include all ideas of any kind that are available for study outside of the individual consciousness; it comprises all that is human around us and everything created and objectified by human minds, including all of the fine and useful arts. "We live in the cultural environment of World 3," which is just as objective and "every bit as real as the physical environment of World 1."[41] You exhibit World 3 behavior whenever you communicate anything by language, or in any other way, because World 3 is the whole of civilized culture.

World 3 is the world of [objectified knowledge, or] knowledge in the objective sense.... It comprises ... [all ideas ... preserved in codified form ... in all records of human culture. In their material composition of paper and ink, books are in World 1, but the knowledge encoded in the print [of books] is in World 3, and [the situation is similar] ... for pictures and all other artefacts.... World 3 comprises the records of the intellectual efforts of all mankind through all ages.... [It is] the cultural heritage [of the human race].[42]

Human beings can interact directly with their physical environment, according to Popper, and indirectly with their cultural environment (by using data from their physical environment as communicative symbols); but those environments can interact with each other "only through human intervention."[43] He rejects psychophysical parallelism, the monistic outlook of scientific materialism, because it isolates the natural and formal orders, regards them as different aspects of the same thing, and prevents them from influencing one another in meaningful ways; and he accepts psychophysical interactionism, also known as dualist interactionism, or "the commonsense view that people are composed of two distinct and separate entities."[44] Thus, "the nonmaterial entity from World 2, the world of the spirit, is the self-conscious mind--the soul or psyche which constitutes the self," and "the material entity from World 1, the world of physical realities, is the human brain and the body it controls."[45] This ties the mind-body problem of philosophy to Popper's "brain-mind liaison,"[46] the frontier of interaction between the mind and its brain which enables the mind to manipulate its physical environment by controlling the brain that controls its body: it explains how the mind can create knowledge subjectively in World 2.
manifestations of knowledge in World 1 (by encoding it in the physical symbols of subjective reports), and store its ideative referents objectively in World 3; and the process is reversible—you can observe the physical symbols of objective knowledge in World 1, recognize their ideative referents in World 3, and reconstruct them as your own subjective knowledge in World 2. By this we see how the imperceptible knowing born of countless human minds from all knowledge; it contains the objective products of manifestations of knowledge in World 1 (by encoding it in the cultural book, or the cultural environment, which gives rise to librarianship, as an informational animal: the cultural knowledge through symbols. This function cannot be performed properly unless librarians comprehend both ends of the mind-document interface and the symbolic nature of human interaction. Thus, they must understand (1) people as minds engaged in thought, (2) the human use of symbols as the means by which people communicate with each other and with their cultural environment. The importance of this mind-document interface cannot be overemphasized. It provides the first three elements of librarianship: the librarians, the fourth element; the fifth and sixth elements consist of everything involved in the interactions of librarians with objective knowledge and with patrons; and the seventh element is librarianship itself—the system, good or bad, which the librarians create by integrating the five elements at their disposal. This basic interface also discloses two views, two modes of inquiry, and nine problem areas of librarianship. \[49\] The two views are the theoretical view of the library educators, who must understand the totality of librarianship and explain it as a field of study, and the pragmatic view of the library practitioners, for whom librarianship is an occupational activity. The two modes of inquiry are basic.

**THE MIND-DOCUMENT INTERFACE**

The seven elements include three indispensable components (patrons, objective knowledge, and librarians), three necessary interfaces (the interactions of patrons-with-knowledge, librarians-with-knowledge, and patrons-with-librarians), and an integrated result (the system which emerges from the essential components and interfaces of librarianship). Everything begins with the human being as an informational animal: the cultural environment, which gives rise to librarianship, is created solely because people are thinkers who must know all kinds of things in order to live by what they know and to control their actions by beliefs which constitute our personal experiences can be expressed for others to contemplate, how we can contemplate the expressions of other people, "and thus how whole new complexes of thoughts and understandings can be created;"\[47\] and we can also see how librarianship is derived from the human ability to create and manipulate ideas by means of symbols.

**LIBRARIANSHIP: its seven elements, two views, nine problem areas, and two modes of inquiry.**

I. **The View from Above:** Librarianship as a field of study

**KNOWING**

[Diagram of the mind-document interface]

**DOING**

[Diagram of the basic research and ad hoc investigation]

**KEY**

- P: A person, the patron (as a thinker who knows things)
- K: Knowledge, in the objective sense, the intellectual products of available objective knowledge
- L: The library (as mediator of the mind-document interface)
- A: The mind-document interface
- B: The librarians or the document
- C: The ideational view of librarianship
- D: The pragmatic view of librarianship as an occupation


*Figure 3*
problems that arise from the seven elements and two views of librarianship, suggest Shera’s view that high technology could not only force librarians "to examine the philosophical implications of librarianship but may also condition them to accommodate 'areas of inquiry which previously have not been ... related to their work."[51]

If librarians ... are to take [full] advantage of the new technology they must first extend the boundaries of their thinking ... and accept into the body of their professional knowledge ideas that at first may seem alien, if not hostile [to librarianship]. They may be particularly alert at its margins, and sensitive and responsive to change [in order] to insure open and clear communication with all relevant sources of innovation.[52]

These problem areas, which generate virtually all of the problems of librarianship, may ultimately require solutions drawn from every field of science and scholarship. The specific problems of librarians are therefore best resolved by systematic inquiry into the nature of nine general problems, which may be listed and amplified as follows.

1. The human being as a thinking mind that constantly creates, uses, stores, retrieves, and re-uses ideas because it requires a continuous supply of knowledge in order to live by what it knows (or believes it knows). Subsumes all problems of personal knowledge, or the subjective processes of knowing which occur only within the minds of individuals.

2. The human cultural environment, which includes all ideas created and objectified as formal objects by human minds. Subsumes all problems of public knowledge, or the objective products of knowing which are available for study as ideas existing outside of the mind that studies them.

3. The mind-document interface, which includes all of the problems derived from the intrasubjective communication of human beings with the formal objects of cultural knowledge. Concerned with every means by which a human mind is able to interact with formal objects created by other human minds and manifested in the social order as the physical expressions of knowledge, whether those expressions consist in temporal processes (like speech and music) or in permanent states (like painting and the printed word). The word "document," accordingly, refers to any natural or artificial means of consulting objectified ideas by putting them on hold, so to speak, in order to re-use them as needed.[53] The kinds of objectified knowledge that can be communicated by means of written documents, needless to say, have especial significance for the literate forms of librarianship.

4. The librarian as an information professional, whose function is to mediate the mind-document interface by bringing minds and documents together and maximizing useful interactions between them.

5. The librarian-patron interface, or all problems derived from the intersubjective communication of librarians with their patrons. Includes all of the direct services to readers, such as reference and readers' advisement, and obligates librarians to determine the specific informational needs of patrons in order to refer them to relevant items of knowledge in the cultural environment.

6. The librarian-document interface, or all problems derived from the intrasubjective communication of librarians with the ideas which constitute the formal objects of cultural knowledge. Includes all of the indirect services to readers, or collection-related operations such as acquisitions and cataloging, and obligates librarians to understand the intellectual structure of objectified knowledge in order to orient patrons to formal objects in the cultural environment.

7. The integrated system of librarianship created by librarians from the five elements common to the performance of their functions in all library operations.

8. The theoretical view of librarianship from above. Held by most library educators, whose function is to reduce the first principles of librarianship to a system of theoretical rules which governs all of its explanations and applications and can be learned in a workable program of instruction. This view is sustained by the intellectual faculty of understanding, which, by creating basic knowledge of librarianship as a field of study, provides a foundation for the practice of librarianship as a professional activity.

9. The pragmatic view of librarianship from below. Held by most practitioners and administrators of librarianship, who must deal with the immediate urgencies of specific library operations. Requires the constant exercise of practical judgment by librarians because, in applying the general rules of librarianship to concrete situations, they must know what to do about very specific matters and how to investigate them in order to resolve the myriads of service problems that occur in every library operation.

An additional perspective on librarianship, which might be called "the view from on high" or "the view from out here," is the idealized overview of those consummate librarians and library educators who, in their near omniscience and omnipotence,
can integrate all of the abstract and concrete realities of their profession into a single comprehensive metaphysical framework bound squarely on the human mind and the cultural environment it creates. It is this philosophical overview which gives birth to the first principles of librarianship, which in turn create the theoretical knowledge applied by working librarians in all kinds of specific library operations. Thus, the mind-document interface constitutes the central concern of the librarians and their educators. It underlies everything they know and do: there would be no librarianship if it were not absolutely real; and its tremendous significance invites serious attention and deserves intensive exploration.

Librarianship and the Three Worlds of Karl Popper. The physical realities of matter and energy enjoy first-order status in all of the empirical disciplines. In intellectual disciplines like librarianship, however, they have only second-order status as symbolic instruments for communicating formal abstractions. The intellectual nature of librarianship, as a matter of fact, can be disclosed with remarkable clarity by identifying its basic components with the three worlds of Karl Popper. The patrons as information-seeking animals, as thinkers searching for knowledge outside of themselves, are intelligent conscious subjects belonging to World 1; the objective knowledge sought by patrons belongs to the cultural environment of World 3; and the librarians as information professionals— as experts who must understand both the subjective knowledge-seeking of patrons and the objective knowledge sought by patrons—are also intelligent conscious subjects who belong to World 2. This raises a most revealing question: Where is World 1, the physical world of matter and energy studied by the empirical methods of science? World 1, remember, contains only the concrete particulars of matter and energy, whereas Worlds 2 and 3 consist solely of universals. World 1, therefore, does not pertain directly to the basic components of librarianship because its physical particulars include neither the subjective processes nor the objective products of knowledge. Thus, its significance is wholly confined to the three interfaces of librarianship where it functions instrumentally as communicative machinery, since the physical data which enable human beings to communicate with each other and with whose objective environments are all derived from World 1; and the role of World 1 in librarianship is thereby reduced to furnishing people with raw materials for constructing the symbolic instruments of human communication. It should be noted, furthermore, that the librarian's professional function, which is intimately involved with the subject-to-subject mode of two-way communication, and with the fact-to-subject mode of one-way communication so familiar to the humanist, has virtually no involvement with the fact-to-subject mode of one-way communication that is absolutely indispensable to the scientist. You can't explain a leaky boat to the ocean, in other words, nor can you communicate anything at all to the books you read or to the phenomena you study. And the reason for all that is basic: librarianship is not concerned with realities; it is concerned with human subjective reports about realities. Librarians should understand this clearly, because human subjective reports about formal or physical realities must either be communicated directly by human beings themselves or indirectly by means of formal objects, not by humans. There are no other ways of communicating human subjective reports.

Summary and Conclusions. Librarianship is the management of knowledge, not the management of nature. It is controlled by ideas, not by phenomena, since it responds to the subjective need of minds in World 2 for objective knowledge in World 3. But the formal abstractions of subjective and objective knowledge cannot be observed: they cannot be seen, heard, smelled, touched, tasted, or otherwise detected by the senses. Thus, knowledge, which always transcends the physical realities of World 1, must be studied philosophically: it cannot be studied scientifically because the human mind, which constitutes the source and the subject matter of librarianship, "is distressingly invisible, and a science with invisible content is likely to become an invisible science." This means that the formal abstractions of knowledge must be communicated by utilizing the physical resources of World 1 as symbolic instruments which refer the mind to ideas in Worlds 2 and 3. The communication of knowledge, furthermore, may be confused with the physical instruments by means of which knowledge is communicated.

The human use of symbols underlies all of the information-related problems of the twentieth century. It has caused the modern knowledge explosion, which overwhelms everybody with its tidal waves of information; and it has launched a sophisticated effort to bring our deepening oceans of symbols under the control of electronics technology. The informational concerns which pervade all aspects of society lie at the very heart of librarianship; but the librarians and their educators have tried to deal with them through information science, which overemphasizes the engineering aspect of communications technology and ignores the specifically human aspects of communication by reducing knowledge to physical signals. The refinement of technology, surely, is an important means of managing knowledge; but it is not the management of knowledge. And building bigger and better bulldozers for pushing the physical manifestations of language around, or discovering the communicative potential of laser beams and glass fiber bundles, can be tremendous aids to communication; but they are not communication. It is plainly and simply impossible to manage knowledge unless the complex relationship of communicative signals with their subjective meanings is understood and controlled; and understanding that psychophysical relationship calls for a dualistic theory that is comprehensive enough to explain exactly how physical symbols are wired up to their metaphysical referents and to human beings. This kind of comprehensive communication theory is precisely what is lacking in librarianship today.
Before he died in 1982, Shera reversed his earlier thinking about information science in these words.

Twenty years ago, I thought of what is now called information science as providing the intellectual and theoretical foundations of librarianship, but I am now convinced that I was wrong.... I seriously question whether there is a true interdisciplinary relation between librarianship and information science.... We must look to other disciplines for its interdisciplinary relations and the core of its theory.[59]

Shera therefore recommended symbolic interactionism to the library profession because he knew that monistic "confusion between data and ideas," which regards data as ideas, "leads to the confusion between data systems and idea systems"[61]--an untenable distinction the scientific monists are neither able nor willing to make. Thus, Shera's insistence in the early eighties that "the general information problem has three aspects, and [that] we have addressed only two of them"[62] is essentially correct: the information explosion was widely publicized from his library school at Western Reserve; and the library profession has finally accepted high technology as a means of dealing with it.[63] But for all that, the information professionals, who are largely committed to the empirical materialism of science, have never really faced the intellectual realities derived from the human use of symbols.

The fundamental problems of librarianship are not technological, nor do they have empirical solutions: they are intellectual problems which require philosophical solutions. The critical examination of symbolically mediated communication, moreover, offers librarians and information scientists as good a chance as they are ever likely to have for learning how to deal with them. But symbolic interactionism also confronts us with two alternatives: we can either investigate the intellectual realities of symbolic communication and learn how to clean up the mess we are in, or we can settle for merely learning how to live with the mess. The former is the right way to go--there's no doubt about that; but following it will be difficult, because the latter is thus far the only thing ever attempted by the information professionals.

[2] Symbolic interactionism lurks in the background of virtually everything except systems theory, for example, in both editions of Stephen W. Littlejohn, Theories of Human Communication (1st ed., Columbus, Ohio: Charles E. Merrill, 1978; and 2d ed., Belmont, Calif.: Wadsworth Publishing Co., 1983). This work is a marvelous index to the literature of communication theory, but is often disappointing in its own discussions of communication.

[3] "Peirce introduced the term, 'pragmatism,' in 1878 as the name of a theory of meaning," William L. Reese, Dictionary of Philosophy and Religion: Eastern and Western Thought (Atlantic Highlands, N.J.: Humanities Press, 1980), 419. "Lewis's 'conceptual pragmatism,' as he called his position, ... includes ... intentions to create a critical philosophy of knowledge and communication," H.S. Thayer, Meaning and Action: a Study of American Pragmatism (New York: Bobbs-Merrill, 1973), 148. Lewis also insisted that the pragmatic element of knowledge is the a priori element (what the mind contributes to knowledge), not the empirical element (what the world brings to knowledge), ibid., 154, 158, 163, 172.

[4] On James as the popularizer and perverter of pragmatism, see ibid., 217: "The usual judgment is that James misunderstood, misapplied, and misdirected Peirce's pragmatism," adding that "Peirce certainly had a right to protest against what James was doing." On the vast differences between Peirce and James, see ibid., 13, 21-22, 76-78, 81-82, 86-88, 97-98, 105, 109 and n.7, 216-18, etc. Peirce, remember, rechristened pragmatism in 1905 as "pragmaticism," a term ugly enough to protect it from kidnappers--like James, and to some extent like Dewey. On James' differences with the later pragmatists, see ibid., 218: "The last pragmatists, especially Dewey, Mead, and Lewis, found serious shortcomings in the way James viewed the wider philosophic scene into which pragmatism was introduced." Dewey rejected "James's anti-intellectualism in philosophy, his distrust of scientific abstractions, and his inability to see the significance of scientific method as a vital part of philosophic inquiry and of the interpretation of behavior," ibid. Mead lampooned popular notions of the pragmatist, doubtless with James in mind, as "a Ford efficiency engineer bent on the mass production of philosophical tin lizzies," Hans Joas, C. H. Mead: a Contemporary Re-examination of his Thought, tr. R. Meyer (Cambridge, Mass.: MIT Press, 1985), 36, citing Mead's The Philosophy of the Act, ed. Charles W. Morris (Chicago: University of Chicago Press, 1959), 97. And the "perceptual pragmatism" of William James would have been constantly threatened by the "conceptual pragmatism" of C. I. Lewis with its emphasis on the "pragmatic apriori" and its insistence that philosophy itself "is the study of the a priori," C. I. Lewis, Mind and the World Order: Outline of a Theory of Knowledge (New York: Dover, 1936), 36 and passim.

[5] I am certain that Kaplan has somewhere described himself in print as "a pragmatist by training, a pragmatist by inclination," although I no longer know where. His close
affinities to Mead, however, are everywhere apparent throughout his discussion of pragmatism in his The New World of Philosophy (New York: Random House, 1961), 13-52, esp. 18, 22, 25, 30, 50.

[6] The modern study of intellectual history, or the history of ideas, was created by Arthur O. Lovejoy in his The Great Chain of Being: A Study in the History of a Biologistic Conception of the World, which was spectacularly unsuccessful, as stated in the conclusion of his The Revolt Against the Moderns: an Inquiry Concerning the Existence of Ideas (2d ed.; "The Paul Carus Lectures," 2; La Salle, Ill.: Open Court, 1960), 328-29: "The revolt ... against dualism in his The New World of Philosophy (New York: Random House, 1961), 13-52, esp. 18, 22, 25, 30, 50.

[7] See, for instance, Karl R. Popper and John C. Eccles, The Self and Its Brain (New York: Springer International, 1979), 111 n.7: "There are certain similarities between my ideas [about the self and the ideas of] the American pragmatist G. H. Mead." Such similarities are frequent and often very pronounced between these two philosophers.


[9] Those who argue that Popper is irrelevant or outdated, therefore, must face the fact that there is virtually nothing in Popper that does not appear, at least implicitly, in Plato, and that Plato is definitely not irrelevant to, nor is he ever going to disappear from, the Western intellectual tradition. All such arguments, accordingly, are ultimately arguments with Plato, not with individual form-philosophers like Popper, Kaplan, or Mead.


[12] This section is based on my article, "From Chaos to Kaplan; A Saga of Library Literature," Scholar and Educator, vol. 8, no. 1 (Spring, 1984), 11-31, which is also excerpted in "The Symbol and Its Referent; an Issue for Library Education," Library Trends, vol. 34, no. 4 (Spring, 1986), 729-76.


[14] Ibid. Italics his.

[15] Ibid.

[16] Ibid., 8.


[19] Ibid., 8.

[20] Ibid. Italics his.


[25] Ibid. Italics mine.


[27] Jesse H. Shera, "Librarianship and Information Science," in Fritz Machlup and Una
A problem arising anywhere in librarianship can thus be approached from either of two perspectives, as indicated by the dashed lines leading from both "BASIC RESEARCH" and "AD HOC INVESTIGATION" to the problems typical of interface "c." Other dashed lines, which have been omitted in order to simplify the diagram, should be understood as relating the two modes of inquiry to all of the problem areas in librarianship.

See two of my articles on this subject, "The Informational Function of the Physical Datum in Human Communication," Scholar and Educator, Spring, 1979, 27-34; and "The Instrumentality of Data," NLA Newsletter, 6 (May, 1981), 4-9.

The fact-to-subject mode of intrapersonal communication is therefore confined to the librarian's administrative function, which is deeply involved with the communicative instruments of librarianship.

The computer business, accordingly, is alive and flourishing in librarianship today, although librarianship is definitely not in the computer business.